WEST PARCEL SOLAR PROJECT

TIERED DRAFT EIR

Volume 2: Appendices

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Mt. San Antonio Community College District
Facilities Planning and Management
1100 North Grand Avenue
Walnut, California 91789-1399

Gary Nellesen, Director
facilitiesplanning@mtsac.edu

SID LINDMARK, AICP
Planning . Environmental . Policy
10 Aspen Creek Lane
Laguna Hills, California 92653-7401

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Memorandum

Date: September 9, 2015

To: Ms. Mikaela Klein, Mt. San Antonio College

From: Fred Greve, Greve & Associates, LLC

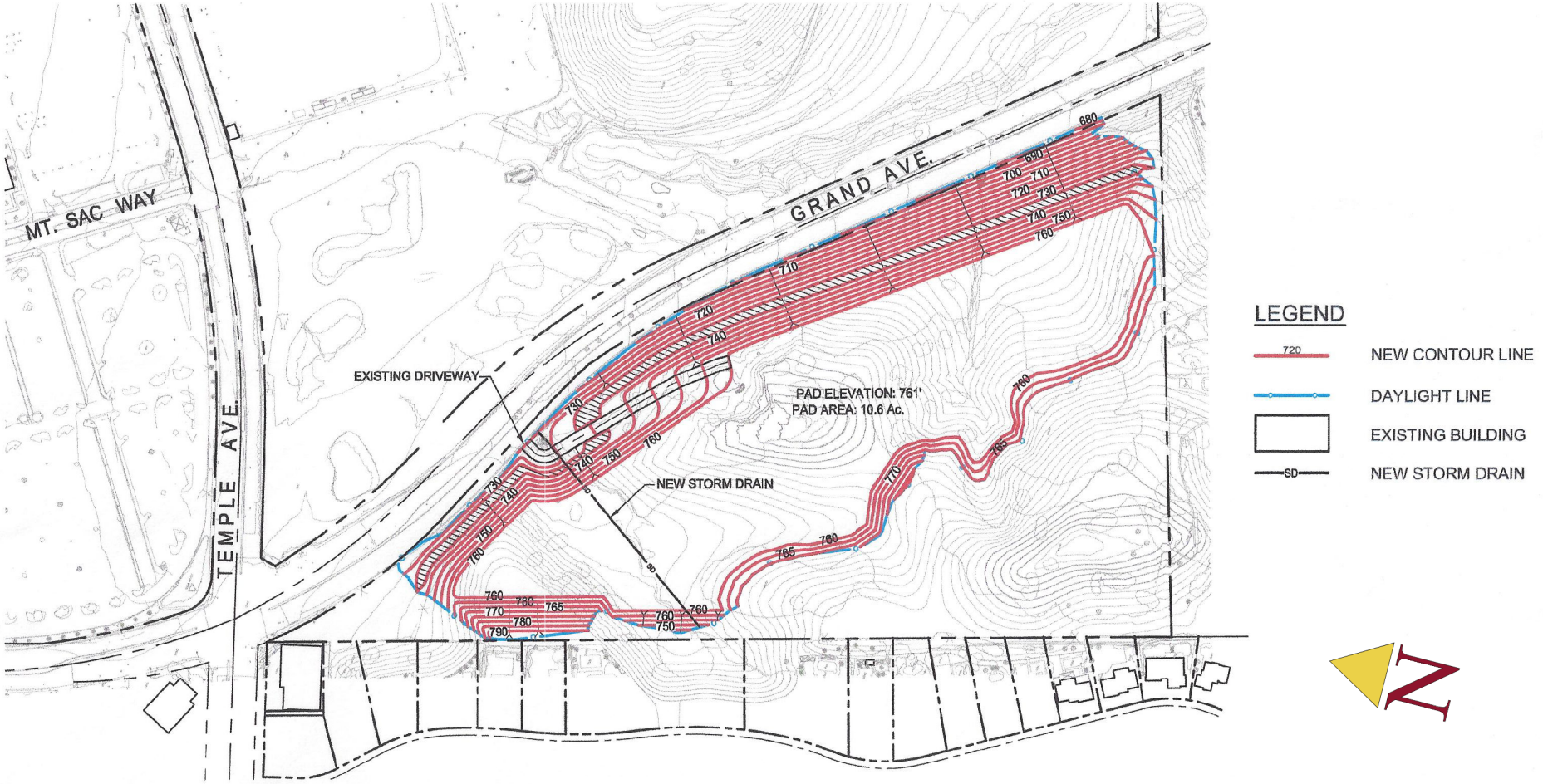
Subject: West Parcel Solar Project – Air Quality Construction Analysis (Report #15-104C)

The analysis presented below examines the potential air quality impacts of the construction of the West Parcel Solar (WPS) project. The project will construct solar panels with a capacity of approximately 2.2 MW. The entire site is approximately 27.7 acres, and approximately 17.7 acres of the site will be graded. Substantial grading and import of dirt will be required for the project. The current grading estimates are 172,708 cubic yards of cut, 336,279 cubic yards of fill with a net import of 163,571 cubic yards. The import fill will come from the Athletics Complex East (ACE) area. The WPS site is a triangular parcel southwest of North Grand Avenue, east of homes along Regal Canyon Drive, and north of homes along Stonybrook Drive (refer to Exhibit 1). The main pad for the solar pads will be lower in elevation than the nearby homes, but some grading close to homes along Regal Canyon Drive will be necessary to construct slopes.

It should be noted that the project will need to comply with the air quality measures contained in the Mitigation Monitoring Program (MMP) for the 2012 Facilities Master Plan SEIR. Measures 3a through 3j of the MMP identify a spectrum of air quality mitigation with Measures 3a, 3b, 3c, 3f, 3g, 3h, and 3i are aimed specifically at reducing quality emissions.

638 CAMINO DE LOS MARES, SUITE H130-153, SAN CLEMENTE, CA 92673
VOICE: 949•466•2967 EMAIL: fred@greveandassociates.com

Exhibit 1 - Site Plan



THRESHOLDS OF SIGNIFICANCE

In their "1993 CEQA Air Quality Handbook", the South Coast Air Quality Management District (SCAQMD) established significance thresholds to assess the impact of project related air pollutant emissions. Table 1 presents the significance thresholds for construction. There are separate thresholds for short-term construction and long-term operational emissions. A project with daily emission rates below these thresholds are considered to have a less than significant effect on regional air quality. It should be noted the thresholds recommended by the SCAQMD are very low and subject to controversy. It is up to the individual lead agencies to determine if the SCAQMD thresholds are appropriate for their projects.

Table 1 Regional Pollutant Emission Thresholds of Significance

	Pollutant Emissions (lbs./day)					
	CO	**VOC**	**NOx**	**PM10**	**PM2.5**	**SOx**
Construction	*550*	*75*	*100*	*150*	*55*	*150*

SCAQMD staff also developed a localized significance threshold (LST) methodology that can be used to determine whether or not a project may generate significant adverse localized air quality impacts. LSTs represent the maximum emissions from a project that will not cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard, and are developed based on the ambient concentrations of that pollutant for each source receptor area (SRA). The LST methodology is described in the "Final Localized Significance Threshold Methodology" updated in 2009 by the SCAQMD and is available at the SCAQMD website (http://aqmd.gov/ceqa/handbook/LST/LST.html).

The LST mass rate look-up tables provided by the SCAQMD allow one to determine if the daily emissions for proposed construction or operational activities could result in significant local air impacts. If the calculated on-site emissions for the proposed construction or operational activities are below the LST emission levels found on the LST mass rate look-up tables, then the proposed construction or operation activity is not significant for air quality.

The project is located in SRA 10. The nearest existing land uses are the residences are at the edge of the project site. If receptors are within 25 meters of the site, the methodology document says that the threshold for the 25 meter distance should be used. Table 2 summarizes the LSTs for construction.

Table 2 Localized Significance Thresholds at the Nearest Receptors

	Localized Significance Threshold (lbs./day)			
Description	NOx	CO	PM_{10}	$PM_{2.5}$
Construction Activities	236	1,566	12	7

POTENTIAL FOR CONSTRUCTION IMPACTS

Air pollutants are emitted by construction equipment and fugitive dust is generated during earth moving operations. Air impacts can contribute significantly to the regional air pollution levels, and this type of impact is referred to as a regional air impact. Air contaminants can also affect sensitive receptors very close to the project, and this is referred to as a local impact. Both regional and local impacts are assessed for the construction the WPS project.

Regional Air Impacts

Construction Emission Calculation Methodology

Emissions during the phases of construction were calculated using the California Emissions Estimator Model (CalEEMod). CalEEMod is a computer program developed by the SCAQMD in conjunction with the California Air Resources Board (CARB). The model calculates emissions for construction and operation of various projects. The latest version of the model was used (i.e., version CalEEMod.2013.2.2)

Construction Activities

The construction area of the site totals approximately 17.7 acres. The construction of the project is estimated to take a little less than 1 year with an estimated start date of October 2015 and a completion date of July 2016. The following are the likely phases of construction; site preparation, grading with import of fill, final grading, solar panel installation, restoration, and landscaping. The appropriate number of acres, duration of each construction phase, key construction equipment, and other key elements of the project were input into the CalEEMod to generate the estimate of emissions. The solar panel installation, restoration, and landscaping will likely occur concurrently, while there will be little overlap between the other phases. Each construction phase is discussed below. Construction is currently envisioned to occur on weekdays and Saturdays (i.e., six days per week) from 7 a.m. to 7 p.m. CalEEMod printouts are included in the Appendix.

Site Preparation. Site preparation will include cacti/duff collection and grub clearing. Likely heavy equipment will include at most a dozer and a backhoe.

Grading with Soil Importation. This construction phase will take about 130 days of work. Some grading may occur prior to importing fill, but most of the time importation of fill will be occurring simultaneously with grading. Heavy equipment during this time will be limited to

three scrapers, a dozer, a loader, and a compacter. Approximately 163,571 cubic yards of dirt will be moved to the WPS from the ACE complex area. Export of dirt will require about 20,446 haul truck trips. A round trip for the haul trucks will be 6.6 miles.

Finish Grading. Finish grading will employ up to 4 scrapers, a dozer, and a compactor. Finish grading is anticipated to last 76 workdays.

Solar Panel Installation/Landscaping/Restoration. These three construction phases will likely occur concurrently for most of the time. Solar panel installation is projected to last 76 workdays, while landscaping and restoration are anticipated to each last 62 days. Very little heavy equipment is needed for this work. Three pieces of equipment are estimated for this time period with the equipment being some mix of tractors and backhoes.

Construction Emissions

Table 3 presents the results of the total emissions calculations for the construction activities discussed above. The highest daily construction emissions for each phase are presented below and represent a worst-case scenario. No mitigation is included in the emission projections presented below. The projected emissions are compared to the Significance Thresholds described above. CalEEMod printouts are included in the Appendix.

Table 3 Peak Construction Emissions

	Pollutant Emissions (lbs./day)					
Activity	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
Collection, Clear & Grub	1.7	17.9	13.7	0.0	7.9	4.3
Grading with Import	9.7	99.6	105.0	0.1	14.0	7.8
Final Grading	7.9	94.7	60.4	0.1	11.2	7.2
Solar Installation	0.3	3.0	2.6	0.0	0.3	0.2
Restoration	0.2	1.6	1.4	0.0	0.5	0.2
Landscaping	0.2	1.6	1.4	0.0	0.4	0.2
Solar Install+Restoration +Landscaping	0.7	6.3	5.4	0.0	1.2	0.5
SCQAMD Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Exceed Threshold?	*No*	*No*	*No*	*No*	*No*	*No*

The projected construction emissions are below the significance thresholds established by the SCAQMD. In all cases the peak daily emissions are well below the thresholds. The NOx emissions for grading with import and for final grading are just below the significance threshold. It is critical that the contractor does not use more equipment than that listed below:

Grading with Importation
3 Scrapers, 1 Loader, 1 Dozer, and 1 Compactor

Grading Alone
4 Scrapers, 1 Dozer, and 1 Compactor

Local Air Impacts

The on-site emissions for the LST analysis were calculated utilizing CalEEMod. The emissions presented in Table 4 are those that would be emitted from activity within the project site. The total on-site construction emissions are compared to the Localized Significance Thresholds (LSTs) described above.

Table 4 On-Site Emissions By Construction Activity

Activity	Daily Emissions (lbs./day) NOx	CO	PM10	PM2.5
Collection, Clear & Grub	17.8	13.4	7.9	4.3
Grading with Import	77.0	50.6	9.8 (6.3)	6.5 (4.7)
Final Grading	94.6	59.5	11.0 (7.2)	7.2 (5.3)
Solar Installation	2.8	2.1	0.2	0.2
Restoration	1.6	1.2	0.4	0.1
Landscaping	1.6	1.2	0.4	0.1
Solar Install+Restoration +Landscaping	6.1	4.5	1.1	0.5
LST Thresholds	*236*	*1,566*	*12*	*7*
Exceed Threshold?	*No*	*No*	*No*	*No*

Note: Values in parenthesis include watering of the active area twice a day.

Without any mitigation, none of the emissions will exceed the LST significance thresholds, except PM2.5 during final grading. The projected emission rate will be 7.2 for PM2.5 emissins during final grading, and the threshold is 7 pounds per day. However, the Mitigation Monitoring Program Measure 3h requires watering at least twice per day. When watering of the site is included in the CalEEMod calculations, the emission projection is reduced to 5.3 pounds per day, which is below the 7 pounds per day threshold. Therefore, no local air impacts will occur due to construction activities.

Diesel Particulate Matter Emissions During Construction

In 1998, the California Air Resources Board (ARB) identified particulate matter from diesel-fueled engines (Diesel Particulate Matter or DPM) as a Toxic Air Contaminant (TAC). It is assumed that the majority of the heavy construction equipment utilized during construction would be diesel fueled and emit DPM.

Impacts from toxic substances are related to cumulative exposure and are assessed over a 70-year period. Cancer risk is expressed as the maximum number of new cases of cancer projected to occur in a population of one million people due to exposure to the cancer-causing substance over a 70-year lifetime (California Environmental Protection Agency, Office of Environmental Health Hazard Assessment, Guide to Health Risk Assessment.) Use of heavy diesel generating equipment will be used intermittently over a nine-month period. Because of the relatively short duration of construction compared to a 70-year lifespan, diesel emissions resulting from the construction of the project will not result in a significant impact.

GREENHOUSE GAS

The SCAQMD has not officially adopted significance thresholds for greenhouse gas emissions. However, their draft recommendations use a 3,500 MT CO_2EQ/yr. threshold for residential projects, a 1,400 MT CO_2EQ/yr. (metric ton of equivalent carbon dioxide per year) threshold for commercial projects, and a 3,000 MT CO_2 EQ/yr. for mixed-use projects. This project

does not fall into any of these categories. Construction emissions are amortized over the life of the project, defined by SCAQMD as 30 years, and are added to the annual operation emissions. The greenhouse gas emissions for construction are very small when amortized over a 30 year period. The CalEEMod analysis (see Appendix) shows that the total greenhouse gas emissions from the project will be 755 metric tons equivalent carbon dioxide (MTCO2EQ), or amortized over 30 years it is 25 MTCO2EQ per year. The construction emissions are well below any SCAQMD recommended threshold. Since the project will generate electricity from solar power, it will reduce GHG emissions during the operational phase. Therefore, the project will not have a significant impact on greenhouse gas emissions.

CONCLUSION

Potential air quality impacts during construction were assessed for the WPS project. Both local and regional air impacts were considered. No air quality impacts are forecasted during construction of the WPS project.

Appendix

CalEEMod Output for Winter

CalEEMod Output for Annual

West Parcel Solar - WPS

South Coast AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	10.00	1000sqft	17.70	10,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	9			**Operational Year**	2016
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - 17.7 acres is the area that will be graded. 10,000 square feet of building was put into the model to represent a very rough approximation of the amount of construction that will be required for the installation of the solar panels

Construction Phase - Schedule has been adjusted to match actual proposed schedule.

Off-road Equipment - Per discussions with Tilden Coil

Off-road Equipment - Per discussions with Tilden-Coil. No compactor in list, using one graders as a substitute for compactor.

Off-road Equipment - Per discussions with Tilden-Coil and EPT

Off-road Equipment - Per discussions with Tilden-Coil and EPT

Off-road Equipment - Per discussions with Tilden-Coil

Off-road Equipment - Per discussions with Borrego Solar

Trips and VMT - Distances for hauling represent actual proposed routes

Grading - Actual size of area to be graded/worked.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	300.00	76.00
tblConstructionPhase	NumDays	30.00	130.00
tblConstructionPhase	NumDays	30.00	20.00
tblConstructionPhase	NumDays	10.00	21.00
tblConstructionPhase	NumDays	10.00	62.00
tblConstructionPhase	NumDays	10.00	62.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	PhaseEndDate	9/24/2016	7/14/2016
tblConstructionPhase	PhaseEndDate	9/8/2016	6/28/2016
tblConstructionPhase	PhaseStartDate	6/29/2016	4/17/2016
tblConstructionPhase	PhaseStartDate	6/29/2016	4/17/2016
tblGrading	AcresOfGrading	390.00	17.70
tblGrading	AcresOfGrading	90.00	17.70
tblGrading	AcresOfGrading	0.00	17.70
tblGrading	AcresOfGrading	0.00	17.70
tblGrading	AcresOfGrading	0.00	17.70
tblGrading	MaterialImported	0.00	163,571.00
tblLandUse	LotAcreage	0.23	17.70
tblOffRoadEquipment	LoadFactor	0.43	0.37
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblProjectCharacteristics	OperationalYear	2014	2016
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	5.60

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	9.7381	99.5853	104.9829	0.1070	10.2352	3.7723	14.0075	4.3440	3.4702	7.8142						10,997.8169

2016	9.0399	94.7193	99.5428	0.1068	9.6372	4.0668	13.1566	4.1973	3.7415	7.4350						10,875.5834
Total	**18.7780**	**194.3046**	**204.5256**	**0.2138**	**19.8723**	**7.8391**	**27.1641**	**8.5413**	**7.2117**	**15.2492**						**21,873.4003**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	9.7381	99.5853	104.9829	0.1070	10.2352	3.7723	14.0075	4.3440	3.4702	7.8142						10,997.8169
2016	9.0399	94.7193	99.5428	0.1068	9.6372	4.0668	13.1566	4.1973	3.7415	7.4350						10,875.5834
Total	**18.7780**	**194.3046**	**204.5256**	**0.2138**	**19.8723**	**7.8391**	**27.1641**	**8.5413**	**7.2117**	**15.2492**						**21,873.4003**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	10/1/2015	10/24/2015	6	21	
2	Grading including Import	Grading	10/25/2015	3/24/2016	6	130	
3	Finish Grading	Grading	3/25/2016	4/16/2016	6	20	
4	Landscaping	Site Preparation	4/17/2016	6/28/2016	6	62	
5	Restoration	Site Preparation	4/17/2016	6/28/2016	6	62	

6	Solar Panel Installation	Building Construction	4/17/2016	7/14/2016	6	76	

Acres of Grading (Site Preparation Phase): 17.7

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	1	8.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading including Import	Concrete/Industrial Saws	0		81	0.73
Grading including Import	Crawler Tractors	0	8.00	208	0.37
Grading including Import	Excavators	0	8.00	162	0.38
Grading including Import	Graders	0	8.00	174	0.41
Grading including Import	Rubber Tired Dozers	1	8.00	255	0.40
Grading including Import	Rubber Tired Dozers	0	8.00	255	0.40
Grading including Import	Scrapers	3	8.00	361	0.48
Grading including Import	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Finish Grading	Excavators	0	8.00	162	0.38
Finish Grading	Graders	1	8.00	174	0.41
Finish Grading	Rubber Tired Dozers	1	8.00	255	0.40
Finish Grading	Scrapers	4	8.00	361	0.48
Finish Grading	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Landscaping	Pavers	0	8.00	125	0.42
Landscaping	Paving Equipment	0	8.00	130	0.36
Landscaping	Rollers	0	8.00	80	0.38
Landscaping	Rubber Tired Dozers	0	8.00	255	0.40
Landscaping	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Restoration	Air Compressors	0	6.00	78	0.48

Restoration	Rubber Tired Dozers	0	8.00	255	0.40
Restoration	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Solar Panel Installation	Cranes	0	7.00	226	0.29
Solar Panel Installation	Forklifts	0	8.00	89	0.20
Solar Panel Installation	Generator Sets	0	8.00	84	0.74
Solar Panel Installation	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Solar Panel Installation	Welders	0	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	2	5.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading including Import	6	15.00	0.00	20,446.00	14.70	6.90	1.00	LD_Mix	HDT_Mix	HHDT
Grading including Import	6	15.00	0.00	20,446.00	14.70	6.90	5.60	LD_Mix	HDT_Mix	HHDT
Finish Grading	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Landscaping	1	3.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Restoration	1	3.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Solar Panel Installation	1	4.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.9159	0.0000	6.9159	3.4067	0.0000	3.4067						0.0000

Off-Road	1.6335	17.8192	13.4021	0.0120		0.9399	0.9399		0.8647	0.8647						1,269.3272
Total	**1.6335**	**17.8192**	**13.4021**	**0.0120**	**6.9159**	**0.9399**	**7.8558**	**3.4067**	**0.8647**	**4.2714**						**1,269.3272**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.0237	0.0318	0.3318	6.6000e-004	0.0559	4.9000e-004	0.0564	0.0148	4.5000e-004	0.0153						57.8527
Total	**0.0237**	**0.0318**	**0.3318**	**6.6000e-004**	**0.0559**	**4.9000e-004**	**0.0564**	**0.0148**	**4.5000e-004**	**0.0153**						**57.8527**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.9159	0.0000	6.9159	3.4067	0.0000	3.4067						0.0000
Off-Road	1.6335	17.8192	13.4021	0.0120		0.9399	0.9399		0.8647	0.8647						1,269.3272
Total	**1.6335**	**17.8192**	**13.4021**	**0.0120**	**6.9159**	**0.9399**	**7.8558**	**3.4067**	**0.8647**	**4.2714**						**1,269.3272**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.0237	0.0318	0.3318	6.6000e-004	0.0559	4.9000e-004	0.0564	0.0148	4.5000e-004	0.0153						57.8527
Total	**0.0237**	**0.0318**	**0.3318**	**6.6000e-004**	**0.0559**	**4.9000e-004**	**0.0564**	**0.0148**	**4.5000e-004**	**0.0153**						**57.8527**

3.3 Grading including Import - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.3088	0.0000	6.3088	3.3474	0.0000	3.3474						0.0000
Off-Road	6.3233	77.0481	50.5576	0.0598		3.4620	3.4620		3.1851	3.1851						6,322.0350
Total	**6.3233**	**77.0481**	**50.5576**	**0.0598**	**6.3088**	**3.4620**	**9.7708**	**3.3474**	**3.1851**	**6.5324**						**6,322.0350**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	3.2728	22.3465	52.4345	0.0432	3.2995	0.3073	3.6068	0.8362	0.2824	1.1186						4,328.6658
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.1421	0.1907	1.9908	3.9800e-003	0.6269	2.9500e-003	0.6298	0.1605	2.7000e-003	0.1632						347.1161
Total	**3.4148**	**22.5372**	**54.4253**	**0.0471**	**3.9264**	**0.3103**	**4.2367**	**0.9967**	**0.2851**	**1.2818**						**4,675.7820**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.3088	0.0000	6.3088	3.3474	0.0000	3.3474						0.0000
Off-Road	6.3233	77.0481	50.5576	0.0598		3.4620	3.4620		3.1851	3.1851						6,322.0350
Total	**6.3233**	**77.0481**	**50.5576**	**0.0598**	**6.3088**	**3.4620**	**9.7708**	**3.3474**	**3.1851**	**6.5324**						**6,322.0350**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.2728	22.3465	52.4345	0.0432	3.2995	0.3073	3.6068	0.8362	0.2824	1.1186						4,328.6658
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000

Worker	0.1421	0.1907	1.9908	3.9800e-003	0.6269	2.9500e-003	0.6298	0.1605	2.7000e-003	0.1632						347.1161
Total	**3.4148**	**22.5372**	**54.4253**	**0.0471**	**3.9264**	**0.3103**	**4.2367**	**0.9967**	**0.2851**	**1.2818**						**4,675.7820**

3.3 Grading including Import - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.3088	0.0000	6.3088	3.3474	0.0000	3.3474						0.0000
Off-Road	6.0668	73.1679	48.3745	0.0598		3.2743	3.2743		3.0124	3.0124						6,252.5697
Total	**6.0668**	**73.1679**	**48.3745**	**0.0598**	**6.3088**	**3.2743**	**9.5831**	**3.3474**	**3.0124**	**6.3597**						**6,252.5697**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.8451	19.9887	49.3716	0.0431	2.7016	0.2423	2.9439	0.6894	0.2228	0.9122						4,279.1941
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.1280	0.1720	1.7967	3.9800e-003	0.6269	2.8000e-003	0.6297	0.1605	2.5800e-003	0.1631						335.0991
Total	**2.9731**	**20.1607**	**51.1683**	**0.0470**	**3.3284**	**0.2451**	**3.5736**	**0.8499**	**0.2253**	**1.0752**						**4,614.2931**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.3088	0.0000	6.3088	3.3474	0.0000	3.3474						0.0000
Off-Road	6.0668	73.1679	48.3745	0.0598		3.2743	3.2743		3.0124	3.0124						6,252.5697
Total	**6.0668**	**73.1679**	**48.3745**	**0.0598**	**6.3088**	**3.2743**	**9.5831**	**3.3474**	**3.0124**	**6.3597**						**6,252.5697**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.8451	19.9887	49.3716	0.0431	2.7016	0.2423	2.9439	0.6894	0.2228	0.9122						4,279.1941
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.1280	0.1720	1.7967	3.9800e-003	0.6269	2.8000e-003	0.6297	0.1605	2.5800e-003	0.1631						335.0991
Total	**2.9731**	**20.1607**	**51.1683**	**0.0470**	**3.3284**	**0.2451**	**3.5736**	**0.8499**	**0.2253**	**1.0752**						**4,614.2931**

3.4 Finish Grading - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Fugitive Dust					6.9606	0.0000	6.9606	3.4116	0.0000	3.4116						0.0000
Off-Road	7.7869	94.6333	59.4982	0.0747		4.0654	4.0654		3.7402	3.7402						7,811.9129
Total	**7.7869**	**94.6333**	**59.4982**	**0.0747**	**6.9606**	**4.0654**	**11.0260**	**3.4116**	**3.7402**	**7.1517**						**7,811.9129**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.0640	0.0860	0.8984	1.9900e-003	0.1677	1.4000e-003	0.1691	0.0445	1.2900e-003	0.0458						167.5495
Total	**0.0640**	**0.0860**	**0.8984**	**1.9900e-003**	**0.1677**	**1.4000e-003**	**0.1691**	**0.0445**	**1.2900e-003**	**0.0458**						**167.5495**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.9606	0.0000	6.9606	3.4116	0.0000	3.4116						0.0000
Off-Road	7.7869	94.6333	59.4982	0.0747		4.0654	4.0654		3.7402	3.7402						7,811.9129

Total	**7.7869**	**94.6333**	**59.4982**	**0.0747**	**6.9606**	**4.0654**	**11.0260**	**3.4116**	**3.7402**	**7.1517**						**7,811.9129**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.0640	0.0860	0.8984	1.9900e-003	0.1677	1.4000e-003	0.1691	0.0445	1.2900e-003	0.0458						167.5495
Total	**0.0640**	**0.0860**	**0.8984**	**1.9900e-003**	**0.1677**	**1.4000e-003**	**0.1691**	**0.0445**	**1.2900e-003**	**0.0458**						**167.5495**

3.5 Landscaping - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.3028	0.0000	0.3028	0.0327	0.0000	0.0327						0.0000
Off-Road	0.1703	1.6275	1.2063	1.5600e-003		0.1253	0.1253		0.1153	0.1153						162.8638
Total	**0.1703**	**1.6275**	**1.2063**	**1.5600e-003**	**0.3028**	**0.1253**	**0.4281**	**0.0327**	**0.1153**	**0.1480**						**162.8638**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.0128	0.0172	0.1797	4.0000e-004	0.0335	2.8000e-004	0.0338	8.8900e-003	2.6000e-004	9.1500e-003						33.5099
Total	**0.0128**	**0.0172**	**0.1797**	**4.0000e-004**	**0.0335**	**2.8000e-004**	**0.0338**	**8.8900e-003**	**2.6000e-004**	**9.1500e-003**						**33.5099**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.3028	0.0000	0.3028	0.0327	0.0000	0.0327						0.0000
Off-Road	0.1703	1.6275	1.2063	1.5600e-003		0.1253	0.1253		0.1153	0.1153						162.8638
Total	**0.1703**	**1.6275**	**1.2063**	**1.5600e-003**	**0.3028**	**0.1253**	**0.4281**	**0.0327**	**0.1153**	**0.1480**						**162.8638**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.0128	0.0172	0.1797	4.0000e-004	0.0335	2.8000e-004	0.0338	8.8900e-003	2.6000e-004	9.1500e-003						33.5099
Total	**0.0128**	**0.0172**	**0.1797**	**4.0000e-004**	**0.0335**	**2.8000e-004**	**0.0338**	**8.8900e-003**	**2.6000e-004**	**9.1500e-003**						**33.5099**

3.6 Restoration - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.3028	0.0000	0.3028	0.0327	0.0000	0.0327						0.0000
Off-Road	0.1703	1.6275	1.2063	1.5600e-003		0.1253	0.1253		0.1153	0.1153						162.8638
Total	**0.1703**	**1.6275**	**1.2063**	**1.5600e-003**	**0.3028**	**0.1253**	**0.4281**	**0.0327**	**0.1153**	**0.1480**						**162.8638**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.0128	0.0172	0.1797	4.0000e-004	0.0335	2.8000e-004	0.0338	8.8900e-003	2.6000e-004	9.1500e-003						33.5099

Total	**0.0128**	**0.0172**	**0.1797**	**4.0000e-004**	**0.0335**	**2.8000e-004**	**0.0338**	**8.8900e-003**	**2.6000e-004**	**9.1500e-003**						**33.5099**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.3028	0.0000	0.3028	0.0327	0.0000	0.0327						0.0000
Off-Road	0.1703	1.6275	1.2063	1.5600e-003		0.1253	0.1253		0.1153	0.1153						162.8638
Total	**0.1703**	**1.6275**	**1.2063**	**1.5600e-003**	**0.3028**	**0.1253**	**0.4281**	**0.0327**	**0.1153**	**0.1480**						**162.8638**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.0128	0.0172	0.1797	4.0000e-004	0.0335	2.8000e-004	0.0338	8.8900e-003	2.6000e-004	9.1500e-003						33.5099
Total	**0.0128**	**0.0172**	**0.1797**	**4.0000e-004**	**0.0335**	**2.8000e-004**	**0.0338**	**8.8900e-003**	**2.6000e-004**	**9.1500e-003**						**33.5099**

3.7 Solar Panel Installation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2980	2.8482	2.1110	2.7200e-003		0.2193	0.2193		0.2018	0.2018						285.0116
Total	**0.2980**	**2.8482**	**2.1110**	**2.7200e-003**		**0.2193**	**0.2193**		**0.2018**	**0.2018**						**285.0116**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0183	0.1771	0.2391	4.3000e-004	0.0125	2.8700e-003	0.0154	3.5600e-003	2.6400e-003	6.2000e-003						43.2468
Worker	0.0171	0.0229	0.2396	5.3000e-004	0.0447	3.7000e-004	0.0451	0.0119	3.4000e-004	0.0122						44.6799
Total	**0.0353**	**0.2000**	**0.4787**	**9.6000e-004**	**0.0572**	**3.2400e-003**	**0.0605**	**0.0154**	**2.9800e-003**	**0.0184**						**87.9267**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Off-Road	0.2980	2.8482	2.1110	2.7200e-003		0.2193	0.2193		0.2018	0.2018						285.0116
Total	**0.2980**	**2.8482**	**2.1110**	**2.7200e-003**		**0.2193**	**0.2193**		**0.2018**	**0.2018**						**285.0116**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0183	0.1771	0.2391	4.3000e-004	0.0125	2.8700e-003	0.0154	3.5600e-003	2.6400e-003	6.2000e-003						43.2468
Worker	0.0171	0.0229	0.2396	5.3000e-004	0.0447	3.7000e-004	0.0451	0.0119	3.4000e-004	0.0122						44.6799
Total	**0.0353**	**0.2000**	**0.4787**	**9.6000e-004**	**0.0572**	**3.2400e-003**	**0.0605**	**0.0154**	**2.9800e-003**	**0.0184**						**87.9267**

Operational information removed since it was not relevant to this study.

West Parcel Solar - WPS

South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	10.00	1000sqft	17.70	10,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	9			**Operational Year**	2016
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - 17.7 acres is the area that will be graded. 10,000 square feet of building was put into the model to represent a very rough approximation of the amount of construction that will be required for the installation of the solar panels

Construction Phase - Schedule has been adjusted to match actual proposed schedule.

Off-road Equipment - Per discussions with Tilden Coil

Off-road Equipment - Per discussions with Tilden-Coil. No compactor in list, using one graders as a substitute for compactor.

Off-road Equipment - Per discussions with Tilden-Coil and EPT

Off-road Equipment - Per discussions with Tilden-Coil and EPT

Off-road Equipment - Per discussions with Tilden-Coil

Off-road Equipment - Per discussions with Borrego Solar

Trips and VMT - Distances for hauling represent actual proposed routes

Grading - Actual size of area to be graded/worked.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	300.00	76.00
tblConstructionPhase	NumDays	30.00	130.00
tblConstructionPhase	NumDays	30.00	20.00
tblConstructionPhase	NumDays	10.00	21.00
tblConstructionPhase	NumDays	10.00	62.00
tblConstructionPhase	NumDays	10.00	62.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	PhaseEndDate	9/24/2016	7/14/2016
tblConstructionPhase	PhaseEndDate	9/8/2016	6/28/2016
tblConstructionPhase	PhaseStartDate	6/29/2016	4/17/2016
tblConstructionPhase	PhaseStartDate	6/29/2016	4/17/2016
tblGrading	AcresOfGrading	390.00	17.70
tblGrading	AcresOfGrading	90.00	17.70
tblGrading	AcresOfGrading	0.00	17.70
tblGrading	AcresOfGrading	0.00	17.70
tblGrading	AcresOfGrading	0.00	17.70
tblGrading	MaterialImported	0.00	163,571.00
tblLandUse	LotAcreage	0.23	17.70
tblOffRoadEquipment	LoadFactor	0.43	0.37
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblProjectCharacteristics	OperationalYear	2014	2016
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	5.60

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2015	0.2965	3.0877	3.1541	3.2500e-003	0.5949	0.1192	0.7141	0.2819	0.1096	0.3915						302.9810

2016	0.4245	4.5386	4.3290	4.8900e-003	0.6218	0.1835	0.8053	0.2853	0.1689	0.4542						452.4927
Total	**0.7210**	**7.6264**	**7.4830**	**8.1400e-003**	**1.2166**	**0.3027**	**1.5194**	**0.5672**	**0.2785**	**0.8456**						**755.4736**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2015	0.2965	3.0877	3.1541	3.2500e-003	0.5949	0.1192	0.7141	0.2819	0.1096	0.3915						302.9807
2016	0.4244	4.5386	4.3289	4.8900e-003	0.6218	0.1835	0.8053	0.2853	0.1689	0.4542						452.4923
Total	**0.7210**	**7.6264**	**7.4830**	**8.1400e-003**	**1.2166**	**0.3027**	**1.5194**	**0.5672**	**0.2785**	**0.8456**						**755.4730**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	10/1/2015	10/24/2015	6	21	
2	Grading including Import	Grading	10/25/2015	3/24/2016	6	130	
3	Finish Grading	Grading	3/25/2016	4/16/2016	6	20	
4	Landscaping	Site Preparation	4/17/2016	6/28/2016	6	62	
5	Restoration	Site Preparation	4/17/2016	6/28/2016	6	62	

6	Solar Panel Installation	Building Construction	4/17/2016	7/14/2016	6	76	

Acres of Grading (Site Preparation Phase): 17.7

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	1	8.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading including Import	Concrete/Industrial Saws	0		81	0.73
Grading including Import	Crawler Tractors	0	8.00	208	0.37
Grading including Import	Excavators	0	8.00	162	0.38
Grading including Import	Graders	0	8.00	174	0.41
Grading including Import	Rubber Tired Dozers	1	8.00	255	0.40
Grading including Import	Rubber Tired Dozers	0	8.00	255	0.40
Grading including Import	Scrapers	3	8.00	361	0.48
Grading including Import	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Finish Grading	Excavators	0	8.00	162	0.38
Finish Grading	Graders	1	8.00	174	0.41
Finish Grading	Rubber Tired Dozers	1	8.00	255	0.40
Finish Grading	Scrapers	4	8.00	361	0.48
Finish Grading	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Landscaping	Pavers	0	8.00	125	0.42
Landscaping	Paving Equipment	0	8.00	130	0.36
Landscaping	Rollers	0	8.00	80	0.38
Landscaping	Rubber Tired Dozers	0	8.00	255	0.40
Landscaping	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Restoration	Air Compressors	0	6.00	78	0.48

Restoration	Rubber Tired Dozers	0	8.00	255	0.40
Restoration	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Solar Panel Installation	Cranes	0	7.00	226	0.29
Solar Panel Installation	Forklifts	0	8.00	89	0.20
Solar Panel Installation	Generator Sets	0	8.00	84	0.74
Solar Panel Installation	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Solar Panel Installation	Welders	0	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	2	5.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading including Import	6	15.00	0.00	20,446.00	14.70	6.90	1.00	LD_Mix	HDT_Mix	HHDT
Grading including Import	6	15.00	0.00	20,446.00	14.70	6.90	5.60	LD_Mix	HDT_Mix	HHDT
Finish Grading	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Landscaping	1	3.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Restoration	1	3.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Solar Panel Installation	1	4.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0726	0.0000	0.0726	0.0358	0.0000	0.0358						0.0000

Off-Road	0.0172	0.1871	0.1407	1.3000e-004		9.8700e-003	9.8700e-003		9.0800e-003	9.0800e-003						12.0909
Total	**0.0172**	**0.1871**	**0.1407**	**1.3000e-004**	**0.0726**	**9.8700e-003**	**0.0825**	**0.0358**	**9.0800e-003**	**0.0449**						**12.0909**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	2.3000e-004	3.4000e-004	3.5700e-003	1.0000e-005	5.8000e-004	1.0000e-005	5.8000e-004	1.5000e-004	0.0000	1.6000e-004						0.5596
Total	**2.3000e-004**	**3.4000e-004**	**3.5700e-003**	**1.0000e-005**	**5.8000e-004**	**1.0000e-005**	**5.8000e-004**	**1.5000e-004**	**0.0000**	**1.6000e-004**						**0.5596**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0726	0.0000	0.0726	0.0358	0.0000	0.0358						0.0000
Off-Road	0.0172	0.1871	0.1407	1.3000e-004		9.8700e-003	9.8700e-003		9.0800e-003	9.0800e-003						12.0909
Total	**0.0172**	**0.1871**	**0.1407**	**1.3000e-004**	**0.0726**	**9.8700e-003**	**0.0825**	**0.0358**	**9.0800e-003**	**0.0449**						**12.0909**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	2.3000e-004	3.4000e-004	3.5700e-003	1.0000e-005	5.8000e-004	1.0000e-005	5.8000e-004	1.5000e-004	0.0000	1.6000e-004						0.5596
Total	**2.3000e-004**	**3.4000e-004**	**3.5700e-003**	**1.0000e-005**	**5.8000e-004**	**1.0000e-005**	**5.8000e-004**	**1.5000e-004**	**0.0000**	**1.6000e-004**						**0.5596**

3.3 Grading including Import - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.4101	0.0000	0.4101	0.2176	0.0000	0.2176						0.0000
Off-Road	0.1834	2.2344	1.4662	1.7300e-003		0.1004	0.1004		0.0924	0.0924						166.3224
Total	**0.1834**	**2.2344**	**1.4662**	**1.7300e-003**	**0.4101**	**0.1004**	**0.5105**	**0.2176**	**0.0924**	**0.3100**						**166.3224**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.0919	0.6602	1.4845	1.2600e-003	0.0938	8.8100e-003	0.1026	0.0238	8.1000e-003	0.0319						114.7345
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	3.8900e-003	5.7000e-003	0.0591	1.2000e-004	0.0178	9.0000e-005	0.0179	4.5700e-003	8.0000e-005	4.6400e-003						9.2736
Total	**0.0958**	**0.6659**	**1.5436**	**1.3800e-003**	**0.1116**	**8.9000e-003**	**0.1205**	**0.0284**	**8.1800e-003**	**0.0365**						**124.0081**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.4101	0.0000	0.4101	0.2176	0.0000	0.2176						0.0000
Off-Road	0.1834	2.2344	1.4662	1.7300e-003		0.1004	0.1004		0.0924	0.0924						166.3222
Total	**0.1834**	**2.2344**	**1.4662**	**1.7300e-003**	**0.4101**	**0.1004**	**0.5105**	**0.2176**	**0.0924**	**0.3100**						**166.3222**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0919	0.6602	1.4845	1.2600e-003	0.0938	8.8100e-003	0.1026	0.0238	8.1000e-003	0.0319						114.7345
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000

Worker	3.8900e-003	5.7000e-003	0.0591	1.2000e-004	0.0178	9.0000e-005	0.0179	4.5700e-003	8.0000e-005	4.6400e-003						9.2736
Total	**0.0958**	**0.6659**	**1.5436**	**1.3800e-003**	**0.1116**	**8.9000e-003**	**0.1205**	**0.0284**	**8.1800e-003**	**0.0365**						**124.0081**

3.3 Grading including Import - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.4101	0.0000	0.4101	0.2176	0.0000	0.2176						0.0000
Off-Road	0.2184	2.6340	1.7415	2.1500e-003		0.1179	0.1179		0.1084	0.1084						204.2005
Total	**0.2184**	**2.6340**	**1.7415**	**2.1500e-003**	**0.4101**	**0.1179**	**0.5279**	**0.2176**	**0.1084**	**0.3260**						**204.2005**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0993	0.7330	1.7324	1.5600e-003	0.0954	8.6600e-003	0.1040	0.0244	7.9600e-003	0.0323						140.8047
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	4.3400e-003	6.3800e-003	0.0663	1.5000e-004	0.0221	1.0000e-004	0.0222	5.6700e-003	9.0000e-005	5.7600e-003						11.1136
Total	**0.1037**	**0.7394**	**1.7987**	**1.7100e-003**	**0.1175**	**8.7600e-003**	**0.1262**	**0.0300**	**8.0500e-003**	**0.0381**						**151.9183**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.4101	0.0000	0.4101	0.2176	0.0000	0.2176						0.0000
Off-Road	0.2184	2.6340	1.7415	2.1500e-003		0.1179	0.1179		0.1084	0.1084						204.2003
Total	**0.2184**	**2.6340**	**1.7415**	**2.1500e-003**	**0.4101**	**0.1179**	**0.5279**	**0.2176**	**0.1084**	**0.3260**						**204.2003**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0993	0.7330	1.7324	1.5600e-003	0.0954	8.6600e-003	0.1040	0.0244	7.9600e-003	0.0323						140.8047
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	4.3400e-003	6.3800e-003	0.0663	1.5000e-004	0.0221	1.0000e-004	0.0222	5.6700e-003	9.0000e-005	5.7600e-003						11.1136
Total	**0.1037**	**0.7394**	**1.7987**	**1.7100e-003**	**0.1175**	**8.7600e-003**	**0.1262**	**0.0300**	**8.0500e-003**	**0.0381**						**151.9183**

3.4 Finish Grading - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Fugitive Dust					0.0696	0.0000	0.0696	0.0341	0.0000	0.0341						0.0000
Off-Road	0.0779	0.9463	0.5950	7.5000e-004		0.0407	0.0407		0.0374	0.0374						70.8685
Total	**0.0779**	**0.9463**	**0.5950**	**7.5000e-004**	**0.0696**	**0.0407**	**0.1103**	**0.0341**	**0.0374**	**0.0715**						**70.8685**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	6.0000e-004	8.9000e-004	9.2000e-003	2.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004						1.5436
Total	**6.0000e-004**	**8.9000e-004**	**9.2000e-003**	**2.0000e-005**	**1.6500e-003**	**1.0000e-005**	**1.6600e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**						**1.5436**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0696	0.0000	0.0696	0.0341	0.0000	0.0341						0.0000
Off-Road	0.0779	0.9463	0.5950	7.5000e-004		0.0407	0.0407		0.0374	0.0374						70.8684

Total	**0.0779**	**0.9463**	**0.5950**	**7.5000e-004**	**0.0696**	**0.0407**	**0.1103**	**0.0341**	**0.0374**	**0.0715**						**70.8684**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	6.0000e-004	8.9000e-004	9.2000e-003	2.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004						1.5436
Total	**6.0000e-004**	**8.9000e-004**	**9.2000e-003**	**2.0000e-005**	**1.6500e-003**	**1.0000e-005**	**1.6600e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**						**1.5436**

3.5 Landscaping - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					9.3900e-003	0.0000	9.3900e-003	1.0100e-003	0.0000	1.0100e-003						0.0000
Off-Road	5.2800e-003	0.0505	0.0374	5.0000e-005		3.8800e-003	3.8800e-003		3.5700e-003	3.5700e-003						4.5802
Total	**5.2800e-003**	**0.0505**	**0.0374**	**5.0000e-005**	**9.3900e-003**	**3.8800e-003**	**0.0133**	**1.0100e-003**	**3.5700e-003**	**4.5800e-003**						**4.5802**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	3.7000e-004	5.5000e-004	5.7100e-003	1.0000e-005	1.0200e-003	1.0000e-005	1.0300e-003	2.7000e-004	1.0000e-005	2.8000e-004						0.9570
Total	**3.7000e-004**	**5.5000e-004**	**5.7100e-003**	**1.0000e-005**	**1.0200e-003**	**1.0000e-005**	**1.0300e-003**	**2.7000e-004**	**1.0000e-005**	**2.8000e-004**						**0.9570**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					9.3900e-003	0.0000	9.3900e-003	1.0100e-003	0.0000	1.0100e-003						0.0000
Off-Road	5.2800e-003	0.0505	0.0374	5.0000e-005		3.8800e-003	3.8800e-003		3.5700e-003	3.5700e-003						4.5802
Total	**5.2800e-003**	**0.0505**	**0.0374**	**5.0000e-005**	**9.3900e-003**	**3.8800e-003**	**0.0133**	**1.0100e-003**	**3.5700e-003**	**4.5800e-003**						**4.5802**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	3.7000e-004	5.5000e-004	5.7100e-003	1.0000e-005	1.0200e-003	1.0000e-005	1.0300e-003	2.7000e-004	1.0000e-005	2.8000e-004						0.9570
Total	**3.7000e-004**	**5.5000e-004**	**5.7100e-003**	**1.0000e-005**	**1.0200e-003**	**1.0000e-005**	**1.0300e-003**	**2.7000e-004**	**1.0000e-005**	**2.8000e-004**						**0.9570**

3.6 Restoration - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					9.3900e-003	0.0000	9.3900e-003	1.0100e-003	0.0000	1.0100e-003						0.0000
Off-Road	5.2800e-003	0.0505	0.0374	5.0000e-005		3.8800e-003	3.8800e-003		3.5700e-003	3.5700e-003						4.5802
Total	**5.2800e-003**	**0.0505**	**0.0374**	**5.0000e-005**	**9.3900e-003**	**3.8800e-003**	**0.0133**	**1.0100e-003**	**3.5700e-003**	**4.5800e-003**						**4.5802**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	3.7000e-004	5.5000e-004	5.7100e-003	1.0000e-005	1.0200e-003	1.0000e-005	1.0300e-003	2.7000e-004	1.0000e-005	2.8000e-004						0.9570

Total	**3.7000e-004**	**5.5000e-004**	**5.7100e-003**	**1.0000e-005**	**1.0200e-003**	**1.0000e-005**	**1.0300e-003**	**2.7000e-004**	**1.0000e-005**	**2.8000e-004**						**0.9570**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					9.3900e-003	0.0000	9.3900e-003	1.0100e-003	0.0000	1.0100e-003						0.0000
Off-Road	5.2800e-003	0.0505	0.0374	5.0000e-005		3.8800e-003	3.8800e-003		3.5700e-003	3.5700e-003						4.5802
Total	**5.2800e-003**	**0.0505**	**0.0374**	**5.0000e-005**	**9.3900e-003**	**3.8800e-003**	**0.0133**	**1.0100e-003**	**3.5700e-003**	**4.5800e-003**						**4.5802**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	3.7000e-004	5.5000e-004	5.7100e-003	1.0000e-005	1.0200e-003	1.0000e-005	1.0300e-003	2.7000e-004	1.0000e-005	2.8000e-004						0.9570
Total	**3.7000e-004**	**5.5000e-004**	**5.7100e-003**	**1.0000e-005**	**1.0200e-003**	**1.0000e-005**	**1.0300e-003**	**2.7000e-004**	**1.0000e-005**	**2.8000e-004**						**0.9570**

3.7 Solar Panel Installation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0113	0.1082	0.0802	1.0000e-004		8.3300e-003	8.3300e-003		7.6700e-003	7.6700e-003						9.8252
Total	**0.0113**	**0.1082**	**0.0802**	**1.0000e-004**		**8.3300e-003**	**8.3300e-003**		**7.6700e-003**	**7.6700e-003**						**9.8252**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	6.7000e-004	6.8600e-003	8.8500e-003	2.0000e-005	4.7000e-004	1.1000e-004	5.8000e-004	1.3000e-004	1.0000e-004	2.3000e-004						1.4982
Worker	6.1000e-004	9.0000e-004	9.3300e-003	2.0000e-005	1.6700e-003	1.0000e-005	1.6800e-003	4.4000e-004	1.0000e-005	4.6000e-004						1.5641
Total	**1.2800e-003**	**7.7600e-003**	**0.0182**	**4.0000e-005**	**2.1400e-003**	**1.2000e-004**	**2.2600e-003**	**5.7000e-004**	**1.1000e-004**	**6.9000e-004**						**3.0623**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Off-Road	0.0113	0.1082	0.0802	1.0000e-004		8.3300e-003	8.3300e-003		7.6700e-003	7.6700e-003						9.8252
Total	**0.0113**	**0.1082**	**0.0802**	**1.0000e-004**		**8.3300e-003**	**8.3300e-003**		**7.6700e-003**	**7.6700e-003**						**9.8252**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	6.7000e-004	6.8600e-003	8.8500e-003	2.0000e-005	4.7000e-004	1.1000e-004	5.8000e-004	1.3000e-004	1.0000e-004	2.3000e-004						1.4982
Worker	6.1000e-004	9.0000e-004	9.3300e-003	2.0000e-005	1.6700e-003	1.0000e-005	1.6800e-003	4.4000e-004	1.0000e-005	4.6000e-004						1.5641
Total	**1.2800e-003**	**7.7600e-003**	**0.0182**	**4.0000e-005**	**2.1400e-003**	**1.2000e-004**	**2.2600e-003**	**5.7000e-004**	**1.1000e-004**	**6.9000e-004**						**3.0623**

Operational information removed since it was not relevant to this study.

Memorandum

Date: April 11, 2017

To: Ms. Rebecca Mitchell, Mt. San Antonio College

From: Fred Greve, Greve & Associates, LLC

Subject: West Parcel Solar Project Update (Report #17-022)

A previous analysis of the construction impacts ("West Parcel Solar Project – Air Quality Construction Analysis," Report #15-104C, memo from Fred Greve, Greve & Associates to Mikaela Klein, MtSAC, dated August 30, 2015) showed that the project would be under the SCAQMD air quality thresholds. However, the project proposed at that time was just under the thresholds for NOx during the "Grading with Import" and "Final Grading" phases. The grading plan for the project was changed slightly, and to be conservative it was decided that the construction emissions should be re-run to ensure that new impacts would not occur.

The entire site is approximately 27.7 acres, and approximately 17.25 acres of the site will be graded (previous grading area was 17.7 acres). Substantial grading and import of dirt will be required for the project. The current grading estimates are 177,500 cubic yards of cut (previously 172,708 cy), 316,500 cy of fill (previously 336,279 cy) with a net import of 139,000 cy (previously 163,571 cy). The import fill will come from the Physical Education Project (PEP) area.

Construction Emissions

Table 1 reproduces Table 3 in the August 30, 2015 report. The highest daily construction emissions for each phase are presented.

2915 CALLE FRONTERA, SAN CLEMENTE, CA 92673
VOICE: 949•466•2967 EMAIL: fred@greveandassociates.com

Table 1 Peak Construction Emissions for 2015 Grading Plan

	Pollutant Emissions (lbs./day)					
Activity	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
Collection, Clear & Grub	1.7	17.9	13.7	0.0	7.9	4.3
Grading with Import	9.7	99.6	105.0	0.1	14.0	7.8
Final Grading	7.9	94.7	60.4	0.1	11.2	7.2
Solar Installation	0.3	3.0	2.6	0.0	0.3	0.2
Restoration	0.2	1.6	1.4	0.0	0.5	0.2
Landscaping	0.2	1.6	1.4	0.0	0.4	0.2
Solar Install+Restoration +Landscaping	0.7	6.3	5.4	0.0	1.2	0.5
SCQAMD Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Exceed Threshold?	***No***	***No***	***No***	***No***	***No***	***No***

Table 2 presents the results for the new updated grading plan. The same version of the CalEEMod was used as was used as was used for the August 2015 report. Only the inputs for cut/fill and grading acreage were changed from the previous 2015 analysis.

Table 2 Peak Construction Emissions for 2017 Grading Plan

	Pollutant Emissions (lbs./day)					
Activity	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
Collection, Clear & Grub	1.7	17.9	13.7	0.0	7.9	4.3
Grading with Import	9.7	99.6	105.0	0.1	14.0	7.8
Final Grading	7.9	94.7	60.4	0.1	**11.0**	7.2
Solar Installation	0.3	3.0	2.6	0.0	0.3	0.2
Restoration	0.2	1.6	1.4	0.0	0.5	0.2
Landscaping	0.2	1.6	1.4	0.0	**0.5**	0.2
Solar Install+Restoration +Landscaping	0.7	6.3	5.4	0.0	1.2	0.5
SCQAMD Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Exceed Threshold?	***No***	***No***	***No***	***No***	***No***	***No***

The grading plan changes result in almost no changes in the emission projections (Table 2). The emission projections that change are bolded. These changes are very minor and do not affect the findings in the previous air assessment.

In 2016, the SCAQMD released an updated version of CalEEMod (version 2016.3.1). The updated grading plan was re-run with the latest version of CalEEMod to ensure that no new impacts were predicted. The results are presented in Table 3.

Table 3 Construction Emissions for 2017 Grading Plan Using CalEEMod v.2016.3.1

	Pollutant Emissions (lbs./day)					
Activity	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
Collection, Clear & Grub	**1.8**	**17.5**	**8.4**	**0.2**	**8.1**	4.3
Grading with Import	**6.4**	**77.8**	**45.3**	0.1	**9.9**	**6.6**
Final Grading	**7.6**	**93.2**	**52.4**	0.1	**10.9**	**7.0**
Solar Installation	**0.5**	**3.4**	**3.5**	0.0	**0.6**	**0.3**
Restoration	**0.5**	**3.3**	**3.3**	0.0	**0.7**	**0.3**
Landscaping	**0.5**	**3.4**	**3.6**	0.0	**0.8**	**0.3**
Solar Install+Restoration +Landscaping	**1.4**	**10.1**	**10.4**	0.0	**2.1**	**1.0**
SCQAMD Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Exceed Threshold?	***No***	***No***	***No***	***No***	***No***	***No***

The values that have changed since the August 2015 analysis are bolded in Table 3. Most of the values have changed slightly, but not enough to change the conclusions or recommendations in the previous report. A major portion of the CalEEMod v.2016.3.1 update was to improve the emission rates for construction equipment. The emission rates for construction equipment went up for some equipment while they went down for other pieces of equipment. This accounts for most of the change in the forecast.

CONCLUSION

Construction emissions were calculated for the updated grading plan with the version of CalEEMod used for the August 2015 analysis and with the CalEEMod version released in 2016. Both the analyses indicated that the no new impacts would occur with the updated

grading plan. The findings, recommendations, and conclusions in the August 2015 study for WPS do not need to changed and are still valid.

Appendix

CalEEMod Output for Updated Grading CalEEMod v.2013.2.2

CalEEMod Output for Updated Grading CalEEMod v.2016.3.1

West Parcel Solar - WPS

South Coast AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	10.00	1000sqft	17.25	10,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	9			**Operational Year**	2016
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - 17.25 acres is the area that will be graded per email 4/10/17. 10,000 square feet of building was put into the model to represent a very rough approximation of the amount of construction that will be required for the installation of the solar panels

Construction Phase - Schedule has been adjusted to match actual proposed schedule.

Off-road Equipment - Per discussions with Tilden Coil

Off-road Equipment - Per discussions with Tilden-Coil. No compactor in list, using one graders as a substitute for compactor.

Off-road Equipment - Per discussions with Tilden-Coil and EPT

Off-road Equipment - Per discussions with Tilden-Coil and EPT

Off-road Equipment - Per discussions with Tilden-Coil

Off-road Equipment - Per discussions with Borrego Solar

Trips and VMT - Distances for hauling represent actual proposed routes

Grading - Actual size of area to be graded/worked.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	300.00	76.00
tblConstructionPhase	NumDays	30.00	130.00
tblConstructionPhase	NumDays	30.00	20.00
tblConstructionPhase	NumDays	10.00	21.00
tblConstructionPhase	NumDays	10.00	62.00
tblConstructionPhase	NumDays	10.00	62.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	PhaseEndDate	9/24/2016	7/14/2016
tblConstructionPhase	PhaseEndDate	9/8/2016	6/28/2016
tblConstructionPhase	PhaseStartDate	6/29/2016	4/17/2016
tblConstructionPhase	PhaseStartDate	6/29/2016	4/17/2016
tblGrading	AcresOfGrading	390.00	17.25
tblGrading	AcresOfGrading	90.00	17.25
tblGrading	AcresOfGrading	0.00	17.25
tblGrading	AcresOfGrading	0.00	17.25
tblGrading	AcresOfGrading	0.00	17.25
tblGrading	MaterialImported	0.00	139,000.00
tblLandUse	LotAcreage	0.23	17.25
tblOffRoadEquipment	LoadFactor	0.43	0.37
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblProjectCharacteristics	OperationalYear	2014	2016
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	5.60
tblTripsAndVMT	HaulingTripNumber	17,375.00	20,446.00
tblTripsAndVMT	HaulingTripNumber	17,375.00	20,446.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	9.7381	99.5853	104.9829	0.1070	10.2101	3.7723	13.9824	4.3404	3.4702	7.8106						10,997.8169

2016	9.0399	94.7193	99.5428	0.1068	9.6121	4.0668	13.1316	4.1936	3.7415	7.4313						10,875.5834
Total	**18.7780**	**194.3046**	**204.5256**	**0.2138**	**19.8222**	**7.8391**	**27.1140**	**8.5340**	**7.2117**	**15.2419**						**21,873.4003**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	9.7381	99.5853	104.9829	0.1070	10.2101	3.7723	13.9824	4.3404	3.4702	7.8106						10,997.8169
2016	9.0399	94.7193	99.5428	0.1068	9.6121	4.0668	13.1316	4.1936	3.7415	7.4313						10,875.5834
Total	**18.7780**	**194.3046**	**204.5256**	**0.2138**	**19.8222**	**7.8391**	**27.1140**	**8.5340**	**7.2117**	**15.2419**						**21,873.4003**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.2616	1.0000e-005	1.0500e-003	0.0000		0.0000	0.0000		0.0000	0.0000						2.3200e-003
Energy	5.5600e-003	0.0505	0.0424	3.0000e-004		3.8400e-003	3.8400e-003		3.8400e-003	3.8400e-003						60.9975
Mobile	0.3037	1.0251	3.7839	9.2200e-003	0.6545	0.0145	0.6690	0.1749	0.0133	0.1882						812.4910

Total	**0.5709**	**1.0757**	**3.8274**	**9.5200e-003**	**0.6545**	**0.0183**	**0.6728**	**0.1749**	**0.0172**	**0.1920**						**873.4908**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.2616	1.0000e-005	1.0500e-003	0.0000		0.0000	0.0000		0.0000	0.0000						2.3200e-003
Energy	5.5600e-003	0.0505	0.0424	3.0000e-004		3.8400e-003	3.8400e-003		3.8400e-003	3.8400e-003						60.9975
Mobile	0.3037	1.0251	3.7839	9.2200e-003	0.6545	0.0145	0.6690	0.1749	0.0133	0.1882						812.4910
Total	**0.5709**	**1.0757**	**3.8274**	**9.5200e-003**	**0.6545**	**0.0183**	**0.6728**	**0.1749**	**0.0172**	**0.1920**						**873.4908**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	10/1/2015	10/24/2015	6	21	
2	Grading including Import	Grading	10/25/2015	3/24/2016	6	130	
3	Finish Grading	Grading	3/25/2016	4/16/2016	6	20	
4	Landscaping	Site Preparation	4/17/2016	6/28/2016	6	62	
5	Restoration	Site Preparation	4/17/2016	6/28/2016	6	62	
6	Solar Panel Installation	Building Construction	4/17/2016	7/14/2016	6	76	

Acres of Grading (Site Preparation Phase): 17.25

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	1	8.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading including Import	Concrete/Industrial Saws	0		81	0.73
Grading including Import	Crawler Tractors	0	8.00	208	0.37
Grading including Import	Excavators	0	8.00	162	0.38
Grading including Import	Graders	0	8.00	174	0.41
Grading including Import	Rubber Tired Dozers	1	8.00	255	0.40
Grading including Import	Rubber Tired Dozers	0	8.00	255	0.40
Grading including Import	Scrapers	3	8.00	361	0.48
Grading including Import	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Finish Grading	Excavators	0	8.00	162	0.38
Finish Grading	Graders	1	8.00	174	0.41
Finish Grading	Rubber Tired Dozers	1	8.00	255	0.40
Finish Grading	Scrapers	4	8.00	361	0.48
Finish Grading	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Landscaping	Pavers	0	8.00	125	0.42
Landscaping	Paving Equipment	0	8.00	130	0.36
Landscaping	Rollers	0	8.00	80	0.38
Landscaping	Rubber Tired Dozers	0	8.00	255	0.40
Landscaping	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Restoration	Air Compressors	0	6.00	78	0.48
Restoration	Rubber Tired Dozers	0	8.00	255	0.40
Restoration	Tractors/Loaders/Backhoes	1	4.00	97	0.37

Solar Panel Installation	Cranes	0	7.00	226	0.29
Solar Panel Installation	Forklifts	0	8.00	89	0.20
Solar Panel Installation	Generator Sets	0	8.00	84	0.74
Solar Panel Installation	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Solar Panel Installation	Welders	0	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	2	5.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading including Import	6	15.00	0.00	20,446.00	14.70	6.90	1.00	LD_Mix	HDT_Mix	HHDT
Grading including Import	6	15.00	0.00	20,446.00	14.70	6.90	5.60	LD_Mix	HDT_Mix	HHDT
Finish Grading	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Landscaping	1	3.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Restoration	1	3.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Solar Panel Installation	1	4.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.8932	0.0000	6.8932	3.4043	0.0000	3.4043						0.0000
Off-Road	1.6335	17.8192	13.4021	0.0120		0.9399	0.9399		0.8647	0.8647						1,269.3272
Total	**1.6335**	**17.8192**	**13.4021**	**0.0120**	**6.8932**	**0.9399**	**7.8331**	**3.4043**	**0.8647**	**4.2690**						**1,269.3272**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.0237	0.0318	0.3318	6.6000e-004	0.0559	4.9000e-004	0.0564	0.0148	4.5000e-004	0.0153						57.8527
Total	**0.0237**	**0.0318**	**0.3318**	**6.6000e-004**	**0.0559**	**4.9000e-004**	**0.0564**	**0.0148**	**4.5000e-004**	**0.0153**						**57.8527**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.8932	0.0000	6.8932	3.4043	0.0000	3.4043						0.0000
Off-Road	1.6335	17.8192	13.4021	0.0120		0.9399	0.9399		0.8647	0.8647						1,269.3272
Total	**1.6335**	**17.8192**	**13.4021**	**0.0120**	**6.8932**	**0.9399**	**7.8331**	**3.4043**	**0.8647**	**4.2690**						**1,269.3272**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.0237	0.0318	0.3318	6.6000e-004	0.0559	4.9000e-004	0.0564	0.0148	4.5000e-004	0.0153						57.8527
Total	**0.0237**	**0.0318**	**0.3318**	**6.6000e-004**	**0.0559**	**4.9000e-004**	**0.0564**	**0.0148**	**4.5000e-004**	**0.0153**						**57.8527**

3.3 Grading including Import - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.2837	0.0000	6.2837	3.3437	0.0000	3.3437						0.0000
Off-Road	6.3233	77.0481	50.5576	0.0598		3.4620	3.4620		3.1851	3.1851						6,322.0350
Total	**6.3233**	**77.0481**	**50.5576**	**0.0598**	**6.2837**	**3.4620**	**9.7458**	**3.3437**	**3.1851**	**6.5288**						**6,322.0350**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.2728	22.3465	52.4345	0.0432	3.2995	0.3073	3.6068	0.8362	0.2824	1.1186						4,328.6658
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.1421	0.1907	1.9908	3.9800e-003	0.6269	2.9500e-003	0.6298	0.1605	2.7000e-003	0.1632						347.1161

Total	**3.4148**	**22.5372**	**54.4253**	**0.0471**	**3.9264**	**0.3103**	**4.2367**	**0.9967**	**0.2851**	**1.2818**						**4,675.7820**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.2837	0.0000	6.2837	3.3437	0.0000	3.3437						0.0000
Off-Road	6.3233	77.0481	50.5576	0.0598		3.4620	3.4620		3.1851	3.1851						6,322.0350
Total	**6.3233**	**77.0481**	**50.5576**	**0.0598**	**6.2837**	**3.4620**	**9.7458**	**3.3437**	**3.1851**	**6.5288**						**6,322.0350**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.2728	22.3465	52.4345	0.0432	3.2995	0.3073	3.6068	0.8362	0.2824	1.1186						4,328.6658
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.1421	0.1907	1.9908	3.9800e-003	0.6269	2.9500e-003	0.6298	0.1605	2.7000e-003	0.1632						347.1161
Total	**3.4148**	**22.5372**	**54.4253**	**0.0471**	**3.9264**	**0.3103**	**4.2367**	**0.9967**	**0.2851**	**1.2818**						**4,675.7820**

3.3 Grading including Import - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.2837	0.0000	6.2837	3.3437	0.0000	3.3437						0.0000
Off-Road	6.0668	73.1679	48.3745	0.0598		3.2743	3.2743		3.0124	3.0124						6,252.5697
Total	**6.0668**	**73.1679**	**48.3745**	**0.0598**	**6.2837**	**3.2743**	**9.5580**	**3.3437**	**3.0124**	**6.3561**						**6,252.5697**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.8451	19.9887	49.3716	0.0431	2.7016	0.2423	2.9439	0.6894	0.2228	0.9122						4,279.1941
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.1280	0.1720	1.7967	3.9800e-003	0.6269	2.8000e-003	0.6297	0.1605	2.5800e-003	0.1631						335.0991
Total	**2.9731**	**20.1607**	**51.1683**	**0.0470**	**3.3284**	**0.2451**	**3.5736**	**0.8499**	**0.2253**	**1.0752**						**4,614.2931**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.2837	0.0000	6.2837	3.3437	0.0000	3.3437						0.0000
Off-Road	6.0668	73.1679	48.3745	0.0598		3.2743	3.2743		3.0124	3.0124						6,252.5697

Total	**6.0668**	**73.1679**	**48.3745**	**0.0598**	**6.2837**	**3.2743**	**9.5580**	**3.3437**	**3.0124**	**6.3561**						**6,252.5697**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.8451	19.9887	49.3716	0.0431	2.7016	0.2423	2.9439	0.6894	0.2228	0.9122						4,279.1941
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.1280	0.1720	1.7967	3.9800e-003	0.6269	2.8000e-003	0.6297	0.1605	2.5800e-003	0.1631						335.0991
Total	**2.9731**	**20.1607**	**51.1683**	**0.0470**	**3.3284**	**0.2451**	**3.5736**	**0.8499**	**0.2253**	**1.0752**						**4,614.2931**

3.4 Finish Grading - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.9368	0.0000	6.9368	3.4090	0.0000	3.4090						0.0000
Off-Road	7.7869	94.6333	59.4982	0.0747		4.0654	4.0654		3.7402	3.7402						7,811.9129
Total	**7.7869**	**94.6333**	**59.4982**	**0.0747**	**6.9368**	**4.0654**	**11.0022**	**3.4090**	**3.7402**	**7.1492**						**7,811.9129**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.0640	0.0860	0.8984	1.9900e-003	0.1677	1.4000e-003	0.1691	0.0445	1.2900e-003	0.0458						167.5495
Total	**0.0640**	**0.0860**	**0.8984**	**1.9900e-003**	**0.1677**	**1.4000e-003**	**0.1691**	**0.0445**	**1.2900e-003**	**0.0458**						**167.5495**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.9368	0.0000	6.9368	3.4090	0.0000	3.4090						0.0000
Off-Road	7.7869	94.6333	59.4982	0.0747		4.0654	4.0654		3.7402	3.7402						7,811.9129
Total	**7.7869**	**94.6333**	**59.4982**	**0.0747**	**6.9368**	**4.0654**	**11.0022**	**3.4090**	**3.7402**	**7.1492**						**7,811.9129**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.0640	0.0860	0.8984	1.9900e-003	0.1677	1.4000e-003	0.1691	0.0445	1.2900e-003	0.0458						167.5495
Total	**0.0640**	**0.0860**	**0.8984**	**1.9900e-003**	**0.1677**	**1.4000e-003**	**0.1691**	**0.0445**	**1.2900e-003**	**0.0458**						**167.5495**

3.5 Landscaping - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.2951	0.0000	0.2951	0.0319	0.0000	0.0319						0.0000
Off-Road	0.1703	1.6275	1.2063	1.5600e-003		0.1253	0.1253		0.1153	0.1153						162.8638
Total	**0.1703**	**1.6275**	**1.2063**	**1.5600e-003**	**0.2951**	**0.1253**	**0.4204**	**0.0319**	**0.1153**	**0.1471**						**162.8638**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.0128	0.0172	0.1797	4.0000e-004	0.0335	2.8000e-004	0.0338	8.8900e-003	2.6000e-004	9.1500e-003						33.5099
Total	**0.0128**	**0.0172**	**0.1797**	**4.0000e-004**	**0.0335**	**2.8000e-004**	**0.0338**	**8.8900e-003**	**2.6000e-004**	**9.1500e-003**						**33.5099**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.2951	0.0000	0.2951	0.0319	0.0000	0.0319						0.0000
Off-Road	0.1703	1.6275	1.2063	1.5600e-003		0.1253	0.1253		0.1153	0.1153						162.8638
Total	**0.1703**	**1.6275**	**1.2063**	**1.5600e-003**	**0.2951**	**0.1253**	**0.4204**	**0.0319**	**0.1153**	**0.1471**						**162.8638**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.0128	0.0172	0.1797	4.0000e-004	0.0335	2.8000e-004	0.0338	8.8900e-003	2.6000e-004	9.1500e-003						33.5099
Total	**0.0128**	**0.0172**	**0.1797**	**4.0000e-004**	**0.0335**	**2.8000e-004**	**0.0338**	**8.8900e-003**	**2.6000e-004**	**9.1500e-003**						**33.5099**

3.6 Restoration - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Fugitive Dust					0.2951	0.0000	0.2951	0.0319	0.0000	0.0319						0.0000
Off-Road	0.1703	1.6275	1.2063	1.5600e-003		0.1253	0.1253		0.1153	0.1153						162.8638
Total	**0.1703**	**1.6275**	**1.2063**	**1.5600e-003**	**0.2951**	**0.1253**	**0.4204**	**0.0319**	**0.1153**	**0.1471**						**162.8638**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.0128	0.0172	0.1797	4.0000e-004	0.0335	2.8000e-004	0.0338	8.8900e-003	2.6000e-004	9.1500e-003						33.5099
Total	**0.0128**	**0.0172**	**0.1797**	**4.0000e-004**	**0.0335**	**2.8000e-004**	**0.0338**	**8.8900e-003**	**2.6000e-004**	**9.1500e-003**						**33.5099**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.2951	0.0000	0.2951	0.0319	0.0000	0.0319						0.0000
Off-Road	0.1703	1.6275	1.2063	1.5600e-003		0.1253	0.1253		0.1153	0.1153						162.8638
Total	**0.1703**	**1.6275**	**1.2063**	**1.5600e-003**	**0.2951**	**0.1253**	**0.4204**	**0.0319**	**0.1153**	**0.1471**						**162.8638**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.0128	0.0172	0.1797	4.0000e-004	0.0335	2.8000e-004	0.0338	8.8900e-003	2.6000e-004	9.1500e-003						33.5099
Total	**0.0128**	**0.0172**	**0.1797**	**4.0000e-004**	**0.0335**	**2.8000e-004**	**0.0338**	**8.8900e-003**	**2.6000e-004**	**9.1500e-003**						**33.5099**

3.7 Solar Panel Installation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2980	2.8482	2.1110	2.7200e-003		0.2193	0.2193		0.2018	0.2018						285.0116
Total	**0.2980**	**2.8482**	**2.1110**	**2.7200e-003**		**0.2193**	**0.2193**		**0.2018**	**0.2018**						**285.0116**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0183	0.1771	0.2391	4.3000e-004	0.0125	2.8700e-003	0.0154	3.5600e-003	2.6400e-003	6.2000e-003						43.2468
Worker	0.0171	0.0229	0.2396	5.3000e-004	0.0447	3.7000e-004	0.0451	0.0119	3.4000e-004	0.0122						44.6799
Total	**0.0353**	**0.2000**	**0.4787**	**9.6000e-004**	**0.0572**	**3.2400e-003**	**0.0605**	**0.0154**	**2.9800e-003**	**0.0184**						**87.9267**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2980	2.8482	2.1110	2.7200e-003		0.2193	0.2193		0.2018	0.2018						285.0116
Total	**0.2980**	**2.8482**	**2.1110**	**2.7200e-003**		**0.2193**	**0.2193**		**0.2018**	**0.2018**						**285.0116**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0183	0.1771	0.2391	4.3000e-004	0.0125	2.8700e-003	0.0154	3.5600e-003	2.6400e-003	6.2000e-003						43.2468
Worker	0.0171	0.0229	0.2396	5.3000e-004	0.0447	3.7000e-004	0.0451	0.0119	3.4000e-004	0.0122						44.6799

Total	**0.0353**	**0.2000**	**0.4787**	**9.6000e-004**	**0.0572**	**3.2400e-003**	**0.0605**	**0.0154**	**2.9800e-003**	**0.0184**						**87.9267**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.3037	1.0251	3.7839	9.2200e-003	0.6545	0.0145	0.6690	0.1749	0.0133	0.1882						812.4910
Unmitigated	0.3037	1.0251	3.7839	9.2200e-003	0.6545	0.0145	0.6690	0.1749	0.0133	0.1882						812.4910

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	69.70	13.20	6.80	233,117	233,117
Total	69.70	13.20	6.80	233,117	233,117

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	16.60	8.40	6.90	59.00	28.00	13.00	92	5	3

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.513363	0.060352	0.180146	0.139338	0.042155	0.006672	0.015739	0.030749	0.001928	0.002503	0.004351	0.000593	0.002111

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	5.5600e-003	0.0505	0.0424	3.0000e-004		3.8400e-003	3.8400e-003		3.8400e-003	3.8400e-003						60.9975
NaturalGas Unmitigated	5.5600e-003	0.0505	0.0424	3.0000e-004		3.8400e-003	3.8400e-003		3.8400e-003	3.8400e-003						60.9975

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	515.342	5.5600e-003	0.0505	0.0424	3.0000e-004		3.8400e-003	3.8400e-003		3.8400e-003	3.8400e-003						60.9975
Total		**5.5600e-003**	**0.0505**	**0.0424**	**3.0000e-004**		**3.8400e-003**	**3.8400e-003**		**3.8400e-003**	**3.8400e-003**						**60.9975**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	0.515342	5.5600e-003	0.0505	0.0424	3.0000e-004		3.8400e-003	3.8400e-003		3.8400e-003	3.8400e-003						60.9975
Total		**5.5600e-003**	**0.0505**	**0.0424**	**3.0000e-004**		**3.8400e-003**	**3.8400e-003**		**3.8400e-003**	**3.8400e-003**						**60.9975**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.2616	1.0000e-005	1.0500e-003	0.0000		0.0000	0.0000		0.0000	0.0000						2.3200e-003
Unmitigated	0.2616	1.0000e-005	1.0500e-003	0.0000		0.0000	0.0000		0.0000	0.0000						2.3200e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0635					0.0000	0.0000		0.0000	0.0000						0.0000
Consumer Products	0.1980					0.0000	0.0000		0.0000	0.0000						0.0000

Landscaping	1.0000e-004	1.0000e-005	1.0500e-003	0.0000		0.0000	0.0000		0.0000	0.0000						2.3200e-003
Total	**0.2616**	**1.0000e-005**	**1.0500e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						**2.3200e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0635					0.0000	0.0000		0.0000	0.0000						0.0000
Consumer Products	0.1980					0.0000	0.0000		0.0000	0.0000						0.0000
Landscaping	1.0000e-004	1.0000e-005	1.0500e-003	0.0000		0.0000	0.0000		0.0000	0.0000						2.3200e-003
Total	**0.2616**	**1.0000e-005**	**1.0500e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						**2.3200e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

West Parcel Solar Update

South Coast AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	10.00	1000sqft	17.25	10,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	9			**Operational Year**	2017
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Actual acreage for grading.

Construction Phase - Per schedule.

Off-road Equipment - Per schedule

Off-road Equipment - per schedule

Off-road Equipment - per schedule

Off-road Equipment - per schedule

Off-road Equipment - per schedule

Off-road Equipment - per schedule

Off-road Equipment - per schedule

Grading - per emails

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	21.00
tblConstructionPhase	NumDays	30.00	130.00
tblConstructionPhase	NumDays	30.00	20.00
tblConstructionPhase	NumDays	10.00	62.00
tblConstructionPhase	NumDays	10.00	62.00
tblConstructionPhase	NumDays	300.00	76.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
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tblConstructionPhase	NumDaysWeek	5.00	6.00
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tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	PhaseEndDate	9/30/2015	10/24/2015
tblConstructionPhase	PhaseEndDate	9/30/2015	3/24/2016
tblConstructionPhase	PhaseEndDate	9/30/2015	4/16/2016
tblConstructionPhase	PhaseEndDate	9/30/2015	6/28/2016
tblConstructionPhase	PhaseEndDate	9/30/2015	6/28/2016
tblConstructionPhase	PhaseEndDate	9/30/2015	7/14/2016
tblConstructionPhase	PhaseStartDate	10/1/2015	10/25/2015
tblConstructionPhase	PhaseStartDate	10/1/2015	3/25/2016
tblConstructionPhase	PhaseStartDate	10/1/2015	4/17/2016
tblConstructionPhase	PhaseStartDate	10/1/2015	4/17/2016
tblConstructionPhase	PhaseStartDate	10/1/2015	4/17/2016
tblGrading	AcresOfGrading	0.00	17.25
tblGrading	AcresOfGrading	0.00	17.25
tblGrading	AcresOfGrading	390.00	17.25
tblGrading	AcresOfGrading	90.00	17.25
tblGrading	AcresOfGrading	0.00	17.25
tblGrading	MaterialImported	0.00	139,000.00

tblLandUse	LotAcreage	0.23	17.25
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	OperationalYear	2018	2017
tblTripsAndVMT	HaulingTripNumber	17,375.00	0.00
tblTripsAndVMT	VendorTripNumber	2.00	0.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	2.00	0.00
tblTripsAndVMT	WorkerTripNumber	4.00	1.00
tblTripsAndVMT	WorkerTripNumber	15.00	4.00
tblTripsAndVMT	WorkerTripNumber	3.00	20.00
tblTripsAndVMT	WorkerTripNumber	3.00	15.00

tblTripsAndVMT	WorkerTripNumber	4.00	18.00
tblTripsAndVMT	WorkerTripNumber	5.00	18.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	6.4383	77.8230	45.2621	0.0612	7.0944	3.5186	9.8598	3.4577	3.2372	6.5965						6,474.9102
2016	7.5537	93.2252	52.4343	0.0776	7.1044	3.8230	10.9275	3.4535	3.5172	6.9707						8,112.7311
Maximum	**7.5537**	**93.2252**	**52.4343**	**0.0776**	**7.1044**	**3.8230**	**10.9275**	**3.4577**	**3.5172**	**6.9707**						**8,112.7311**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	6.4383	77.8230	45.2621	0.0612	7.0944	3.5186	9.8598	3.4577	3.2372	6.5965						6,474.9102
2016	7.5537	93.2252	52.4343	0.0776	7.1044	3.8230	10.9275	3.4535	3.5172	6.9707						8,112.7311
Maximum	**7.5537**	**93.2252**	**52.4343**	**0.0776**	**7.1044**	**3.8230**	**10.9275**	**3.4577**	**3.5172**	**6.9707**						**8,112.7311**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e

Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.2235	1.0000e-005	1.0400e-003	0.0000		0.0000	0.0000		0.0000	0.0000						2.3400e-003
Energy	5.3700e-003	0.0488	0.0410	2.9000e-004		3.7100e-003	3.7100e-003		3.7100e-003	3.7100e-003						58.8813
Mobile	0.2057	1.0859	2.9760	8.4800e-003	0.6564	0.0117	0.6682	0.1757	0.0111	0.1868						860.5973
Total	**0.4346**	**1.1347**	**3.0180**	**8.7700e-003**	**0.6564**	**0.0154**	**0.6719**	**0.1757**	**0.0148**	**0.1905**						**919.4809**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.2235	1.0000e-005	1.0400e-003	0.0000		0.0000	0.0000		0.0000	0.0000						2.3400e-003
Energy	5.3700e-003	0.0488	0.0410	2.9000e-004		3.7100e-003	3.7100e-003		3.7100e-003	3.7100e-003						58.8813
Mobile	0.2057	1.0859	2.9760	8.4800e-003	0.6564	0.0117	0.6682	0.1757	0.0111	0.1868						860.5973
Total	**0.4346**	**1.1347**	**3.0180**	**8.7700e-003**	**0.6564**	**0.0154**	**0.6719**	**0.1757**	**0.0148**	**0.1905**						**919.4809**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e

Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	10/1/2015	10/24/2015	6	21	
2	Grading Including Import	Grading	10/25/2015	3/24/2016	6	130	
3	Finish Grading	Grading	3/25/2016	4/16/2016	6	20	
4	Landscaping	Site Preparation	4/17/2016	6/28/2016	6	62	
5	Restoration	Site Preparation	4/17/2016	6/28/2016	6	62	
6	Solar Panel Installation	Building Construction	4/17/2016	7/14/2016	6	76	

Acres of Grading (Site Preparation Phase): 17.25

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating –

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Solar Panel Installation	Air Compressors	0	6.00	78	0.48
Finish Grading	Excavators	0	8.00	158	0.38
Finish Grading	Concrete/Industrial Saws	0	8.00	81	0.73
Landscaping	Excavators	0	8.00	158	0.38
Grading Including Import	Cranes	0		231	0.29
Grading Including Import	Forklifts	0		89	0.20
Grading Including Import	Generator Sets	0		84	0.74
Restoration	Pavers	0	8.00	130	0.42
Restoration	Rollers	0	8.00	80	0.38
Finish Grading	Rubber Tired Dozers	1	8.00	247	0.40

Landscaping	Rubber Tired Dozers	0	8.00	247	0.40
Grading Including Import	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Landscaping	Graders	0	8.00	187	0.41
Landscaping	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Restoration	Paving Equipment	0	8.00	132	0.36
Solar Panel Installation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Solar Panel Installation	Rubber Tired Dozers	0	8.00	247	0.40
Landscaping	Scrapers	0	8.00	367	0.48
Grading Including Import	Welders	0		46	0.45
Solar Panel Installation	Cranes	0	7.00	231	0.29
Grading Including Import	Excavators	0	8.00	158	0.38
Solar Panel Installation	Forklifts	0	8.00	89	0.20
Solar Panel Installation	Generator Sets	0	8.00	84	0.74
Grading Including Import	Graders	0	8.00	187	0.41
Finish Grading	Graders	1	8.00	187	0.41
Grading Including Import	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	1	8.00	247	0.40
Restoration	Rubber Tired Dozers	0	8.00	247	0.40
Grading Including Import	Scrapers	3	8.00	367	0.48
Finish Grading	Scrapers	4	8.00	367	0.48
Finish Grading	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Restoration	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Solar Panel Installation	Welders	0	8.00	46	0.45
Architectural Coating	Rubber Tired Dozers	1	8.00	247	0.40
Architectural Coating	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class

Solar Panel Installation	1	1.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading Including Import	6	4.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Finish Grading	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Landscaping	1	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Restoration	1	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Solar Panel Installation	1	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	2	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.8932	0.0000	6.8932	3.4043	0.0000	3.4043						0.0000
Off-Road	1.6296	17.3440	7.1660	0.0117		0.9550	0.9550		0.8786	0.8786						1,233.5709
Total	**1.6296**	**17.3440**	**7.1660**	**0.0117**	**6.8932**	**0.9550**	**7.8482**	**3.4043**	**0.8786**	**4.2829**						**1,233.5709**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000

Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.1502	0.1147	1.2093	2.2400e-003	0.2012	1.8400e-003	0.2030	0.0534	1.7000e-003	0.0551						222.5559
Total	**0.1502**	**0.1147**	**1.2093**	**2.2400e-003**	**0.2012**	**1.8400e-003**	**0.2030**	**0.0534**	**1.7000e-003**	**0.0551**						**222.5559**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.8932	0.0000	6.8932	3.4043	0.0000	3.4043						0.0000
Off-Road	1.6296	17.3440	7.1660	0.0117		0.9550	0.9550		0.8786	0.8786						1,233.5709
Total	**1.6296**	**17.3440**	**7.1660**	**0.0117**	**6.8932**	**0.9550**	**7.8482**	**3.4043**	**0.8786**	**4.2829**						**1,233.5709**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.1502	0.1147	1.2093	2.2400e-003	0.2012	1.8400e-003	0.2030	0.0534	1.7000e-003	0.0551						222.5559
Total	**0.1502**	**0.1147**	**1.2093**	**2.2400e-003**	**0.2012**	**1.8400e-003**	**0.2030**	**0.0534**	**1.7000e-003**	**0.0551**						**222.5559**

3.3 Grading Including Import - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.2837	0.0000	6.2837	3.3437	0.0000	3.3437						0.0000
Off-Road	6.3914	77.5003	44.8988	0.0602		3.5146	3.5146		3.2334	3.2334						6,370.8694
Total	**6.3914**	**77.5003**	**44.8988**	**0.0602**	**6.2837**	**3.5146**	**9.7983**	**3.3437**	**3.2334**	**6.5772**						**6,370.8694**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0135	0.2972	0.0946	5.1000e-004	0.0128	3.5500e-003	0.0164	3.6900e-003	3.4000e-003	7.0800e-003						54.5839
Worker	0.0334	0.0255	0.2687	5.0000e-004	0.0447	4.1000e-004	0.0451	0.0119	3.8000e-004	0.0122						49.4569
Total	**0.0469**	**0.3227**	**0.3634**	**1.0100e-003**	**0.0575**	**3.9600e-003**	**0.0615**	**0.0156**	**3.7800e-003**	**0.0193**						**104.0408**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Fugitive Dust					6.2837	0.0000	6.2837	3.3437	0.0000	3.3437						0.0000
Off-Road	6.3914	77.5003	44.8988	0.0602		3.5146	3.5146		3.2334	3.2334						6,370.8694
Total	**6.3914**	**77.5003**	**44.8988**	**0.0602**	**6.2837**	**3.5146**	**9.7983**	**3.3437**	**3.2334**	**6.5772**						**6,370.8694**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0135	0.2972	0.0946	5.1000e-004	0.0128	3.5500e-003	0.0164	3.6900e-003	3.4000e-003	7.0800e-003						54.5839
Worker	0.0334	0.0255	0.2687	5.0000e-004	0.0447	4.1000e-004	0.0451	0.0119	3.8000e-004	0.0122						49.4569
Total	**0.0469**	**0.3227**	**0.3634**	**1.0100e-003**	**0.0575**	**3.9600e-003**	**0.0615**	**0.0156**	**3.7800e-003**	**0.0193**						**104.0408**

3.3 Grading Including Import - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.2837	0.0000	6.2837	3.3437	0.0000	3.3437						0.0000
Off-Road	6.1795	74.1062	43.1952	0.0602		3.3531	3.3531		3.0848	3.0848						6,301.8602
Total	**6.1795**	**74.1062**	**43.1952**	**0.0602**	**6.2837**	**3.3531**	**9.6368**	**3.3437**	**3.0848**	**6.4285**						**6,301.8602**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0118	0.2787	0.0837	5.1000e-004	0.0128	2.9800e-003	0.0158	3.6900e-003	2.8500e-003	6.5400e-003						54.5502
Worker	0.0297	0.0223	0.2364	4.8000e-004	0.0447	3.9000e-004	0.0451	0.0119	3.6000e-004	0.0122						48.2404
Total	**0.0415**	**0.3010**	**0.3201**	**9.9000e-004**	**0.0575**	**3.3700e-003**	**0.0609**	**0.0156**	**3.2100e-003**	**0.0188**						**102.7907**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.2837	0.0000	6.2837	3.3437	0.0000	3.3437						0.0000
Off-Road	6.1795	74.1062	43.1952	0.0602		3.3531	3.3531		3.0848	3.0848						6,301.8602
Total	**6.1795**	**74.1062**	**43.1952**	**0.0602**	**6.2837**	**3.3531**	**9.6368**	**3.3437**	**3.0848**	**6.4285**						**6,301.8602**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0118	0.2787	0.0837	5.1000e-004	0.0128	2.9800e-003	0.0158	3.6900e-003	2.8500e-003	6.5400e-003						54.5502
Worker	0.0297	0.0223	0.2364	4.8000e-004	0.0447	3.9000e-004	0.0451	0.0119	3.6000e-004	0.0122						48.2404
Total	**0.0415**	**0.3010**	**0.3201**	**9.9000e-004**	**0.0575**	**3.3700e-003**	**0.0609**	**0.0156**	**3.2100e-003**	**0.0188**						**102.7907**

3.4 Finish Grading - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.9368	0.0000	6.9368	3.4090	0.0000	3.4090						0.0000
Off-Road	7.4423	93.1416	51.5477	0.0758		3.8216	3.8216		3.5159	3.5159						7,931.8295
Total	**7.4423**	**93.1416**	**51.5477**	**0.0758**	**6.9368**	**3.8216**	**10.7584**	**3.4090**	**3.5159**	**6.9249**						**7,931.8295**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000

Worker	0.1113	0.0836	0.8866	1.8200e-003	0.1677	1.4500e-003	0.1691	0.0445	1.3400e-003	0.0458						180.9015
Total	**0.1113**	**0.0836**	**0.8866**	**1.8200e-003**	**0.1677**	**1.4500e-003**	**0.1691**	**0.0445**	**1.3400e-003**	**0.0458**						**180.9015**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.9368	0.0000	6.9368	3.4090	0.0000	3.4090						0.0000
Off-Road	7.4423	93.1416	51.5477	0.0758		3.8216	3.8216		3.5159	3.5159						7,931.8295
Total	**7.4423**	**93.1416**	**51.5477**	**0.0758**	**6.9368**	**3.8216**	**10.7584**	**3.4090**	**3.5159**	**6.9249**						**7,931.8295**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.1113	0.0836	0.8866	1.8200e-003	0.1677	1.4500e-003	0.1691	0.0445	1.3400e-003	0.0458						180.9015
Total	**0.1113**	**0.0836**	**0.8866**	**1.8200e-003**	**0.1677**	**1.4500e-003**	**0.1691**	**0.0445**	**1.3400e-003**	**0.0458**						**180.9015**

3.5 Landscaping - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.2951	0.0000	0.2951	0.0319	0.0000	0.0319						0.0000
Off-Road	0.3406	3.2551	2.4126	3.1100e-003		0.2506	0.2506		0.2306	0.2306						326.1181
Total	**0.3406**	**3.2551**	**2.4126**	**3.1100e-003**	**0.2951**	**0.2506**	**0.5457**	**0.0319**	**0.2306**	**0.2624**						**326.1181**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.1484	0.1114	1.1821	2.4200e-003	0.2236	1.9300e-003	0.2255	0.0593	1.7800e-003	0.0611						241.2020
Total	**0.1484**	**0.1114**	**1.1821**	**2.4200e-003**	**0.2236**	**1.9300e-003**	**0.2255**	**0.0593**	**1.7800e-003**	**0.0611**						**241.2020**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Fugitive Dust					0.2951	0.0000	0.2951	0.0319	0.0000	0.0319						0.0000
Off-Road	0.3406	3.2551	2.4126	3.1100e-003		0.2506	0.2506		0.2306	0.2306						326.1181
Total	**0.3406**	**3.2551**	**2.4126**	**3.1100e-003**	**0.2951**	**0.2506**	**0.5457**	**0.0319**	**0.2306**	**0.2624**						**326.1181**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.1484	0.1114	1.1821	2.4200e-003	0.2236	1.9300e-003	0.2255	0.0593	1.7800e-003	0.0611						241.2020
Total	**0.1484**	**0.1114**	**1.1821**	**2.4200e-003**	**0.2236**	**1.9300e-003**	**0.2255**	**0.0593**	**1.7800e-003**	**0.0611**						**241.2020**

3.6 Restoration - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.2951	0.0000	0.2951	0.0319	0.0000	0.0319						0.0000
Off-Road	0.3406	3.2551	2.4126	3.1100e-003		0.2506	0.2506		0.2306	0.2306						326.1181
Total	**0.3406**	**3.2551**	**2.4126**	**3.1100e-003**	**0.2951**	**0.2506**	**0.5457**	**0.0319**	**0.2306**	**0.2624**						**326.1181**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.1113	0.0836	0.8866	1.8200e-003	0.1677	1.4500e-003	0.1691	0.0445	1.3400e-003	0.0458						180.9015
Total	**0.1113**	**0.0836**	**0.8866**	**1.8200e-003**	**0.1677**	**1.4500e-003**	**0.1691**	**0.0445**	**1.3400e-003**	**0.0458**						**180.9015**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.2951	0.0000	0.2951	0.0319	0.0000	0.0319						0.0000
Off-Road	0.3406	3.2551	2.4126	3.1100e-003		0.2506	0.2506		0.2306	0.2306						326.1181
Total	**0.3406**	**3.2551**	**2.4126**	**3.1100e-003**	**0.2951**	**0.2506**	**0.5457**	**0.0319**	**0.2306**	**0.2624**						**326.1181**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.1113	0.0836	0.8866	1.8200e-003	0.1677	1.4500e-003	0.1691	0.0445	1.3400e-003	0.0458						180.9015
Total	**0.1113**	**0.0836**	**0.8866**	**1.8200e-003**	**0.1677**	**1.4500e-003**	**0.1691**	**0.0445**	**1.3400e-003**	**0.0458**						**180.9015**

3.7 Solar Panel Installation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3406	3.2551	2.4126	3.1100e-003		0.2506	0.2506		0.2306	0.2306						326.1181
Total	**0.3406**	**3.2551**	**2.4126**	**3.1100e-003**		**0.2506**	**0.2506**		**0.2306**	**0.2306**						**326.1181**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.1410	0.1059	1.1230	2.3000e-003	0.3970	1.8300e-003	0.3988	0.1016	1.6900e-003	0.1033						229.1419

Total	**0.1410**	**0.1059**	**1.1230**	**2.3000e-003**	**0.3970**	**1.8300e-003**	**0.3988**	**0.1016**	**1.6900e-003**	**0.1033**						**229.1419**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3406	3.2551	2.4126	3.1100e-003		0.2506	0.2506		0.2306	0.2306						326.1181
Total	**0.3406**	**3.2551**	**2.4126**	**3.1100e-003**		**0.2506**	**0.2506**		**0.2306**	**0.2306**						**326.1181**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.1410	0.1059	1.1230	2.3000e-003	0.3970	1.8300e-003	0.3988	0.1016	1.6900e-003	0.1033						229.1419
Total	**0.1410**	**0.1059**	**1.1230**	**2.3000e-003**	**0.3970**	**1.8300e-003**	**0.3988**	**0.1016**	**1.6900e-003**	**0.1033**						**229.1419**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.2057	1.0859	2.9760	8.4800e-003	0.6564	0.0117	0.6682	0.1757	0.0111	0.1868						860.5973
Unmitigated	0.2057	1.0859	2.9760	8.4800e-003	0.6564	0.0117	0.6682	0.1757	0.0111	0.1868						860.5973

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	69.70	13.20	6.80	233,117	233,117
Total	69.70	13.20	6.80	233,117	233,117

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	16.60	8.40	6.90	59.00	28.00	13.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.542123	0.045435	0.198009	0.129481	0.019131	0.005886	0.019249	0.030178	0.001920	0.002234	0.004581	0.000701	0.001073

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	5.3700e-003	0.0488	0.0410	2.9000e-004		3.7100e-003	3.7100e-003		3.7100e-003	3.7100e-003						58.8813
NaturalGas Unmitigated	5.3700e-003	0.0488	0.0410	2.9000e-004		3.7100e-003	3.7100e-003		3.7100e-003	3.7100e-003						58.8813

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	497.534	5.3700e-003	0.0488	0.0410	2.9000e-004		3.7100e-003	3.7100e-003		3.7100e-003	3.7100e-003						58.8813
Total		**5.3700e-003**	**0.0488**	**0.0410**	**2.9000e-004**		**3.7100e-003**	**3.7100e-003**		**3.7100e-003**	**3.7100e-003**						**58.8813**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					

General Light Industry	0.497534	5.3700e-003	0.0488	0.0410	2.9000e-004		3.7100e-003	3.7100e-003		3.7100e-003	3.7100e-003						58.8813
Total		**5.3700e-003**	**0.0488**	**0.0410**	**2.9000e-004**		**3.7100e-003**	**3.7100e-003**		**3.7100e-003**	**3.7100e-003**						**58.8813**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.2235	1.0000e-005	1.0400e-003	0.0000		0.0000	0.0000		0.0000	0.0000						2.3400e-003
Unmitigated	0.2235	1.0000e-005	1.0400e-003	0.0000		0.0000	0.0000		0.0000	0.0000						2.3400e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0254					0.0000	0.0000		0.0000	0.0000						0.0000
Consumer Products	0.1980					0.0000	0.0000		0.0000	0.0000						0.0000
Landscaping	1.0000e-004	1.0000e-005	1.0400e-003	0.0000		0.0000	0.0000		0.0000	0.0000						2.3400e-003

Total	**0.2235**	**1.0000e-005**	**1.0400e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						**2.3400e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0254					0.0000	0.0000		0.0000	0.0000						0.0000
Consumer Products	0.1980					0.0000	0.0000		0.0000	0.0000						0.0000
Landscaping	1.0000e-004	1.0000e-005	1.0400e-003	0.0000		0.0000	0.0000		0.0000	0.0000						2.3400e-003
Total	**0.2235**	**1.0000e-005**	**1.0400e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						**2.3400e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Table 1
West Parcel Solar Mitigation Monitoring Program
SCH 2002041161

First determine if each Mitigation Measure is required for the Project and assign the Responsible Party. Add comments if needed and retain the original MM Index. If desired, to simplify the Worksheet, delete the entire row for each Mitigation Measure that is not required. The Worksheet is retained permanently.
The Responsible Party must verify that each mitigation measure was completed; state when it was completed, and sign that it was completed. Section 15097 of the CEQA Guidelines lists the requirements for Mitigation Monitoring Programs.

Project Name:	West Parcel Solar
Date of Adoption of Project MMP:	August 9, 2017
Identification Number in 2012 Facility Master Plan:	Retail & Solar
Project Manager:	Leonard Ortiz
Initial Worksheet Prepared by:	Sid Lindmark, AICP
Date Worksheet Prepared:	July 27, 2017
Phone:	(909) 274-5496
E-Mail:	lortiz6@mtsac.edu

Mitigation Measures	Other Firms Agencies Involved	Date Completed	Responsible Party Signature	Comments
1. LAND USE				
LU-01. All future land uses on campus, building locations and square footage (ASF) shall be substantially consistent with the 2012 Facility Master Plan. Facilities Planning and Management shall ensure compliance.				ASF does not apply to ACE Project
LU-07. The District shall submit a grading plan to the City of Walnut for all projects subject to the Walnut Municipal Code Sections 6-5.5 and 6-5.6. The grading plan shall confirm to the requirements of the Walnut Municipal Code Section 6-5.3 and Appendix J Sections J101.7, J108 - J111 of Appendix J. To the extent there is any ambiguity as to scope, the WMC controls over Appendix J. The District shall comply with				

all requirements of an approved grading plan. Facilities Planning and Management shall ensure compliance. Projects that are exempt from City of Walnut local building, construction and land use controls will comply with City of Walnut grading ordinances regulating drainage improvements and requiring the review and approval of grading plans as these ordinances relate to the design and construction of onsite improvements which affect drainage, road conditions or grading,				
2. TRAFFIC/CIRCULATION				
TR-31. The District shall submit an application for a truck hauling plan prepared by a registered traffic engineer to the City of Walnut for all projects subject to the Walnut Municipal Code Sections 6-8. In general, WMC 6-8 addressed projects moving more than 5,000 cubic yards of earth on any public roadway. The District shall comply with all requirements of an approved truck hauling plan. Facilities Planning and Management shall ensure compliance.				
TR-32. Contractors shall submit traffic handling plans and other construction documents to Facilities Planning and Management prior to commencement of demolition or grading. The plans and documents shall comply with the *Work Area Traffic Control Handbook (WATCH)*. Facilities Planning and Management shall monitor compliance.				
TR-33. Demolition and construction contracts shall include plans for temporary sidewalk closure, pedestrian safety on adjacent sidewalks, vehicle and pedestrian safety along the project perimeter, and along construction equipment haul routes on campus. These plans shall be reviewed by the Public Safety				

Department and approved by Facilities Planning and Management. Facilities Planning and Management shall monitor compliance.				
TR-34. Demolition and construction contracts shall include plans for construction worker parking areas on campus. Facilities Planning and Management shall monitor compliance.				
TR-35. Each project site shall be adequately barricaded with temporary fencing to secure construction equipment, minimize trespassing, vandalism, short-cut attractions, and reduce hazards during demolition and construction. Facilities Planning and Management shall monitor compliance.				
TR-36. Construction contractors shall post a flag person at locations near a construction site during major truck hauling activities to protect pedestrians from conflicts with heavy equipment entering or leaving the project site. Facilities Planning and Management shall monitor compliance.				
TR-59. The Public Safety Department shall keep the Sheriff Department informed of anticipated major changes in circulation patterns, parking, and any special security needs related to campus construction and operation. Public Safety shall monitor compliance.				
TR-62. During the truck hauling period, the City of Walnut shall adjust the traffic signal timing at the Temple Avenue and Grand Avenue intersection from 9:00 am to 3:00 pm by laggings the WB Temple Avenue left-turn movement, posting a “No Right Turn on Red” sign for the eastbound Amar Road approach and adding MUTCD C44 (CA) “Trucks Entering Exiting” Sign along Grand Avenue at the north and south West Parcel driveways. The City of				

Walnut shall ensure compliance.				
3. AIR QUALITY				
AQ-01. All contractors shall comply with all feasible Best Available Control Measures (BACM) included in South Coast Air Quality Management District (SCAQMD) Rule 403**:** Fugitive Dust included in Table 1: Best Available Control Measures Applicable to All Construction Activity Sources. In addition, the project shall comply with at least one of the following Track-Out Control Options: (a) Install a pad consisting of washed gravel (minimum-size: one inch) maintained in a clean condition to a depth of at least six inches and extending at least 20 feet wide and 50 feet long, (b) Pave the surface extending at least 100 feet and a width of at least 20 feet wide, (c) Utilize a wheel shaker/wheel spreading device consisting of raised dividers (rails, pipe, or grates) at least 24 feet long and 10 feet wide to remove bulk material from tires and vehicle under carriages before vehicles exit the site, (d) Install and utilize a wheel washing system to remove bulk material from tires and vehicle undercarriages before vehicles exit the site, (e) Any other control measures approved by the Executive Officer and the U.S. EPA as equivalent to the methods specified items (a) through (d) above. Individual BACM in Table 1 that are not applicable to the project or infeasible, based on additional new project information, may be omitted only if Facilities Planning and Management specifies in a				

written agreement with the applicant that specific BACM measures may be omitted. Any clarifications, additions, selections of alternative measures, or specificity required to implement the required BACM for the project shall be included in the written agreement. The written agreement shall be completed prior to demolition and/or grading for a project. Facilities Planning and Management shall include the written agreement within the Mitigation Monitoring Program for the project and Facilities Planning and Management shall ensure compliance.				
AQ-02. Project construction contracts shall prohibit vehicle and engine idling in excess of five (5) minutes and ensure that all off-road equipment is compliant with the CARB's in-use off-road diesel vehicle regulations and SCAQMD Rule 1186 and 1186.1 certified street sweepers or roadway washing trucks, and all internal combustion engines/construction equipment operating on the project site shall meet EPA-Certified Tier 2 emissions standards, or higher according to the adopted project start date requirements. A copy of each unit's certified tier specification, BACT documentation and CARB or SCAQMD operating permit shall be provided to the construction manager at the time of mobilization of each applicable unit of equipment. Facilities Planning and Management shall ensure compliance.				
AQ-03. During construction, contractors shall minimize offsite air quality impacts by implementing the following measures: (a) encourage car pooling for construction				

workers, (b) limit lane closures to off-peak travel periods, (c) park construction vehicles off traveled roadways, (d) encourage receipt of materials during non-peak traffic hours and (e) sandbag construction sites for erosion control. These requirements shall be included in construction contracts and implemented. Facilities Planning and Management shall monitor compliance.				
AQ-04. Truck deliveries and pickups shall be scheduled during off-peak hours whenever possible to alleviate traffic congestion and air quality emissions during peak hours. Facilities Planning and Management shall monitor compliance.				
AQ-05R. During project construction all off-road construction equipment shall be outfitted with BACT devices certified by CARB. Any emission control devices used by a contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations. A copy of each unit's certified tier specification, BACT documentation and CARB or SCAQQMD operating permit shall be provided by contractors before commencement of equipment use on campus. Facilities Planning and Management shall ensure compliance.				
AQ-06. Construction contracts shall specify that all diesel construction equipment used onsite shall use ultra-low sulfur diesel fuel. Facilities Planning and Management shall ensure compliance.				
AQ-07R. During grading and construction, fugitive dust from construction operations shall be reduced by watering at least twice daily using reclaimed water or chemical soil				

binder, where feasible, or water whenever substantial dust generation is evident. The project shall comply with Rule 403: Fugitive Dust (South Coast Air Quality Management District). Project contractors shall suspend grading operations, apply soil binders, and water the grading site when wind speeds (as instantaneous gusts) exceed 25 miles per hour. Traffic speeds on all unpaved graded surfaces shall not exceed 15 miles per hour. All grading operations shall be suspended during first and second stage smog alerts. All project contracts shall require project contractors to keep construction equipment engines tuned to ensure that air quality impacts generated by construction activities are minimized. Upon request, contractors shall submit equipment tuning logs to Facilities Planning and Management. Facilities Planning and Management shall ensure compliance.				
AQ-11. Construction equipment onsite for the West Parcel Solar project shall be limited to three scrapers, one loader, one dozer, and one compactor during the "Grading with Importation" phase. A limit of four scrapers, one dozer, and one compactor is required during the "Grading Alone" phase. Facilities Planning and Management shall ensure compliance.				
5. NOISE				
NO-01. All construction and general maintenance activities, except in emergencies or special circumstances, shall be limited to the hours of 7 am to 7 pm Monday-Saturday. Staging areas for construction shall be located away from existing offsite residences. All construction equipment shall use properly operating mufflers. These requirements shall				

be included in construction contracts and implemented. Facilities Planning and Management shall monitor compliance.				
6. GEOLOGY/SOILS				
MR-01. All recommendations in the final geotechnical report(s) for the shall be included in construction contracts and implemented. Facilities Planning and Management shall monitor compliance.				
MR-03. During construction grading and site preparation activities, the Contractor shall monitor all construction activities. In the event that cultural resources (i.e., prehistoric sites, historic sites, and/or isolated artifacts) are discovered, work shall be halted immediately within 50 feet of the discovery and the Contractor shall inform the Project Manager. A qualified archaeologist that meets the Secretary of the Interior's Standards and Guidelines for Professional Qualifications in Archaeology shall be retained to analyze the significance of the discovery and recommend further appropriate measures to reduce further impacts on archaeological resources. Such measures may include avoidance, preservation in place, excavation, documentation, curation, data recovery, or other appropriate measures. Facilities Planning and Management shall monitor compliance.				
CR-02. If, during the course of implementing the project, human remains are discovered, all work shall be halted immediately within 50 feet of the discovery, the Contractor shall inform the Project Manager, and the County Coroner must be notified according to Section 5097.98 of the PRC and Section 7050.5 of California's Health and Safety Code. If the remains are determined to be Native				

American, the coroner will notify the Native American Heritage Commission, and the procedures outlined in CEQA Section 15064.5(d) and (e) shall be followed. Facilities Planning and Management shall monitor compliance.				
MR-04. The geologist shall require contractors use one or more of the following mitigation measures to improve expansive soils at the site. The measures include: (1) Placement of 2 feet thick of non-expansive soil below finished sub-grade, (2) Pre-saturation of on-site compacted sub-grade soils to at approximate three (3) percent above optimum moisture content or (3) Lime treat the upper two (2) feet of the sub-grade soils. Facilities Planning and Management shall monitor compliance.				
7. HYDROLOGY/FLOODING				
HYD-03. All drainage improvements shall be consistent with the *Master Campus Drainage Plan*. All recommendations of the approved final drainage plan(s) shall be included in construction contracts and implemented. Facilities Planning and Management shall monitor compliance.				
9. BIOLOGICAL RESOURCES				
BIO-01. New permanent lighting standards in Parking Lot M and Lot W immediately adjacent to sensitive biological habitat areas (i.e. Wildlife Sanctuary/Open Space Zone) shall not exceed 0.2 foot- candles at five (5) feet outside of the parking lot boundary. Facilities Planning and Management shall ensure compliance.				

BIO-02. Pre-construction burrowing owl (BUOW) surveys will be conducted to ensure no construction related impacts occur to this sensitive species. A pre-construction survey for BUOW shall be completed for construction areas with suitable habitat for the BUOW Owl (e.g. Irrigation Well site, the Detention Basin site, and the Fire Training Academy site). If clearing, grading, or construction is planned to occur during the BUOW breeding season (February 1 through August 31), pre-construction surveys should be conducted in the construction area and in appropriate habitat within 500 feet of the construction area. A pre-construction nest/owl survey should be completed for each project or work area within 14 days of the start of construction. Multiple pre-construction surveys may be required because the start of specific projects may be separated in time by months or years. If there are no nesting owls, within each area, development would be allowed to proceed. If BUOW are observed, impacts shall be avoided according to the Staff Report on Burrowing Owl Mitigation (CDFW 2012). All recommendations of the final studies shall be implemented. Facilities Planning and Management shall ensure compliance.				Applies east of Grand in HMP
BIO-03. Prior to grading within areas of Venturan Coastal Sage Scrub, the college shall identify replacement 2:1 acreage. Replacement habitat shall be installed prior to project completion. Planning and Facilities Management shall ensure compliance.				
BIO-04. Prior to grading within areas of non-native grassland, the college shall identify replacement 0.5:1 acreage habitat.				

Replacement habitat shall be completed prior to project completion. Planning and Facilities Management shall ensure compliance.				
BIO-06. Prior to removal of any trees on campus in or near construction areas of the project site during March - May, a qualified biologist shall survey the trees for active nesting sites of migratory birds. (See BIO -17 for raptors) If migratory birds are observed nesting in the trees, development within 300 feet must be postponed either until all nesting has ceased, or until construction is moved far away enough so that the activity does not impact the birds. Facilities Planning and Management shall monitor compliance.				
BIO-08. Permanent development adjacent to any future wetland mitigation areas shall incorporate a 25-foot buffer during final project design. If un-vegetated, the buffer shall be planted with non- invasive species that are compatible with the adjacent wetland mitigation area habitat. A qualified biologist shall review the final landscape plans for the buffer area to conform that no species on the California Invasive Plan Council (Cal-IPC) list are present in the plan. Facilities Planning and Management shall monitor compliance.				Could apply to HMP east of Grand
BIO-09. The limits of construction for projects adjacent to sensitive habitats should be delineated with silt fencing/fiber rolls and orange construction fencing. A qualified biologist should attend a pre-construction meeting to inform construction crews about the sensitivity of any adjacent habitat. A qualified biologist should also inspect the fencing upon installation and monitor clearing and grading of (and near) native habitat to prevent unauthorized impacts. Facilities				

Planning and Management shall monitor compliance.				
BIO-11. A 25-foot buffer shall be incorporated into the project design for the Fire Training Academy to protect future wetland mitigation areas along Snow Creek. A qualified biologist shall also review the draft landscape plans for the buffer area to confirm that no species on the Cal-IPC list would be present during plan implementation. Facilities Planning and Management shall ensure compliance.				
BIO-13. Construction noise adjacent to existing coastal sage scrub habitat within the West Parcel and on MSAC Hill that is retained (i.e. not graded) will be minimized whenever feasible by avoiding construction grading during the prime nesting season. Facilities Planning and Management shall monitor compliance.				
BIO-14. Project construction activities shall comply with all requirements included in the Noise Planning for Mt. San Antonio College West Parcel Solar Project, Helix Environmental Planning, June 7, 2016. Facilities Planning and Management shall ensure compliance.				
BIO-15. Project construction activities shall comply with all requirements included in the Section 401, 404 permits and the 1603 Agreement for the West Parcel Solar Project. Facilities Planning and Management shall ensure compliance.				
BIO-16. Erosion control seed mixes and landscape plans for the projects should be reviewed by a qualified biologist prior to final approval to ensure that no species on the California Invasive Plant Council (Cal-IPC) list of problem species would be incorporated into the plan(s). Facilities Planning and				

Management shall monitor compliance.				
BIO-17. Raptors may be impacted during construction activities by nest disruption, habitat loss or noise. A pre-construction survey shall be conducted within 14 days of the start of construction. If clearing, grading, or construction will occur from Feb 1 – July 31, pre-construction surveys shall be conducted in the construction area and in appropriate nesting habitat within 500 feet of the construction area. Multiple pre-construction surveys may be required if the start of specific projects is separated in time by months or years. If there are no nesting raptors within each area, development is allowed to proceed. However, if raptors are observed nesting within the area and within sight and sound of the work, development within 300 feet shall be postponed either until all nesting has ceased, until after the breeding season, or until construction is moved far enough away so the activity does not impact the birds. An exception to this would be any raptor nests east of North Grand Avenue. North Grand Avenue is a four-lane road with a landscaped median. Any nests east of the road would likely be habituated to activity from this busy road and unaffected by construction on the West Parcel. Facilities Planning and Management shall monitor compliance.				
BIO-18. Impacts to coastal cactus wren habitat should be mitigated at 2:1 ratio. That is, for each acre of cacti dominated coastal sage scrub impacted, 2 acres should be created and/or preserved. Facilities Planning and Management shall monitor compliance.				
BIO-19. Construction activities known to generate noise levels capable of disrupting				

breeding coastal California gnatcatchers birds will be restricted to the non-breeding season (September 1 to February 14). Facilities Planning and Management shall monitor compliance.				
BIO-20. All construction lighting and new campus lighting that is adjacent to sensitive habitat areas should be of low illumination and be shielded and directed downwards and away from adjacent native habitat. Facilities Planning and Management shall monitor compliance.				
BIO-21. The Planting Plan, EPT Design (Sheet L3.01), January 15, 2015 or an update shall be implemented for the West Parcel project. Facilities Planning and Management shall ensure compliance.				
BIO-22. Because Mt. SAC is not enrolled as a participant in the NCCP, the District cannot rely on a habitat loss permit under Section 4(d) of the federal ESA. Since there is not an existing Habitat Conservation Plan (HCP) for the project site, the "take" of a listed species requires an approved application to the USFWS for issuance of a Section 10 (a) Permit for "incidental" take of endangered or threatened species (with preparation of an HCP). Facilities Planning and Management shall ensure compliance.				
12. AESTHETICS				
AES-02. All new construction contracts shall implement those provisions of the *Landscape Plan* applicable to their projects. Facilities Planning and Management shall monitor compliance.				Project has its own Landscape Plan (BIO-21)

13. SHERIFF				
TR-59. The Public Safety Department shall keep the Sheriff Department informed of anticipated major changes in circulation patterns and parking, and any special security needs related to campus construction and operation. Public Safety shall monitor compliance.				
15. WATER				
SS-03. The college shall obtain permit(s) and water commitments required by the Three Valleys Municipal Water District for water service for all projects. These requirements shall be included in construction contracts. TVMWD has requested advance notification whenever demand may increase by more than 50 percent so future planning may be completed. Facilities Planning and Management shall monitor compliance.				
17. PUBLIC UTILITIES				
SS-06. For each project, the college shall obtain all approval(s) required by Southern California Edison for electrical service. These requirements shall be included in construction contracts for each project. Facilities Planning and Management shall monitor compliance.				
Source: Facilities Planning and Management, July 27, 2017				

Memorandum

Date: September 9, 2015

To: Ms. Mikaela Klein, Mt. San Antonio College

From: Fred Greve, Greve & Associates, LLC

Subject: West Parcel Solar Project – Construction Noise Analysis (Report #15-104D)

The analysis presented below examines the potential noise impacts of the construction of the West Parcel Solar (WPS) project. The Project will construct solar panels with a capacity of approximately 2.2 MW. The entire site is approximately 27.7 acres, and approximately 17.7 acres of the site will be graded. Substantial grading and import of dirt will be required for the project. The current grading estimates are 172,708 cubic yards of cut, 336,279 cubic yards of fill with a net import of 163,571 cubic yards. The import fill will come from the Athletic Complex East (ACE) area.

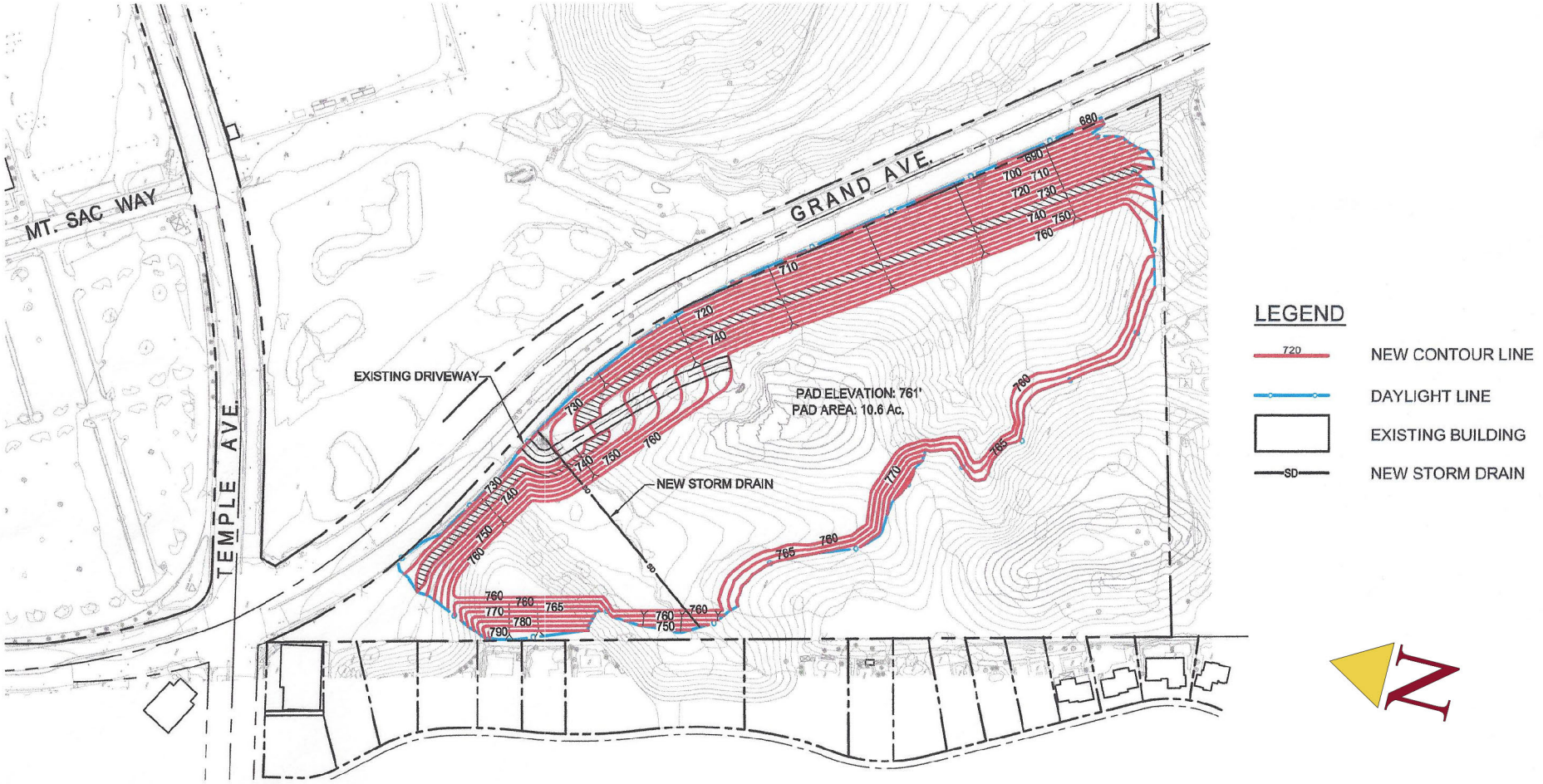
The WPS site is a triangular parcel southwest of North Grand Avenue, east of homes along Regal Canyon Drive, and north of homes along Stonybrook Drive (refer to Exhibit 1). The main pad for the solar pads will be lower in elevation than the nearby homes, but some grading close to homes along Regal Canyon Drive will be necessary to construct slopes.

CITY NOISE STANDARDS

The City of Walnut Noise Ordinance contains restrictions on noise during construction. The Noise Ordinance applies to noise on one property impacting a neighbor. It sets limits on noise levels that can be experienced at the neighbor. The Noise Ordinance is part of the City's Municipal Code and is enforceable throughout the City. The Noise Ordinance cannot be enforced against vehicles traveling on public roadways, railroads, or aircraft. Control of the mobile noise sources on public roads is preempted by federal and state laws. It can be applied to vehicles traveling on private property (e.g. parking lots). However, the Noise Ordinance is not applicable to the campus. Per California Government Code Section 53091(e): Water and electrical energy facilities: "Zoning ordinances of a county or city shall not apply to the location or construction of facilities for the production, generation, storage, treatment, or transmission of water, or for the production or generation of electrical energy, facilities that are subject to Section 12808.5 of the Public Utilities Code, or electrical substations in an electrical transmission system that receives electricity at less than 100,000 volts. Zoning ordinances of a county or city shall apply to the location or construction of facilities for the storage or transmission of electrical energy by a local agency, if the zoning ordinances make provision for those facilities."

638 CAMINO DE LOS MARES, SUITE H130-153, SAN CLEMENTE, CA 92673
VOICE: 949•466•2967 EMAIL: fred@greveandassociates.com

Exhibit 1 - Site Plan



The Walnut Noise Ordinance (Chapter 16B of the Municipal Code) establishes exterior and interior noise standards that protect residential, commercial, and industrial areas. Section 16B-5, quoted below, presents the City's Noise Ordinance Standards.

Section 16B-5
Citations for violations are hereby authorized when:

(a) Exterior noise levels shall apply to all receptor properties as follows, unless otherwise noted:

Receptor Land Use	Time of Day	Noise Level
Residential	11 p.m. to 7 a.m.	45 dB
	7 a.m. to 11 p.m.	50 dB
Commercial	11 p.m. to 7 a.m.	45 dB
	7 a.m. to 11 p.m.	50 dB
Industrial	Anytime	70 dB

(b) If the measurement location is on a boundary property between two different zones, exterior noise level utilized in subsection (a) of this section to determine the exterior standard shall be the daytime exterior noise level of the subject receptor property.

The noise scale associated with the noise level limits presented in Section 16B-5 of the City's Noise Ordinance is not indicated. If one assumes that the levels specified in the Noise Ordinance were the levels that could not be exceeded at any time, the Ordinance would be overly restrictive and almost any use adjacent to a residential use would likely violate the Noise Ordinance limits on a regular basis. It is likely that the City's Noise Ordinance limits are intended to duplicate the County of Los Angeles Noise Ordinance limits. The County's Noise Ordinance base limits are the same as specified in the City's Noise Ordinance. In the County's Ordinance, the base noise level limits are noise levels that cannot be exceeded for 30 minutes in one hour (L50 percentile).

The City's Noise Ordinance (Article II Regulations, Section 16B-3(a)) exempts construction noise from the noise level limits between the hours of 7:00 a.m. and 8:00 p.m. on weekdays. Construction is not allowed on holidays, Saturdays, and Sundays without special approvals or exceptions. The 2012 Final EIR concluded that construction noise, regardless of its level, would be mitigated if construction was limited from 7 a.m. to 7 p.m., Monday through Saturday.

MEASURED NOISE LEVELS

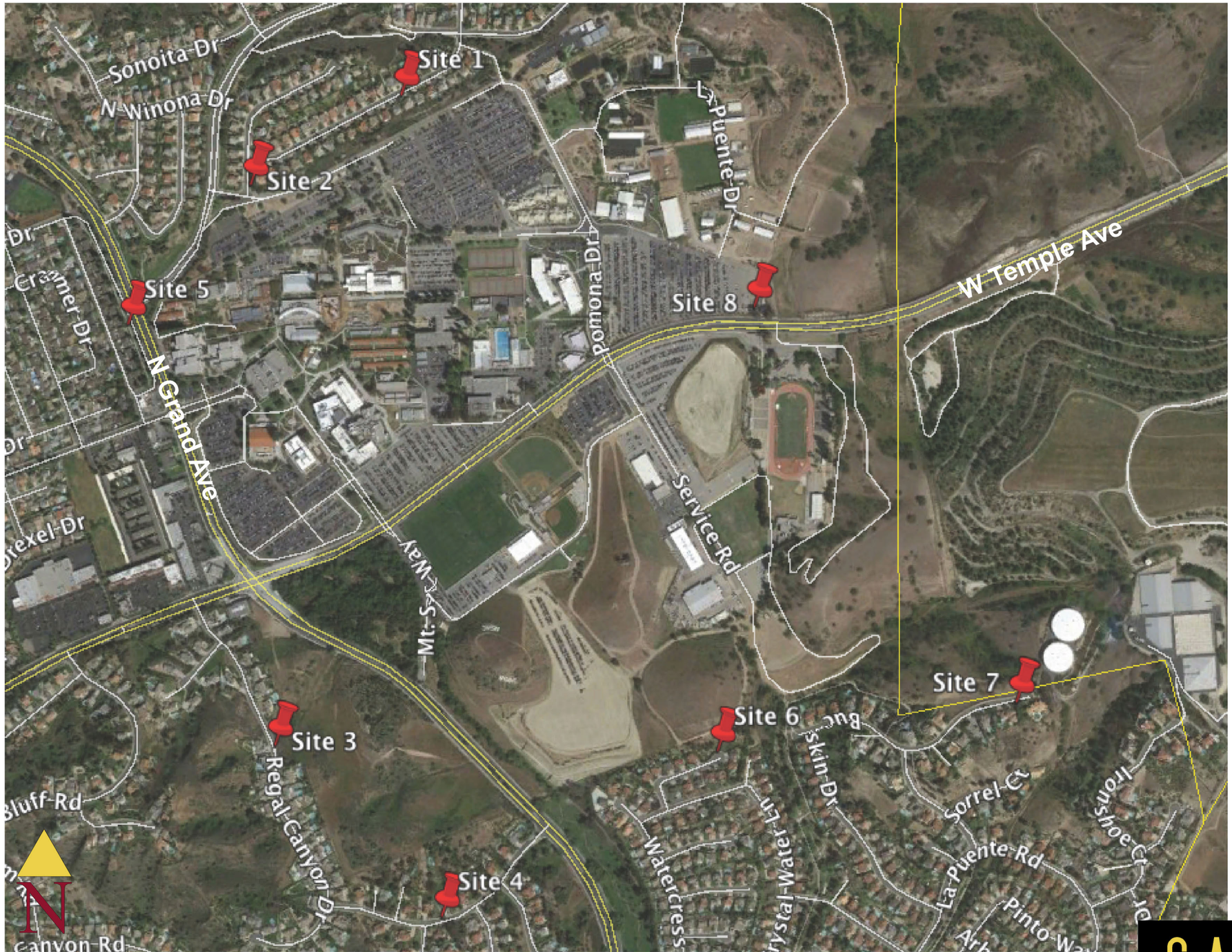
Noise levels were recently measured for many areas surrounding Mt. San Antonio College, and are reported in "Ambient Noise Levels (Report #15-104B)," (memo to Ms. Mikaela Klein, by Greve & Associates, dated August 23, 2015. All measured sites are presented in Exhibit 2. Four of the eight sites measured for the referenced report are relevant to this Project, and the results of the measurements are presented below in Table 1. Specifically, Sites 3, 4, 5, and 8 have relevancy to this Project. Sites 3 and 4 represent residential areas directly adjacent to the WPS site. Sites 5 and 8 are along haul truck routes for the Project.

Details on the methodology for the measurements can be found in the above referenced document. Table 1 shows the results of the measurements for Sites 3, 4, 5, and 8. Specific notes for each site are presented following the table.

Table 1 **Noise Measurement Results (dBA)**

	Site 3	Site 4	Site 5	Site 8
Start Time	1:35p	2:10p	11:24a	2:40p
Leq	46.9	51.8	61.6	59.2
Lmax	66.5	70.9	71.4	68.7
L1.7	57.4	64.5	68.6	65.9
L8.3	47.6	51.2	66.0	64.0
L25	43.1	45.9	62.5	60.8
L50	41.3	44.2	59.8	56.4
L90	38.9	40.1	52.6	46.3
Lmin	37.4	37.6	45.5	42.6

Exhibit 2 - Measurement Sites



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Site 3: Residence at 1131 Regal Canyon Drive.

Site 3 is located across the street from the residence at 1131 Regal Canyon Drive. This site is next to the West Parcel Solar site. A portion of North Grand Avenue can be seen from this site, which is typical for many homes along the West Parcel Solar site. The traffic noise from North Grand Avenue was very faint. This site had an average noise level (Leq) of 46.9 dBA, which is typical for a quiet suburban area. High jet aircraft, cars on Regal Canyon Drive, and low levels of noise from North Grand Avenue were the primary sources of noise.

Site 4: Residence at 21107 Stonybrook Drive.

Site 4 is located in front of the residence at 21107 Stonybrook Drive. This area is also next to the West Parcel Solar site. The small amount of traffic on Stonybrook Drive was the most significant source of noise in the area. This site had an average noise level (Leq) of 51.8 dBA. Other sources of noise experienced in the area included high jet aircraft, wind in the trees, birds, and air conditioners.

Site 5: Residence at 1433 Kem Way.

Site 5 is located in front of the residence at 1433 Kem Way. Kem Way is a frontage road that runs parallel to North Grand Avenue. The dominant source of noise at this site was traffic, including buses, on North Grand Avenue. This was the loudest site measured with an Leq 61.6 dBA, which is typical for an urban area. Other sources of noise in the area were very minor compared to the traffic on North Grand Avenue.

Site 8: Stadium Parking Lot.

Site 8 was the only site monitored that was not representative of a residential neighborhood. Site 8 is located in the southeast corner of the parking lot across West Temple Avenue from the existing stadium. The site is dominated by traffic noise from West Temple Avenue. The site had an average (Leq) noise level of 59.2 dBA. Some low flying general aviation aircraft were also heard during the measurements.

PROJECT NOISE SOURCES AND IMPACTS

A project may generate both construction noise and operational noise after buildout. However, the WPS Project will generate only construction noise but does not generate significant operational noise following buildout.

Construction Noise. Per the 2012 Final EIR, construction generating appreciable noise that would occur outside the hours of 7 a.m. to 7 p.m. on non-holidays, Monday through Saturday, would cause a significant noise impact.

The construction area for the site totals approximately 17.7 acres. The construction of the Project will take a little less than 1 year with an estimated start date of October 2015 and a completion date of July 2016. The following are the likely phases of construction: site preparation, grading with import of fill, final grading, solar panel installation, restoration, and landscaping. The solar panel installation, restoration, and landscaping will likely occur concurrently, while there will be little overlap between the other phases. Each construction phase is discussed below.

Site Preparation. Site preparation will include cacti/duff collection and grub clearing. Likely heavy equipment will include at most a dozer and a backhoe.

Grading with Soil Importation. This construction phase will take about 130 days of work. Some grading may occur prior to importing fill, but most of the time importation of fill will be occurring simultaneously with grading. Heavy equipment during this time will be limited to three scrapers, a dozer, a loader, and a compacter. Approximately 163,571 cubic yards of dirt will be moved to the WPS from the ACE complex area. Export of dirt will require about 20,446 haul truck trips. A round trip for the haul trucks will be 6.6 miles. Hauling of fill material is restricted to 9 a.m. to 2 p.m. weekdays and 8 a.m. to 5 p.m. Saturdays to avoid peak hour traffic (Mitigation Measure 2c in the 2012 FMP Mitigation Monitoring Program). Fill material will be brought to the site via Temple Avenue and Grand Avenue. The trucks will return via Grand Avenue, Valley Boulevard, and Temple Avenue.

Finish Grading. Finish grading will employ up to 4 scrapers, a dozer, and a compactor. Finish grading is anticipated to last 76 workdays.

Solar Panel Installation/Landscaping/Restoration. These three construction phases will likely occur concurrently for most of the time. Solar panel installation is projected to last 76 workdays, while landscaping and restoration are anticipated to each last 62 days. Very little heavy equipment is needed for this work. Three pieces of equipment are estimated for this time period with the equipment being some mix of tractors and backhoes.

Construction Noise Levels. Noise levels at the residential area closest to the WPS construction area were projected. Both maximum sound levels (Lmax) and average (Leq) noise levels were projected. Examples of construction noise are presented in Exhibit 3. The noise levels shown in Exhibit 2 are generally considered to be higher than typically experienced in real-life situations. Therefore, when these levels are used for noise projections, they are considered to be worst-case projections. Noise levels presented in Exhibit 3 were used for the noise projections in this analysis. The type of equipment for each phase has been discussed above, and an asterisk also identifies the equipment to be used in Exhibit 3.

Table 2 presents the noise levels at distances of 50, 200, and 500 feet from residences. (A noise worksheet is included in the Appendix.) Construction equipment could be 50 feet or even closer to residential lot lines on rare occasions. A few slopes need to be constructed that would go very close to residences. The noise levels projected for 50 feet would be representative of when equipment is working on slopes close to residences. Most work will be conducted on and around the main pad. Often the equipment could be located around 200 feet from the residences when these pad areas are being constructed and solar panels being installed. Finally, noise projections are presented for a distance of around 500 feet. This is a common distance from the residences to the center of the pad, and might represent an overall or typical noise level during construction.

Table 2 Construction Noise Levels

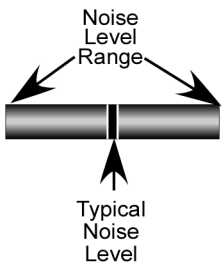
	Site Prep	Grading with Fill Import	Finish Grading	Solar Install/ Restoration/ Landscape
At 50 feet from Residences				
Maximum Levels at Residence (Lmax dBA)	97	97	97	97
Average Noise at Residence (dBA Leq)	86	94	93	85
At 200 feet from Residences				
Maximum Levels at Residence (Lmax dBA)	85	85	85	85
Average Noise at Residence (dBA Leq)	74	82	81	73
At 500 feet from Residences				
Maximum Levels at Residence (Lmax dBA)	77	77	77	77
Average Noise at Residence (dBA Leq)	66	74	73	65

The maximum construction noise levels (Lmax) at the nearest residences may reach up to 97 dBA when construction equipment is very close to the residential perimeter. However, more typically Lmax noise levels would be in the range of 77 to 85 dBA. These temporary noise levels will be considered loud by the residents when they occur. Maximum noise levels will occur when the activities are at their highest, and would be considerably less when quieter equipment is being used and when fewer pieces of equipment are operating. Table 2 noise projections do not account for any noise attenuation provided by the natural terrain or the graded terrain when construction equipment operates at lower elevations. Table 2 assumes noise levels for a direct line-of-sight between the noise source and noise receptor, and thus, are the worst case noise levels anticipated.

Average noise levels (Leq) range from 85 to 94 dBA when equipment is operating very close to residences. More typically average noise levels would be in the 65 to 82 dBA range when the construction equipment is operating at more representative distances. Again these levels might be reached when construction activity levels are highest for that phase.

Exhibit 3 - Construction Noise Levels

LEGEND



Sources: "Handbook of Noise Control,"
by Cyril Harris, 1979
"Transit Noise and Vibration Impact Assessment"
by Federal Transit Administration, 1995

✳ - **Equipment Likely Used During Construction**

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All of the projected temporary noise levels are higher than the ambient noise levels monitored for Sites 3 and 4. The temporary construction noise will be clearly audible. The Project will result in a substantial temporary increase in ambient noise levels in the Project vicinity during construction above existing ambient noise levels. The temporary increase in ambient noise level is more annoying when it occurs in the early morning or late evening hours. Therefore, the most effective means of reducing temporary significant construction noise is to minimize the time construction occurs [i.e. complete it quickly to limit the noise duration exposure or avoid the hours of the day when noise is more annoying for residents (i.e. the early morning, late evening and nighttime sleeping hours)].

Few feasible options exist to reduce the noise levels from construction equipment. One potential solution is to construct temporary sound barriers along the residential areas adjacent to the Project. The fences along the residential perimeter are open grate metal fencing. Approximately 2,800 feet of temporary sound barrier would be needed along the west and south sides of the Project. The barrier would need to be at least 12 feet high. The barrier could be constructed of plywood and/or sound curtains. Unfortunately, only a noise reduction of about 10 dBA will result from a temporary soundwall. A reduction of only 10 dBA would not substantially lessen the temporary noise impact and construction of a sound barrier would be intrusive to the residences and impede all of their views to the east. Therefore, a temporary sound barrier is not recommended.

Although inconsistent with the City's Noise Ordinance, the 2012 Final EIR found and concluded that construction noise, regardless of its level, would be mitigated if construction was limited from 7 a.m. to 7 p.m., non-holidays, Monday through Saturday. Mitigation Measure 5a of the Mitigation Monitoring Plan adopted that limitation for all campus projects. Since Mitigation Measure 5a is applicable to this Project, the Project's construction noise impact is less than significant.

Operational Noise. The solar panels generate no noise, and the only noise onsite will be irregular use of maintenance vehicles (e.g. small trucks) to service the equipment. The Project will not generate significant off-site operational noise during onsite activities on adjacent residential areas after buildout.

Therefore, the siting of a solar project onsite is appropriate and does not conflict with the City of Walnut General Plan and State of California General Plan Appendix C: Noise Element Guidelines. Therefore, the Project will not create any significant operational noise after buildout.

HAUL TRUCK NOISE

Haul trucks will use Temple Avenue, Grand Avenue, and Valley Boulevard. Noise measurements along Grand Avenue (Site 5) and Temple Avenue (Site 8) indicate that the noise levels along major arterial roadways in the area are high. The noise levels along Valley Boulevard would be high also given the high volume of traffic on that road. In particular, many buses were observed along Grand Avenue and Temple Avenue, and these often resulted in short term high noise levels. Since the haul trucks will be using major arterial roadways, and will not be on local residential streets, no significant noise impacts are anticipated along the haul truck routes on adjacent sensitive receptors.

CONCLUSION

As stated previously, the District is not subject to the City's Noise Ordinance pursuant to California Government Code 53091(e). However, construction activities will be conducted in a manner to reduce construction noise levels whenever feasible. This includes scheduling the nosiest activities outside of the more sensitive night, evening or early morning hours.

The 2012 Mitigation Monitoring Program includes the following measures, which are applicable to all campus projects. The original mitigation number index is retained herein. Please note that Mitigation Measure 2c is a traffic mitigation measure to reduce roadway congestion during peak hours. Mitigation 3b prohibits excess idling of construction equipment engines onsite during construction which minimizes both noise and air quality emissions. Once Responsible Agencies that impact conditions of approval upon the Project for biological resource permits have completed their review of the Project, a site-specific Mitigation Monitoring Program will be adopted by the District for this Project.

2c. Prior to issuance of a grading permit, Facilities Planning & Management shall consult with the City of Walnut on a Truck Route Plan for truck hauling activities with more than fifty (50) trucks per day. Hauling of earth materials shall only occur between 9:00 am and 2:00 pm Monday through Friday and between 8:00 am to 5:00 pm on Saturdays to avoid peak hour traffic. Light duty trucks with a weight of no more than 8,500 pounds are exempted from this restriction. Facilities Planning & Management shall ensure compliance.

3b. Project construction contracts shall prohibit vehicle and engine idling in excess of five (5) minutes and ensure that all off-road equipment is compliant with the CARB's in-use off-road diesel vehicle regulations and SCAQMD Rule 1186 and 1186.1. Certified street sweepers or roadway washing trucks, and all internal combustion engines/construction equipment operating on the project site shall meet EPA-Certified Tier 2 emissions standards, or higher according to the adopted project start date requirements. A copy of each unit's certified tier specification, BACT documentation and CARB or SCAQMD operating permit shall be provided to the construction manager at the time of mobilization of each applicable unit of equipment. Facilities Planning & Management shall ensure compliance.

5a. All construction and general maintenance activities, except in emergencies or special circumstances, shall be limited to the hours of 7 a.m. to 7 p. m. Monday to Saturday. Staging areas for construction shall be located away from existing off-site residences. All construction equipment shall use properly operating mufflers. These requirements shall be included in construction contracts and implemented. Facilities Planning & Management shall monitor compliance.

Appendix

Construction Noise

WPS - Construction Noise

	Peak Noise @ 50 ft.	Site Prep	Grading with Fill Import	Finish Grading	Solar Install/ Restore./ Landscape
Front Loader/Dozer/Compact.	97	1	3	2	
Backhoe	93	1			3
Grader/Scraper	96		3	4	
Paver	92				
Truck	97		1		
Concrete Mixer	90				
Concrete Pump	85				
Saw	96				
Distance (ft.)		50	50	50	50
Peak @ 50 ft. (dBA)		97	97	97	97
Peak @ Receptor (dBA)		**97**	**97**	**97**	**97**

	Average Noise @ 50 ft.	Site Prep	Grading with Fill Import	Finish Grading	Solar Install/ Restore./ Landscape
Front Loader/Dozer	85	1	3	2	
Backhoe	80	1			3
Grader/Scraper	85		3	4	
Paver	89				
Truck	88		1		
Concrete Mixer	85				
Concrete Pump	82				
Saw	76				
Distance (ft.)		50	50	50	50
Avg. @ 50 ft. (dBA)		86	94	93	85
Avg. @ Receptor (dBA)		**86**	**94**	**93**	**85**

	Peak Noise @ 50 ft.	Site Prep	Grading with Fill Import	Finish Grading	Solar Install/ Restore./ Landscape
Front Loader/Dozer/Compact.	97	1	3	2	
Backhoe	93	1			3
Grader/Scraper	96		3	4	
Paver	92				
Truck	97		1		
Concrete Mixer	90				
Concrete Pump	85				
Saw	96				
Distance (ft.)		200	200	200	200
Peak @ 50 ft. (dBA)		97	97	97	97
Peak @ Receptor (dBA)		**85**	**85**	**85**	**85**

	Average Noise @ 50 ft.	Site Prep	Grading with Fill Import	Finish Grading	Solar Install/ Restore./ Landscape
Front Loader/Dozer	85	1	3	2	
Backhoe	80	1			3
Grader/Scraper	85		3	4	
Paver	89				
Truck	88		1		
Concrete Mixer	85				
Concrete Pump	82				
Saw	76				
Distance (ft.)		200	200	200	200
Avg. @ 50 ft. (dBA)		86	94	93	85
Avg. @ Receptor (dBA)		**74**	**82**	**81**	**73**

	Peak Noise @ 50 ft.	Site Prep	Grading with Fill Import	Finish Grading	Solar Install/ Restore./ Landscape
Front Loader/Dozer/Compact.	97	1	3	2	
Backhoe	93	1			3
Grader/Scraper	96		3	4	
Paver	92				
Truck	97		1		
Concrete Mixer	90				
Concrete Pump	85				
Saw	96				
Distance (ft.)		500	500	500	500
Peak @ 50 ft. (dBA)		97	97	97	97
Peak @ Receptor (dBA)		**77**	**77**	**77**	**77**

	Average Noise @ 50 ft.	Site Prep	Grading with Fill Import	Finish Grading	Solar Install/ Restore./ Landscape
Front Loader/Dozer	85	1	3	2	
Backhoe	80	1			3
Grader/Scraper	85		3	4	
Paver	89				
Truck	88		1		
Concrete Mixer	85				
Concrete Pump	82				
Saw	76				
Distance (ft.)		500	500	500	500
Avg. @ 50 ft. (dBA)		86	94	93	85
Avg. @ Receptor (dBA)		**66**	**74**	**73**	**65**

Table 1.0
2017 Mt. SAC MITIGATION MONITORING PROGRAM MASTER FILE
CEQA Guidelines Section 15097
October 11, 2017

Notes: Includes all mitigation measures from certified Final EIRS to date cited
Titles revised to conform to revised CEQA Checklist, OPR, August 2016
All prior indices for mitigation measures have been changed

Mitigation Measures	Monitoring Action	Department Responsible
1. Aesthetics		
AES-01. All athletic field lighting (excluding the PEP: Phase 1, 2)) must employ automatic shutoff devices to ensure that facilities are not illuminated unless desired. Lighting levels and design shall comply with the recommendations of the Illuminating Engineers Society Standards of North America (IESN) *Recommended* Practice *for Sports and Recreational Area Lighting* (IESNA RP-6-01), Facilities Planning and Management shall monitor compliance.	Assure light and glare is minimized outside of the athletic fields.	Facilities Planning and Management
AES-02. All new construction contracts shall implement those provisions of the latest Facility Master Plan Landscape Plan applicable to their projects. Facilities Planning and Management shall ensure compliance.	Assuring the campus landscaping plans and guidelines are implemented.	Facilities Planning and Management
AES-03. Hilmar Lodge Stadium (D6) lighting fixtures shall be designed, located, installed, aimed downward or toward structures, and maintained in good order to prevent glare, light trespass, and light pollution offsite. Lighting fixtures shall be mounted, aimed and shielded so that their beams fall within the primary playing area and their immediate surroundings, and so that no significant off-site light trespass is produced. Stadium Lighting (D6) shall adhere to NCAA Lighting Guidelines, the Flex Field (D5) to 50 FC: 2:1 Uniformity, and the Practice Field (D5) to 30 FC 22:1 Uniformity Standards. The Stadium sports lighting shall be turned off as soon as possible following the end of the event and players and spectators are leaving the Stadium. Where feasible, a low-level lighting system shall be used to facilitate spectators leaving the facility, cleanup, nighttime maintenance and other closing activities. Facilities Planning and Management shall ensure	Assure light and glare is minimized outside of the athletic fields.	Facilities Planning and Management

compliance.		
AES-04. The lighting and programming for the soccer fields south of the Observatory (Building 60) shall be reviewed to determine if light and glare can be reduced for Observatory activities on the first Friday of each month for public viewing and on Tuesday, Wednesday nights for student research activities. Facilities Planning and Management shall ensure compliance.	Minimizing conflicts with observatory activities and soccer field lighting.	Facilities Planning and Management
AES-05. Exterior building materials, colors and signage shall be reviewed by the Campus Master Plan Coordinating Team (CMPCT). All construction contracts shall specify these items and implement CMPCT final recommendations. Facilities Planning and Management shall monitor compliance.	Ongoing provision for consistency between projects and the local built environment.	Facilities Planning and Management
AES-06. All future projects included in the 2015 FMPU that are located near the perimeter of the campus shall conform to the Campus Perimeter Night Lighting Guidelines (Table 3.7.12 in Draft EIR). The Guidelines do not supersede California Building Code Section 1205.6, the California Administrative Code Section for the LZA Z, or the Illuminating Engineering Society (IES) G-1-03 Standards for parking and sidewalks/walkway security illumination levels. Facilities Planning and Management shall ensure compliance.	Project compliance to reduce light or glare impacts off-campus.	Facilities Planning and Management
AES-07. All lighting shall be directed site and not spill over into offsite areas. Al construction contracts shall include provisions for defining the lighting for each project and direct light onsite. Facilities Planning and Management shall ensure compliance.	Project compliance to reduce light or glare impacts on and off-campus.	Facilities Planning and Management
2. Air Quality		
AQ-01. All contractors shall comply with all feasible Best Available Control Measures (BACM) *included in* South Coast Air Quality Management District (SCAQMD) *Rule 403:* Fugitive Dust *included in Table* 1: Best Available Control Measures Applicable to All Construction Activity Sources. In addition, the project shall comply with at least one of the following Track-Out Control Options: (a) Install a pad consisting of washed gravel (minimum-size: one inch) maintained in a clean condition to a depth of at least six inches and extending	Ongoing compliance with Rule 403 to reduce air quality emissions.	Purchasing

at least 20 feet wide and 50 feet long, (b) Pave the surface extending at least 100 feet and a width of at least 20 feet wide, (c) Utilize a wheel shaker/wheel spreading device consisting of raised dividers (rails, pipe, or grates) at least 24 feet long and 10 feet wide to remove bulk material from tires and vehicle under carriages before vehicles exit the site, (d) Install and utilize a wheel washing system to remove bulk material from tires and vehicle undercarriages before vehicles exit the site, (e) Any other control measures approved by the Executive Officer and the U.S. EPA as equivalent to the methods specified items (a) through (d) above. Individual BACM in Table 1 that are not applicable to the project or infeasible, based on additional new project information, may be omitted only if Planning Facilities Planning and Management specifies in a written agreement with the applicant that specific BACM measures may be omitted. Any clarifications, additions, selections of alternative measures, or specificity required to implement the required BACM for the project shall be included in the written agreement. The written agreement shall be completed prior to demolition and/or grading for the project. Facilities Planning and Management shall include the written agreement within the Mitigation Monitoring Program for the project and Facilities Planning and Management shall ensure compliance.		
AQ-02. Project construction contracts shall prohibit off-road vehicle and engine idling in excess of five (5) minutes and ensure that all off-road equipment is compliant with the CARB's in-use off-road diesel vehicle regulations and SCAQMD Rule 1186 and 1186.1 certified street sweepers or roadway washing trucks, and all internal combustion engines/construction equipment operating on the project site shall meet EPA-Certified Tier 2 emissions standards, or higher according to the adopted project start date requirements. A copy of each unit's certified tier specification, BACT documentation and CARB or SCAQMD operating permit shall be provided to the construction manager at the time of mobilization of each applicable unit of equipment. Facilities Planning and	Ongoing compliance with CARB and EPA regulations to reduce air quality emissions.	Purchasing

Management shall ensure compliance.		
AQ-03. During construction, contractors shall minimize offsite air quality impacts by implementing the following measures: (a) encourage car pooling for construction workers, (b) limit lane closures to off-peak travel periods, (c) park construction vehicles off traveled roadways, (d) encourage receipt of materials during non-peak traffic hours and (e) sandbag construction sites for erosion control. These requirements shall be included in construction contracts and implemented. Facilities Planning and Management shall monitor compliance.	Ongoing compliance with recommendations to reduce air quality emissions.	Facilities Planning and Management
AQ-04. Truck deliveries and pickups shall be scheduled during off-peak hours whenever possible to alleviate traffic congestion and air quality emissions during peak hours. Facilities Planning and Management shall monitor compliance.	Ongoing compliance with recommendations to reduce vehicle trips during peak hours.	Facilities Planning and Management
AQ-05. During project construction, all off-road diesel-powered construction equipment greater than 50 hp shall meet the EPA-Certified Tier 4 emission standards where available. All construction equipment shall be outfitted with BACT devices certified by CARB. Any emission control devices used by a contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations. A copy of each unit's certified tier specification, BACT documentation and CARB or SCAQQMD operating permit shall be provided by contractors before commencement of equipment use on campus. Facilities Planning and Management shall ensure compliance.	Ongoing compliance with EPA and CARB regulations to reduce diesel particulate emissions.	Facilities Planning and Management
AQ-06. Construction contracts shall specify that all diesel construction equipment used onsite shall use ultra-low sulfur diesel fuel. Facilities Planning and Management shall ensure compliance.	Ongoing compliance with recommendations to reduce diesel engine air quality emissions.	Purchasing
AQ-07. During grading and construction, fugitive dust from construction operations shall be reduced by watering at least twice daily using reclaimed water or chemical soil binder, where feasible, or water whenever substantial dust generation is evident. Grading sites of more than ten gross acres shall be watered at least three times daily. The project shall comply with Rule 403: Fugitive Dust (South Coast Air Quality	Ongoing compliance with SCAQMD regulations to reduce particulate emissions.	Facilities Planning and Management

Management District). Project contractors shall suspend grading operations, apply soil binders, and water the grading site when wind speeds (as instantaneous gusts) exceed 25 miles per hour. Traffic speeds on all unpaved graded surfaces shall not exceed 15 miles per hour. All grading operations shall be suspended during first and second stage smog alerts. All project contracts shall require project contractors to keep construction equipment engines tuned to ensure that air quality impacts generated by construction activities are minimized. Upon request, contractors shall submit equipment tuning logs to Facilities Planning and Management. Facilities Planning and Management shall ensure compliance.		
AQ-08. To reduce VOC emissions, all construction contracts shall limit painting to eight hours per day, specify the use of paints and coatings with a VOC content of 80 grams per liter (g/l) or less. Facilities Planning and Management shall ensure compliance.	Ongoing compliance with SCAQMD regulations to reduce VOC/ROG particulate emissions.	Purchasing
AQ-09. All off-road diesel-powered construction equipment greater than 50 hp (e.g., excavators, graders, dozers, scrappers, tractors, loaders, etc.) used during construction of PEP (Phase 1) shall comply with EPA-Certified Tier IV emission controls where available. The requirements shall be placed in construction contracts. Facilities Planning and Management shall ensure compliance.	Ongoing compliance with SCAQMD regulations for construction NOx emissions.	Purchasing
AQ-10. The college shall obtain all required permits for the Fire Training Academy from the South Coast Air Quality Management District. Fire Technology shall ensure compliance.	Compliance with SCAQMD permits for operation of fire suppression activities at the Training Academy.	Fire Technology
AQ-11. Construction equipment onsite for the West Parcel shall be limited to three scrapers, one loader, one dozer, and one compactor during the “Grading with Importation” phase. A limit of four scrapers, one dozer, and one compactor is required during the “Grading Alone” phase. Facilities Planning and Management shall ensure compliance.	Ongoing compliance with SCAQMD regulations for construction emissions.	Facilities Planning and Management
3. Biological Resources		

BIO-01. New permanent lighting standards in Parking Lot M and Lot W immediately adjacent to sensitive biological habitat areas (i.e. Wildlife Sanctuary/Open Space Zone) shall not exceed 0.2 foot- candles at five (5) feet outside of the parking lot boundary. Facilities Planning and Management shall ensure compliance.	Minimize light intrusion in open space areas.	Facilities Planning and Management
BIO-02. Pre-construction burrowing owl (BUOW) surveys will be conducted to ensure no construction related impacts occur to this sensitive species. A pre-construction survey for BUOW shall be completed for construction areas with suitable habitat for the BUOW Owl (e.g. Irrigation Well site, the Detention Basin site, and the Fire Training Academy site). If clearing, grading, or construction is planned to occur during the BUOW breeding season (February 1 through August 31), pre-construction surveys should be conducted in the construction area and in appropriate habitat within 500 feet of the construction area. A pre-construction nest/owl survey should be completed for each project or work area within 14 days of the start of construction. Multiple pre-construction surveys may be required because the start of specific projects may be separated in time by months or years. If there are no nesting owls, within each area, development would be allowed to proceed. If BUOW are observed, impacts shall be avoided according to the Staff Report on Burrowing Owl Mitigation (CDFW 2012). All recommendations of the final studies shall be implemented. Facilities Planning and Management shall ensure compliance.	Project compliance with CDFG regulations for burrowing owls.	Facilities Planning and Management
BIO-03. Prior to grading within areas of Venturan Coastal Sage Scrub, the college shall identify replacement 2:1 acreage. Replacement habitat shall be installed prior to project completion. Planning and Facilities Management shall ensure compliance.	Project compliance with CDFG regulations for rare and sensitive biological resources.	Facilities Planning and Management
BIO-04. Prior to grading within areas of non-native grassland, the college shall identify replacement 0.5:1 acreage habitat. Replacement habitat shall be completed prior to project completion. Planning and Facilities Management shall ensure compliance.	Project compliance with CDFG regulations for rare and sensitive biological resources.	Project compliance with CDFG regulations for rare and sensitive biological resources.
BIO-05. The college shall adopt a Land Management Plan to minimize impacts on California Black Walnut trees on campus. Any walnut trees with a diameter of six inches four feet above ground damaged or removed by construction activities shall be replaced according to the standards in Table 4 of the Mt. SAC California Black	Project compliance with CDFG regulations for rare and sensitive biological resources. Mitigation Measure 1b. above provides the Conservation Area for replacement of California black walnut trees removed elsewhere on campus.	Facilities Planning and Management

Walnut Management Plan (Helix Environmental Planning, September 2012). Replacement habitat shall be completed prior to project completion. The required mitigation acreage for replacement walnut trees is 2.018 acres. The replacement specimens shall be preserved, maintained and monitored for a period of five years to ensure vitality. Facilities Planning and Management shall ensure compliance.		
BIO-06. Prior to removal of any trees on campus in or near construction areas during March - May, a qualified biologist shall survey the trees for active nesting sites of migratory birds. (See BIO -17 for raptors) If migratory birds are observed nesting in the trees, development within 300 feet must be postponed either until all nesting has ceased, or until construction is moved far away enough so that the activity does not impact the birds. Facilities Planning and Management shall monitor compliance.	Project compliance with Migratory Bird Treaty Act (MBTA).	Facilities Planning and Management
BIO-08. Permanent development adjacent to any future wetland mitigation areas shall incorporate a 25-foot buffer during final project design. If un-vegetated, the buffer shall be planted with non- invasive species that are compatible with the adjacent wetland mitigation area habitat. A qualified biologist shall review the final landscape plans for the buffer area to conform that no species on the California Invasive Plan Council (Cal-IPC) list are present in the plan. Facilities Planning and Management shall monitor compliance.	Project compliance to reduce impacts on wetland habitat areas.	Facilities Planning and Management
BIO-09. The limits of construction for projects adjacent to sensitive habitats should be delineated with silt fencing/fiber rolls and orange construction fencing. A qualified biologist should attend a pre-construction meeting to inform construction crews about the sensitivity of any adjacent habitat. A qualified biologist should also inspect the fencing upon installation and monitor clearing and grading of (and near) native habitat to prevent unauthorized impacts. Facilities Planning and Management shall monitor compliance.	Project compliance to reduce intrusion of construction equipment into sensitive adjacent habitats.	Facilities Planning and Management
BIO-10. Impacts to California Black Walnut trees, if they cannot be avoided, should be mitigated by the replacement of each impacted tree that has a diameter of 6 inches at 4 feet, 6 inches above the ground by a 24-inch boxed specimen (Table 5 in Appendix G1). These trees should be planted in the approved California Black Walnut Management Plan area and preserved, maintained and monitored for two years.	Compliance with impacts on California Black Walnut trees.	Facilities Planning and Management

Planning and Management shall ensure compliance.		
BIO-11. A 25-foot buffer shall be incorporated into the project design for the Fire Training Academy to protect future wetland mitigation areas along Snow Creek. A qualified biologist shall also review the draft landscape plans for the buffer area to confirm that no species on the Cal-IPC list would be present during plan implementation. Facilities Planning and Management shall ensure compliance.	Compliance with efforts to reduce impacts on native habitat and sensitive bird species.	Facilities Planning and Management
BIO-12. When a preliminary site plan for the Fire Training Academy is available, the college shall have a qualified noise consultant evaluate the potential construction and operational noise impacts of the Fire Training Academy on threatened and special status birds in the adjacent coastal sage scrub on MSAC Hill and riparian habitat along Snow Creek. The study shall also assess any noise impacts on residential uses to the south. All recommended mitigation measures of the final report shall be implemented. Facilities Planning and Management shall monitor compliance.	Compliance with efforts to reduce impacts on a threatened or special status bird species.	Facilities Planning and Management
BIO-13. Construction noise adjacent to existing coastal sage scrub habitat within the West Parcel and on MSAC Hill that is retained (i.e. not graded) will be minimized whenever feasible by avoiding construction grading during the prime nesting season. Facilities Planning and Management shall monitor compliance.	Compliance with efforts to reduce impacts on a threatened or special status bird species.	Facilities Planning and Management
BIO-14. Project construction activities shall comply with all requirements included in the Noise Planning for Mt. San Antonio College West Parcel Solar Project, Helix Environmental Planning, June 7, 2016. Facilities Planning and Management shall ensure compliance.	Compliance with efforts to reduce impacts on a threatened or special status bird species.	Facilities Planning and Management
BIO-15. Project construction activities shall comply with all requirements included in the Section 401, 404 permits and the 1602 Agreement for the West Parcel Solar Project. Facilities Planning and Management shall ensure compliance.	Compliance with requirements of state agencies.	Facilities Planning and Management
BIO-16. Erosion control seed mixes and landscape plans for the projects should be reviewed by a qualified biologist prior to final approval to ensure that no species on the California Invasive Plant Council (Cal-IPC) list of problem species would be incorporated into the plan(s). Facilities Planning and Management shall monitor compliance.	Minimizing impact on native habitat from invasive plant species.	Facilities Planning and Management

BIO-17. Raptors may be impacted during construction activities by nest disruption, habitat loss or noise. A pre-construction survey shall be conducted within 14 days of the start of construction. If clearing, grading, or construction will occur from Feb 1 – July 31, pre-construction surveys shall be conducted in the construction area and in appropriate nesting habitat within 500 feet of the construction area. Multiple pre-construction surveys may be required if the start of specific projects is separated in time by months or years. If there are no nesting raptors within each area, development is allowed to proceed. However, if raptors are observed nesting within the area and within sight and sound of the work, development within 300 feet shall be postponed either until all nesting has ceased, until after the breeding season, or until construction is moved far enough away so the activity does not impact the birds. An exception to this would be any raptor nests east of North Grand Avenue. North Grand Avenue is a four-lane road with a landscaped median. Any nests east of the road would likely be habituated to activity from this busy road and unaffected by construction on the West Parcel. Facilities Planning and Management shall monitor compliance.	Project compliance to reduce construction noise impacts on raptors nesting sites.	Facilities Planning and Management
BIO-18. Impacts to coastal cactus wren habitat should be mitigated at 2:1 ratio. That is, for each acre of cacti dominated coastal sage scrub impacted, 2 acres should be created and/or preserved. Facilities Planning and Management shall monitor compliance.	Project compliance to provide replacement habitat for coastal cactus wrens.	Facilities Planning and Management
BIO-19. Construction activities known to generate noise levels capable of disrupting breeding coastal California gnatcatchers birds will be restricted to the non-breeding season (September 1 to February 14). Facilities Planning and Management shall monitor compliance.	Project compliance to reduce construction noise impacts on coastal California gnatcatchers.	Facilities Planning and Management
BIO-20. All construction lighting and new campus lighting that is adjacent to sensitive habitat areas should be of low illumination and be shielded and directed downwards and away from adjacent native habitat. Facilities Planning and Management shall monitor compliance.	Project compliance to reduce intrusive lighting in sensitive habitat areas.	Facilities Planning and Management
BIO-21. The Planting Plan, EPT Design (Sheet L3.01), January 15, 2015 or an update shall be implemented for the West Parcel project. Facilities Planning and Management shall ensure compliance.	Installation of project landscaping following grading of native habitat.	Facilities Planning and Management
BIO-22. Because Mt. SAC is not enrolled as a participant in the NCCP, the District cannot rely on a	Compliance with state and federal regulations for habitat loss and taking of sensitive species.	Facilities Planning and Management

habitat loss permit under Section 4(d) of the federal ESA. Since there is not an existing Habitat Conservation Plan (HCP) for the project site, the "take" of a listed species requires an approved application to the USFWS for issuance of a Section 10 (a) Permit for "incidental" take of endangered or threatened species. Facilities Planning and Management shall ensure compliance.		
BIO-23. The Planting Plan, EPT Design (Sheet L3.01), January 15, 2015 or an update shall be implemented for the Detention Basin area east of the stadium. Facilities Planning and Management shall ensure compliance.	Installation of project landscaping following grading of native habitat.	Facilities Planning and Management
4. Cultural Resources		
CR-01 During construction grading and site preparation activities, the Contractor shall monitor all construction activities. In the event that cultural resources (i.e., prehistoric sites, historic sites, and/or isolated artifacts) are discovered, work shall be halted immediately within 50 feet of the discovery and the Contractor shall inform the Project Manager. A qualified archaeologist that meets the Secretary of the Interior's Standards and Guidelines for Professional Qualifications in Archaeology shall be retained to analyze the significance of the discovery and recommend further appropriate measures to reduce further impacts on archaeological resources. Such measures may include avoidance, preservation in place, excavation, documentation, curation, data recovery, or other appropriate measures. Facilities Planning and Management shall monitor compliance.	Actions if cultural resources are discovered during grading.	Facilities Planning and Management
CR-02. If, during the course of implementing the project, human remains are discovered, all work shall be halted immediately within 50 feet of the discovery, the Contractor shall inform the Project Manager, and the County Coroner must be notified according to Section 5097.98 of the PRC and Section 7050.5 of California's Health and Safety Code. If the remains are determined to be Native American, the coroner will notify the Native American Heritage Commission, and the procedures outlined in CEQA Section 15064.5(d) and (e) shall be followed. Facilities Planning and Management shall monitor compliance.	Actions if human remains are discovered during grading.	Facilities Planning and Management

CR-03. The recommended action for the adverse impact on historic resources and on the Mt. SAC Historic District due to buildout of the 2015 FMPU and the PEP is revision of the Land Use Plan to avoid demolition of a CEQA historic resource. An evaluation of feasible options shall be prepared for CMPCT prior to certification of the Final EIR. The college shall evaluate whether the impacts on 3CD or 3CB buildings proposed for removal or demolition in the recommended District may be reduced to Less than Significant. The alternatives to be considered include: (1) Redesign of the 2015 Facility Master Plan Update to avoid impacting the 3CD or 3CB buildings, (2) Redesign of the 2015 Facility Master Plan Update to reduce the project impacts on 3CD or 3CB buildings to Less than Significant, (3) Redesign of phases of the project to reduce impacts on 3CD or 3CB buildings to Less than Significant as more detailed planning for each phase comes up for review before the Campus Master Plan Coordinating Team (CMPCT), and (4) Evaluation of adaptive reuses of 3CD or 3CB buildings prior to construction. Planning Facilities & Management shall monitor compliance. The Facilities Planning and Management Department shall ensure compliance.	Assuring future projects have been assessed for cultural resource impacts	Facilities Planning and Management
CR-04. If project redesign is not feasible to achieve the Project and College's educational goals and facility needs, the following mitigation shall be implemented to reduce the significant impacts on historical resources: (a) HABS Level II History Report for the (1) Mt. SAC Historic District and for (2) Hilmer Lodge Stadium consistent with the *Historic American Buildings Survey Guidelines for Historical Reports* (National Park Service 2007); (b) HABS Level II Standard Photography following the *Secretary of Interior Standards and Guidelines for Architectural and Engineering Documentation* and HABS specific guidelines for the Mt. SAC Historic District and Hilmer Lodge Stadium; (c) Reproduction of select existing drawings for each building proposed for demolition or alteration following HABS Level II guidelines; (d) Creation of a interpretative	Compliance with mitigation requirements for historic resources.	Facilities Planning and Management

exhibit within Heritage Hall (HH) including not only the history of Hilmer Lodge Stadium, but the entire Historic District as well, and (e) Development of a "Mt. SAC History" section on the campus website. The Facilities Planning and Management Department shall ensure compliance		
CR-05. Prior to demolition, removal, or remodeling of any 3CD or 3CB building on campus, the college shall enlist the services of a qualified architectural historian to prepare the HABS Narrative Historical Report as well as CA DPR 523 forms. Documentation through HABS is an important measure because it allows documentation of the resource before alterations begin. Given the relative historic significance of the resources, Level II HABS is the recommended documentation standard, to be prepared in accordance with the *Secretary of Interior Standards and Guidelines for Architectural and Engineering Documentation* and HABS specific guidelines (http://www.nps.gov/hdp/standards/habsguidelines.htm). A narrative historical report following the *Historic American Buildings Survey Guidelines for Historical Reports* (National Park Service 2007) should be prepared for the (1) Mt. SAC Historic District and (2) Hilmer Lodge Stadium. The college shall enlist the services of a qualified architectural historian to prepare the HABS Narrative Historical Report as well as CA DPR 523 forms. The DPR forms shall be submitted to the State Office of Historic Preservation (via the SCCIC) for their records. All other historic documents shall be made available to the public in the collection of the College's Learning Technology Center, including: the HABS Narrative Historical Report, DPR 523 forms, the *Historic Resources on the Campus of Mt. San Antonio College, Walnut, California* (The Building Biographer, June 1, 2003) and *The Historical Resources Analysis for Five Buildings at Mount San Antonio College, Los Angeles County, Walnut, California* (Davis 2012), and a copy of this report. Facilities Planning and Management shall ensure compliance.	Compliance with mitigation requirements for historic resources.	Facilities Planning and Management
CR-06. Prior to demolition, removal or remodeling of any 3CD or 3CB building, the college shall hire a qualified HABS photographer to provide photo-documentation for the properties on campus identified as 3CD or 3CB which are proposed for removal or	Project compliance with CEQA regulations and SHPO guidelines for historic resources.	Facilities Planning and Management

demolition in the 2012 Facilities Master Plan or 2015 FMP Update. The photo-documentation shall be made available to the public in the collection of the College's Learning Technology Center. The documentation should be done in accordance with the Guidelines provided in the *Photographic Specifications: Historic American Building Survey, Historic American Engineering Record, Division of National Register Programs, National Park Service, Western Region*. Facilities Planning and Management shall ensure compliance.		
CR-07. Prior to demolition, removal or remodeling of any 3CD or 3CB building, the college shall prepare archivally stable reproduction of original as-built drawings. Reproductions of drawings shall be done in accordance with the *Secretary of the Interior's Guidelines for Architectural and Engineering Documentation*. Select existing drawings, where available, may be photographed with large-format negatives or photographically reproduced on Mylar in accordance with the U.S. Copyright Act, as amended. Facilities Planning and Management shall ensure compliance.	Project compliance with CEQA regulations and SHPO guidelines for historic resources.	Facilities Planning and Management
CR-08. To recognize the history of Mt. SAC, part of the facilities for the new Stadium will include Heritage Hall, an area dedicated to historical interpretation of the history of Hilmer Lodge Stadium and the college. The interpretative panels could utilize information from the HABS Level II Narrative Historical Report and large-format photographic documentation. Facilities Planning and Management shall ensure compliance.	Compliance with mitigation requirements for historic resources.	Facilities Planning and Management
CR-09. To further recognition of the history of Mt. SAC, a page or series of pages should be developed for inclusion on the college's website. This project could be completed as a multi-disciplinary school project, prepared by students in the Technology and History departments utilizing the information from the HABS Level II Narrative Historical Report and large-format photographic documentation. Facilities Planning and Management shall ensure compliance.	Compliance with mitigation requirements for historic resources.	Facilities Planning and Management
CR-10. An architectural historian or historical architect meeting the SOI Professional Qualification Standards for either discipline shall review the proposed architectural drawings and renderings of the Library (6), Bookstore (9A) and Technology Center (28 A/B) to ensure compliance with the SOI Treatment of Historic	Compliance with mitigation requirements for historic resources.	Facilities Planning and Management

Properties. The person should be consulted during the early design of the renovation projects to ensure adherence to the Standards and to minimize plan alternations during the design process. Facilities Planning and Management shall ensure compliance.		
5. Energy		
EN-01. An energy management system shall be installed in all new facilities to reduce energy consumption and related pollutant emissions. Facilities Planning and Management shall monitor compliance.	Ongoing compliance with recommendations to reduce energy and air quality emissions.	Facilities Planning and Management
6. Greenhouse Gas Emissions		
GH-01. Future buildings exceeding 20,000 ASF shall have building roof coverings with a minimum three-year aged solar reflectance and thermal emittance, or a minimum reflectance index (SRI) greater than or equal to the values specified in Sections A5.106.11.2.1 and A5 106.11.2.2 or a minimum aged Solar Reflectance Index (SRI) 3 complying with Sections A5.106.11.2.3 as shown in Table A5.106.11.2.1 or A5.106.11.2.2 in Appendix A5 for Non-Residential Voluntary Measures in the 2010 California Green Building Standards Code (CalGreen). Facilities Planning and Management shall ensure compliance.	Ongoing compliance with CalGreen regulations to reduce cumulative GHG emissions in the SCAB.	Facilities Planning and Management
GH-02. Future buildings exceeding 20,000 ASF shall include occupant sensors, motion sensors and vacancy sensors capable of automatically turning off all the lights in an area no more than 30 minutes after the area has been vacated and shall have a visible status signal indicating that the device is operating properly or that it has failed or malfunctioned. The visible status signal may have an override switch that s turns the signal off. In addition, ultrasonic and microwave devices shall have a built-in mechanism that allows the calibration of the sensitivity of the device to room movement in order to reduce the false sensing of occupants and shall comply with either Subsection A5.209.1.4.1 or A5.209.1.4.2 as applicable. These measures are included in Appendix	Ongoing compliance with CalGreen regulations to reduce cumulative GHG emissions in the SCAB.	Facilities Planning and Management

A5 for Non-Residential Voluntary Measures in the 2010 California Green Building Standards Code (CalGreen). Facilities Planning and Management shall ensure compliance.		
GH-03. Future buildings exceeding 20,000 ASF shall include installation of field-fabricated fenestration (i.e. windows) and field-fabricated exterior doors only if the compliance documentation demonstrates compliance for the installation using U-factors from Table A5.205.1-A and Solar Heat Gain Coefficient (SHGC) values from Table A5.205.1-B included in Appendix A5 for Non-Residential Voluntary Measures in the 2010 California Green Building Standards Code (CalGreen). Facilities Planning and Management shall ensure compliance.	Ongoing compliance with CalGreen regulations to reduce cumulative GHG emissions in the SCAB.	Facilities Planning and Management
GH-04. Future buildings exceeding 70,000 ASF shall either have an energy efficiency of 30 percent above Title 24. Part 6 (e.g. Exceed CEC requirements (Performance Approach), based on the 2008 Energy Efficiency Standards by 30 percent and meet the requirements of Division A45.6) or exceed the latest edition of "Savings by Design, Healthcare Modeling Procedures" by 15 percent, in accordance with Section A.5.203.1.2 CalGreen Tier 2 (OSHPD), as listed in Appendix A5 for Non-Residential Voluntary Measures in the 2010 California Green Building Standards Code (CalGreen). Facilities Planning and Management shall ensure compliance.	Ongoing compliance with CalGreen regulations to reduce cumulative GHG emissions in the SCAB.	Facilities Planning and Management
7. Hazards & Hazardous Materials		
HAZ-01. Prior to demolition or remodeling, onsite inspection and sampling in all buildings included in the 2015 Facility Master Plan Update for renovation or demolition shall be completed by a qualified OSHA professional for asbestos contaminated building materials and the presence of lead-based paint. All final recommendations of the final approved report(s) shall be included in construction contracts and implemented. Facilities Planning and Management shall monitor compliance.	Ongoing compliance with OSHA and SCAQMD regulations for ACBM materials or lead-based paint hazards.	Facilities Planning and Management
HAZ-02. All building plans for laboratories on campus	Ongoing compliance with DSA regulations for fire	Facilities Planning and Management

shall be reviewed by the Department of State Architect, the State Fire Marshall and the County of Los Angeles Fire Department (Fire Prevention-Engineering Unit) for fire and hazard safety. All final recommendations of the final approved plan(s) shall be included in construction contracts and implemented. Facilities Planning and Management shall monitor compliance.	and hazard safety in campus laboratories.	
HAZ-03. Prior to construction all proposed storage areas onsite of potential hazardous chemicals and materials and operational plans shall be reviewed by the County of Los Angeles Fire Department. All recommendations of the final approved plans shall be included in construction documents, if applicable and implemented. Facilities Planning and Management shall monitor compliance.	Ongoing compliance with County of Los Angeles Fire Department regulations for storage of potential hazardous chemicals and materials on campus.	Facilities Planning and Management
HAZ-04. All materials generated onsite for the Fire Training Academy that are classified as hazardous by state regulations shall be disposed of consistent with OSHA, CALEPA and LACHA. Fire Technology shall ensure compliance.	Compliance with OSHA, CALEPA and LACHA requirements for operation of fire suppression activities at the Fire Training Academy.	Fire Technology
8. Hydrology/Water Quality		
HYD-01. Future development occurring for buildout of the 2015 FMPU shall install the drainage facilities required by the Utilities Master Plan Infrastructure Plan, as modified by the 2016 Hydrology Study, Psomas May 2016, and Future Hydrology Figure 2d, (Ibid) prior to occupancy. Facilities Planning and Management shall monitor compliance.	Providing adequate drainage facilities for all future development on campus.	Facilities Planning and Management
HYD-02. 7a. The *Master Campus Drainage Plan* shall be updated prior to commencement of grading for the Fire Training Academy and Athletics Education Building projects. The plan shall comply with the *State of California National Pollutant Discharge Elimination System (NPDES) Construction Activities Storm Water Discharge Permit (Construction Permit*) regulations. When construction activities on campus constitute acreage at or above the threshold acreage, the college shall prepare a *Storm Water Pollution Prevention Plan (SWPPP)* and a *Monitoring Program* for the 2012 Facility Master Plan. The *Master Campus Drainage Plan* shall meet any requirements of the County of Los Angeles Department of Public Works and the City of Walnut. All recommendations of the approved final	Ongoing provisions for compliance with Water Quality Management Plans.	Facilities Planning and Management

drainage plan(s) shall be included in construction contracts and implemented. Facilities Planning and Management shall monitor compliance.		
HYD-03. All drainage improvements shall be consistent with the *Master Campus Drainage Plan*. All recommendations of the approved final drainage plan(s) shall be included in construction contracts and implemented. Facilities Planning and Management shall monitor compliance.	Ongoing provisions for compliance with campus drainage plans.	Facilities Planning and Management
HYD-04. Prior to excavation onsite for which the preliminary soils/geology report indicated groundwater may be encountered; any required permit for de-watering shall be obtained from the California Regional Water Quality Control Board, Los Angeles Region. If effluent concentrations exceed permit requirements, a carbon treatment system or equivalent system to remove pollutants shall be utilized prior to discharge. Facilities Planning and Management shall monitor compliance.	Ongoing provisions for compliance with RWQCB regulations.	Facilities Planning and Management
HYD-05. 21b. The college shall obtain all required permits for the Fire Training Academy from the Los Angeles Regional Water Quality Control Board. Fire Technology shall ensure compliance.	Compliance with RWQCB permits for wastewater disposal for Fire Training Academy fire suppression activities.	Fire Technology
9. Land Use/Planning		
LU-01. All future land uses on campus, building locations and square footage (ASF) shall be in substantially consistent with the 2015 Facilities Master Plan Update. Facilities Planning and Management shall monitor compliance.	Ongoing review of consistency between individual projects and 2015 Facility Master Plan Update	Facilities Planning and Management
LU-02. The following Master Plan elements shall be revised to conform to the 2015 Facilities Master Plan Update: (1) Land Use Plan, (2) Conservation Plan, (3) Circulation and Parking Plan. Facilities Planning and Management shall monitor compliance.	Assuring consistency between the 2015 FMPU Land Use Plan and other elements.	Facilities Planning and Management
LU-03. The City of Walnut should revise its General Plan designation for the campus in its next General Plan Update to Community College and the Zoning District to Community College (or another applicable) zoning district so the General Plan and Zoning District are consistent. The Community Development Department of the City of Walnut shall ensure compliance.	Resolving inconsistencies between General Plan designations and campus land uses.	City of Walnut

LU-04. The Facility Master Plan Conservation Plan shall be revised to include approximately 25.6 acre Habitat Mitigation Area for removal of existing California Black Walnut, Coastal Sage Scrub and Non-Native Grassland habitats. Facilities Planning and Management shall monitor compliance.	The adopted Mt. San Antonio College California Black Walnut Management Plan, Helix Environmental Planning, Inc., September 21, 2012 defines the large 25.6 acres area and the smaller initial CBW replacement habit of 2.02 areas (Figure 4).	Facilities Planning and Management
LU-05. Prior to building construction for the Fire Training Academy, the CMPCT shall review the Preliminary Landscaping Plan and a Preliminary Operation and Management Plan for the Fire Training Academy. Facilities Planning and Management shall ensure compliance.	CMPCT oversight of the preliminary plans for the Fire Training Academy.	Facilities Planning and Management
LU-06. Programming for the Auditorium should establish if an adjacent Parking Structure is desirable in Lot B within six months of certification of the Final EIR. A site specific study is required for the Auditorium and/or an adjacent parking structure. Facilities Planning and Management shall ensure compliance.	Provision for potential future parking structure near the Auditorium.	Facilities Planning and Management
LU-07. The District shall submit a grading plan to the City of Walnut for all projects subject to the Walnut Municipal Code Sections 6-5.5 and 6-5.6. The grading plan shall confirm to the requirements of the Walnut Municipal Code Section 6-5.3 and Appendix J Sections J101.7, J108 - J111 of Appendix J. To the extent there is any ambiguity as to scope, the WMC controls over Appendix J. The District shall comply with all requirements of an approved grading plan. Facilities Planning and Management shall ensure compliance. Projects that are exempt from City of Walnut local building, construction and land use controls will comply with City of Walnut grading ordinances regulating drainage improvements and requiring the review and approval of grading plans as these ordinances relate to the design and construction of onsite improvements which affect drainage, road conditions or grading,	Comply with City of Walnut grading standards	Facilities Planning and Management
10. Noise		
NO-01. All construction and general maintenance activities, except in emergencies or special circumstances, shall be limited to the hours of 7 am to 7 pm Monday-Saturday. Staging areas for construction shall be located away from existing off-site residences. All construction equipment shall use properly operating mufflers. These requirements shall be included in construction contracts and implemented. Facilities	Ongoing of limitation on construction hours to reduce construction noise impacts on adjacent areas.	Facilities Planning and Management

Planning and Management shall monitor compliance.		
NO-02. Loudspeaker and other public address systems on campus shall be located and adjusted to register no more than 70 dB Lmax at the nearest offsite residences. Facilities Planning and Management shall monitor compliance.	Ongoing restriction of loudspeaker and public address system noise levels to minimize noise impacts on adjacent areas.	Facilities Planning and Management
NO-03. Weekend special events within any athletic field complex such as tournaments, day-long meets, etc. shall be planned to not begin before 7 am on Saturday or 8 am on Sunday. Event Services shall monitor compliance.	Ongoing restriction of event hours to minimize early morning noise impacts on adjacent areas.	Event Services
NO-04. Concrete pouring for Parking Structure J shall be located as far away from residences as possible. Concrete trucks shall use Bonita Drive and Walnut Drive for access. Construction of the parking structure is limited to the hours of 7 am to 7 pm Monday-Saturday. Planning and Management shall monitor compliance.	Ongoing limitations on location of concrete pouring to minimize noise impacts on adjacent offsite residential areas.	Facilities Planning and Management
NO-05. The college shall adopt policies and post signs in the parking structure indicating vehicles with alarms may be towed from parking areas if alarms sound for more than five minutes. The Public Safety Department shall ensure compliance.	Ongoing restriction on vehicle alarms to minimize noise impacts on adjacent areas.	Public Safety
NO-06. Construction contracts shall specify that construction equipment vibration impacts with a peak particle velocity (PPV) of 0.04 inches per second or more occurring offsite in a sensitive receptor area shall not exceed 15 minutes in any one hour. Facilities Planning and Management shall monitor compliance.	Minimization of vibration offsite for sensitive receptors from construction equipment operations.	Facilities Planning and Management
11. Open Space, Managed Resources and Working Landscapes		
MR-01. All recommendations in the final geotechnical report(s) for projects included in the 2015 Facility Master Plan Update shall be included in construction contracts and implemented. Facilities Planning and Management shall monitor compliance.	Ongoing requirements to assure public safety from seismic hazards.	Facilities Planning and Management
MR-02. During construction grading and site preparation activities, the Contractor shall monitor all construction activities. In the event a paleontological find or a potential paleontological find is discovered, construction activities shall cease and the Contractor shall inform the Project Manager. A qualified paleontologist shall be contacted to analyze the find and recommend further appropriate measures to reduce further impacts on paleontological resources. Facilities Planning and Management shall monitor compliance.	Ongoing during construction	Facilities Planning and Management

MR-03. During construction grading and site preparation activities, the Contractor shall monitor all construction activities. In the event that cultural resources (i.e., prehistoric sites, historic sites, and/or isolated artifacts) are discovered, work shall be halted immediately within 50 feet of the discovery and the Contractor shall inform the Project Manager. A qualified archaeologist that meets the Secretary of the Interior's Standards and Guidelines for Professional Qualifications in Archaeology shall be retained to analyze the significance of the discovery and recommend further appropriate measures to reduce further impacts on archaeological resources. Such measures may include avoidance, preservation in place, excavation, documentation, curation, data recovery, or other appropriate measures. Facilities Planning and Management shall monitor compliance.	Ongoing during construction Please note MR-03 is a duplicate of CR-01.	Facilities Planning and Management
MR-04. The geologist shall require contractors use one or more of the following mitigation measures to improve expansive soils at the site. The measures include: (1) Placement of 2 feet thick of non-expansive soil below finished sub-grade, (2) Pre-saturation of on-site compacted sub-grade soils to at approximate three (3) percent above optimum moisture content or (3) Lime treat the upper two (2) feet of the sub-grade soils. Facilities Planning and Management shall monitor compliance.	Ongoing during West Parcel construction	Facilities Planning and Management
12. Population/Housing		
PH-01. Beginning on January 2016, on January 2020 and every five years, projections of future campus employment shall be forwarded to the Southern California Association of Governments. Human Resources shall monitor compliance.	Ongoing provision for employment projections for SCAG forecasts.	Human Resources
13. Public Services		
PS-01. The net increase in campus wastewater flows shall be projected whenever the Mt. SAC Utility Infrastructure Master Plan (UIMP) is updated for a new campus Facility Master Plan, or within ten years of the last UIMP Update. The District shall obtain the required permits from the Consolidated Sanitation District of Los Angeles County, and pay the required capital facilities	Ongoing provision for adequate sewage capacity in local lines and treatment at regional facilities.	Facilities Planning and Management

fees for the net increase projected in the UIMP Update. Facilities Planning and Management shall ensure compliance.		
PS-02. The Public Safety Department shall project their Department personnel and equipment needs to accommodate the student, staff and facility increases projected in the 2015 Facility Master Plan Update**.** The plan shall provide for student, staff and visitor security upon buildout of the 2015 Facility Master Plan Update. (Expansions of the Code Blue Emergency Phone System and revisions to the assignment of Evening Escorts shall be included in the plan). Public Safety shall ensure compliance	Ongoing provision for maintaining safety for personnel and equipment to serve campus needs at buildout.	Facilities Planning and Management
PS-03. Within six months of certification of the 2015 Final EIR, the Public Safety Department shall complete a security construction plan to address direct and indirect security needs for all construction activities on campus associated with the 2015 Facility Master Plan Update. The special public safety needs of buildings (i.e. demolition, new construction and remodeling), construction sites, transport of construction materials and equipment, construction parking and use of construction equipment shall be addressed. Facilities Planning and Management shall ensure compliance	Ongoing provision for maintaining safety for personnel and equipment to serve campus needs during construction.	Facilities Planning and Management
PS-04. The Athletics Division and the Campus Security Department shall prepare a Security Plan for all new Special Events (i.e. does not include the 2020 Olympic Track & Field Trials) with a maximum daily attendance of 10,000 persons or more. The Security Plan shall be approved by the Board of Trustees a minimum of three (3) months prior to the event. Facilities Planning and Management shall ensure compliance.	Ongoing provision for maintaining safety for personnel and equipment for any future new special events. None are currently planned. -	Facilities Planning and Management
PS-05. The Athletics Division and the Campus Security Department shall prepare a Security Plan for the 2020 Olympic Track & Field Trials. The Security Plan shall be approved by the Board of Trustees a minimum of nine (9) months prior to the event. Facilities Planning and Management shall ensure compliance.	Provision for maintaining safety for guests, athletes, students, faculty, staff and volunteers during the event.	Facilities Planning and Management
14. Transportation		
TR-01 to TR-14 are intersection improvements or ramp improvements required for buildout of the 2015 Facilities Master Plan Update		
TR-01. A second EB right-turn lane shall be added to	Complete required traffic improvements by 2020	Facilities Planning and Management

the Grand Avenue and Cameron Avenue intersection. The City of Industry is the Lead Agency and the County of Los Angeles is an interested agency. The City of Industry shall ensure compliance.		
TR-03. The EB right-turn lane at the Grand Avenue and Temple Avenue intersection shall be converted to a through/right-turn lane. The City of Walnut is the Lead Agency.	Complete required traffic improvements by 2020	Facilities Planning and Management
TR-04. The signal phasing for the Grand Avenue and La Puente Road intersection shall be modified to include an EB right-turn overlap phase (i.e. a right-turn protected arrow). The City of Walnut shall ensure compliance.	Complete required traffic improvements by 2020	Facilities Planning and Management
TR-05. The EB approach shall be restriped to include a dedicated right-turn lane at the Temple Avenue and Mt. SAC Way intersection. The City of Walnut is the Lead Agency.	Complete required traffic improvements by 2020	Facilities Planning and Management
TR-07. When a site plan is completed, a site-specific analysis shall be completed for the Public Transit Center. All recommendations of the traffic analysis shall be completed and the project coordinated with the college, the City of Walnut, the Foothill Transit Agency and if required, the County of Los Angeles Metro Transit Authority. Facilities Planning and Management shall ensure compliance.	Complete required traffic improvements by 2020	Facilities Planning and Management
TR-09. The NB approach of the Grand Avenue and Baker Parkway intersection shall be restriped to include a third through-lane. However, this improvement would not fully mitigate the cumulative impact. The City of Industry is the Lead Agency.	Complete required traffic improvements by 2025	Facilities Planning and Management
TR-10. When the preliminary design of the pedestrian bridge on Temple east of Bonita Avenue is available, it shall be reviewed by the Executive Board of Officers of Associated Students, by CMPCT, by the City of Walnut, and DSA. All recommendations of a site-specific traffic analysis shall be implemented. The Lead Agency is the City of Walnut.	Complete required traffic improvements by 2025	Facilities Planning and Management
TR-11. Convert the existing EB right-turn lane to a through/right-turn lane at the Nogales/Amar Road	Complete required traffic improvements by 2025	Facilities Planning and Management

intersection (#1). There is sufficient roadway width at the intersection departure lane in the eastbound direction to accommodate the third through-lane. The City of Walnut is the Lead Agency.		
TR-12. Restripe the EB approach lane to include a dedicated right-turn lane at the Lemon Avenue and Amar Road intersection (#2). The City of Walnut is the Lead Agency.	Complete required traffic improvements by 2025	Facilities Planning and Management
TR-13. Convert the existing NB right-turn lane to a shared through/right-turn lane at the Grand Avenue and SR-60 EB Ramps (#13). There is sufficient roadway width at the intersection departure in the northbound direction to accommodate the third through lane. The California Department of Transportation is the Lead Agency.	Complete required traffic improvements by 2025	Facilities Planning and Management
TR-14. Modify the traffic signal at the Bonita Avenue and Temple Avenue intersection (#15) to include a NB right-turn overlap phase. The City of Walnut is the Lead Agency.	Complete required traffic improvements by 2025	Facilities Planning and Management
TR-16 to TR-27 are requirements for hosting the 2020 Olympic Track & Field Trials		
TR-16. Facilities Planning and Management, along with the Local Organizing Committee (LOC) shall prepare a Transportation and Parking Management Plan for the 2020 Olympics Track & Field Trials. All campus parking locations and parking or shuttle fees shall be included in the Plan. If needed, additional security shall be provided at off-campus shuttle lots. All parking attendants (i.e. a minimum of one for each lot) shall have communication devices to communicate with a Campus Parking Supervisor. The Executive Board Officers of the Associated Students (AS) of Mt. SAC shall be given an opportunity to review and comment on the preliminary plan. The Plan shall be substantially complete at least a year (12 months) before the Trials begin and be approved by the Board of Trustees. The timeframe relates to the preparation of registration materials and event websites. Facilities Planning and Management shall ensure compliance.	Implement a traffic and parking plan that provides adequate parking, minimizes congestion and provides opportunities for shuttle use.	Facilities Planning and Management

TR-17. Parking lot locations, vehicle occupancy requirements, and Parking Pass fees shall be published in all registration and event materials, on the event websites, and included in all media information. The Local Organizing Committee (LOC) shall hire students part-time as parking attendants or if qualified, as shuttle drivers. Event Services shall monitor compliance.	Distributing information to all registrants, media and the public on parking availability.	Facilities Planning and Management
TR-18. The Local Organizing Committee (LOC) shall provide shuttle bus service as described in Section 3.11.2. The off-campus shuttles shall operate at least three (3.0) hours before the first event of the day for the 2020 Olympic Track & Field Trials and for at least three (3.0) hours after the last event ends. Event Services shall monitor compliance.	Provision for shuttle bus service to reduce vehicle trips during Trials.	Facilities Planning and Management
TR-19. The Local Organizing Committee (LOC) shall conduct two or more workshops for local Chamber of Commerce members and area Hotel Managers at least nine (9) months before the 2020 Olympic Track & Field Trials to inform them of the events, Shuttle Routes and time tables, distribute media packets, answer questions and encourage hotel managers to offer special hotel packages and morning and evening hotel shuttle services between their hotel and the campus free or for a limited fee. The Director of the Local Organizing Committee (LOC) shall ensure compliance.	Distributing information to businesses that provide services to athletics and guests during the event.	Facilities Planning and Management
TR-20. The Transportation and Parking Management Plan for the 2020 Olympic Track & Field Trials shall be based on the information in the Parking Plan in Section 3.11.2. With the stated minimum persons per vehicle, the designated lots provide parking for at least 14,174 guests and 490 faculty/staff on campus during the 2020 Summer Intersession if classes are not in session. The Planning Plan provides sufficient parking without Parking Structure J. The plan shall be refined when the Shuttle Route system is finalized (i.e. TR-19). Facilities Planning and Management shall ensure compliance.	Implement a traffic and parking plan that provides adequate parking, minimizes congestion and provides opportunities for shuttle use.	Facilities Planning and Management
TR-21. If the 2020 Olympic Track & Field Trials are held during the Summer Intersession and classes are in session, the Local Organizing Committee (LOC) shall implement a Parking Plan based on Section 3.11.2.	Implement a traffic and parking plan that provides adequate parking, minimizes congestion and provides opportunities for shuttle use.	Facilities Planning and Management

The Plan shall pre-register faculty and staff for parking on-campus for the week (i.e. not daily). Faculty and staff do not need to pre-register for the weekend. This procedure assures all faculty and staff have easy access to reserved parking during the week. Facilities Planning and Management shall ensure compliance.		
TR-22. During registration for the 2020 Olympic Track & Field Trials, registrants may purchase a Parking Pass for a specific on-campus Parking Lot (e.g. Lot F) for an off-campus Parking Pass (e.g. Cal Poly Pomona, Lanterman Developmental Center, Diamond Bar High School or Walnut High School etc.). Parking Passes will be sold for the entire 10-day event, for Session 1 (Day 1 – 4), Day 5 - 6 or Session 2 (Day 7 – 10). No Parking Passes will be issued for the other off-campus shuttle locations. Each registrant who purchases a Parking Pass shall receive a windshield Parking Pass for a specific Parking Lot. Each Parking Pass shall state the Minimum Persons per Vehicle (e. g., Minimum 3.0 Persons per Vehicle). Registration for Athletes and Officials shall begin two (2) weeks before registration for the general public. Facilities Planning and Management shall ensure compliance.	Implement a traffic and parking plan that provides adequate parking, minimizes congestion and provides opportunities for shuttle use.	Facilities Planning and Management
TR-24. With classes scheduled in the Summer Intersession, the recommenced parking plan for the 2020 Olympics Track & Field Trials is Plan C in Section 3.11.2. The plan shall be refined when the Shuttle Route system is finalized (i.e. SE-04). An updated focused traffic analysis is required. Facilities Planning and Management shall ensure compliance.	Implement a traffic and parking plan that provides adequate parking, minimizes congestion and provides opportunities for shuttle use.	Facilities Planning and Management
TR-25. For additional reduction in pm peak period conflicts between area commuter traffic and 2020 Olympics Track & Field Trials traffic leaving the final event on Friday or Monday during Session 1, the event schedule shall be revised so guest traffic leaves before the commute period begins after the pm peak commute period ends. Either event schedule revision results in reducing the number of pm peak period conflicts by two days, and only two of the ten event days during Session 2 have pm peak conflicts (Table 3.11.8). Facilities Planning and Management shall ensure compliance.	If feasible, revising the preliminary schedule to reduce traffic congestion weekdays during the pm peak period.	Facilities Planning and Management
TR-26. Prior to installation of the Lot F traffic signal, the City of Walnut shall consider lowering the posted travel speed along Temple Avenue near Lot F from 50 mph to 35-40 mph to facilitate access to the Lot F east entry	Consideration of lower posted travel speeds on Temple Avenue when a signal is warranted at Lot F and Temple Avenue.	City of Walnut

driveway. The Public Works Department of the City of Walnut shall monitor compliance.		
TR-27. Prior to completion of Parking Structure J, the northside leg at the Lot F and Temple Avenue driveway shall be widened. Facilities Planning and Management shall ensure compliance.	Complete required traffic improvements when required	Facilities Planning and Management
TR-28 to TR-40 are requirements for general parking, construction, and transportation impacts		
TR-28. Beginning in 2015, whenever a traffic/parking study for a FMP has not been completed in five (5) years, a new parking study shall be completed. The parking study shall specify the total parking supply required and a timeframe for providing the required number of campus parking spaces. Facilities Planning and Management shall ensure compliance.	Ongoing provision for adequate parking based on the college's recommended most recent headcount parking standard.	Facilities Planning and Management
TR-29. Site specific traffic and parking studies are required by the District for all new Special Events (i.e. excluding the 2020 Olympic Track & Field Trials) with projected maximum daily attendance above 15,000 weekdays (excludes Summer Intersession and campus holidays). Facilities Planning and Management shall ensure compliance.	Studies for new Special Events other than the 2020 Olympics Track & Field Trials	Facilities Planning and Management
TR-30. The following recommendations from the 2002 Mt. San Antonio College Parking Lot and Access Study shall be implemented for onsite improvements: (1) Preferential carpool parking permits and spaces for Special Events and/or special recognition of student and faculty achievements, (2) Additional parking spaces for motorcycles, (3) Additional bicycle racks, (4) Bicycle lockers and/or showers and lockers for cyclists, and (5) Evaluation of reduction in free parking, raising parking fees and/or demand parking prices. The evaluation shall be completed by July 1, 2017 and CMPCT shall issue a recommendation to the Board of Trustees by September 1, 2017. Facilities Planning and Management shall ensure compliance.	Provision for parking for alternative modes of transportation.	Facilities Planning and Management
TR-31. For hauling operations of more than 15 trucks per hour or more than 100,000 cubic yards in cities other than the City of Walnut, a Truck Haul Plan (THP) approved by the Director of Facilities Planning and Management, with consultation with adjacent cities, shall be implemented. The Plan shall consider traffic counts, routes, hours/day of hauling, avoidance of am and pm peak hours, intersection geometrics,	Assure pedestrian safety and reduce vehicular congestion along haul routes for campus construction hauling during peak hour traffic. See TR-50 for City of Walnut.	Facilities Planning and Management

access/egress constraints, and pieces construction equipment onsite. Recommendations shall be made concerning all hauling operations to minimize traffic and pedestrian congestion on-campus and off-campus and included in construction logistics plans. If required, all haul trucks shall be radio-dispatched. Light duty trucks with a weight of no more than 8,500 pounds are exempt from the THP requirements. Facilities Planning and Management shall ensure compliance.		
TR-32. Contractors shall submit traffic handling plans and other construction documents to Facilities Planning and Management prior to commencement of demolition or grading. The plans and documents shall comply with the *Work Area Traffic Control Handbook (WATCH)*. Facilities Planning and Management shall monitor compliance.	Ongoing assurance of public safety at or near project construction sites.	Facilities Planning and Management
TR-33. Demolition and construction contracts shall include plans for temporary sidewalk closure, pedestrian safety on adjacent sidewalks, vehicle and pedestrian safety along the project perimeter, and along construction equipment haul routes on campus. These plans shall be reviewed by the Public Safety Department and approved by Facilities Planning and Management. Facilities Planning and Management shall monitor compliance.	Ongoing assurance of public safety at or near project construction sites.	Facilities Planning and Management
TR-34. Demolition and construction contracts shall include plans for construction worker parking areas on campus. Facilities Planning and Management shall monitor compliance.	Ongoing provisions for construction employee parking areas near construction sites or in designated areas with permits.	Facilities Planning and Management
TR-35. Each project site shall be adequately barricaded with temporary fencing to secure construction equipment, minimize trespassing, vandalism, short-cut attractions, and reduce hazards during demolition and construction. Facilities Planning and Management shall monitor compliance.	Ongoing provisions for construction security for individual projects and assurance of public safety.	Facilities Planning and Management
TR-36. Construction contractors shall post a flag person at locations near a construction site during major truck hauling activities to protect pedestrians from conflicts with heavy equipment entering or leaving the project site. Facilities Planning and Management shall monitor compliance.	Ongoing provision for public safety from truck hauling activities near pedestrian paths.	Facilities Planning and Management
TR-37. Upon completion of construction documents, the Public Safety Department shall complete a parking, pedestrian, circulation and signage plan to address direct and indirect public safety needs for parking on campus during the construction period. For each major	Ongoing provision for maintaining adequate parking during construction periods.	Facilities Planning and Management

project, the changing parking demands created by construction, increased student enrollments and new building locations shall be addressed. Facilities Planning and Management shall ensure compliance.		
TR-38. During the preparation of campus grading, landscape and street improvement plans, the sight distance at each project access on campus shall be reviewed with respect to Caltrans standards. Facilities Planning and Management shall monitor compliance.	Provision for sight distances for public safety on campus near construction sites.	Facilities Planning and Management
TR-39. Onsite traffic signing and striping shall be implemented in conjunction with detailed construction plans for the project. Facilities Planning and Management shall monitor compliance.	Provision for required onsite traffic signs and striping.	Facilities Planning and Management
TR-40. The *Master Facilities Transportation Plan* shall be updated and shall specify all revisions and additions to parking areas, parking controls, public bus stops, private shuttle operations, shuttle stops and signage within the campus needed for buildout of the 2015 Facility Master Plan Update. All recommendations of the approved transportation plan shall be included in construction contracts and implemented. Facilities Planning and Management shall monitor compliance.	Provision for adequate transportation facilities and services for buildout of the 2015 Facility Master Plan Update.	Facilities Planning and Management
TR-41 to TR-48 are requirements for public transit impacts		
TR-41. The Bursar Office at Mt. San Antonio College shall participate in the Metrolink College Student Discount Pass Program. Registration materials for each term shall inform student of its availability. Auxiliary Services shall monitor compliance.	Ongoing provision for bus passes for campus students.	Auxiliary Services
TR-42. Schedule/fee information for Foothill Transit (including the Go Pass), Metrolink and the County of Los Angeles Metropolitan Transit Authority shall be made available for students for each semester. Auxiliary Services shall monitor compliance.	Ongoing provision for up to date information on area transportation services.	Auxiliary Services
TR-43. The Campus Master Plan Coordination Team (CMPCT) shall review the preliminary site plan for the Public Transportation Center and recommend any changes needed in the Pedestrian Circulation and Vehicular Circulation exhibits in the 2015 Facility Master Plan Update to provide safe pedestrian paths, including Americans with Disability Act requirements for students to access the Public Transportation Center. Facilities Planning and Management shall ensure compliance.	Ongoing provision for adequate pedestrian paths and vehicular circulation near the Public Transit Center.	Facilities Planning and Management

TR-44. The Student Senate shall be given an opportunity to review and comment on all campus public transit center projects prior to CMPCT final review. Facilities Planning and Management shall ensure compliance.	Provision for student comment on the Public Transit Center facilities and services.	Facilities Planning and Management
TR-45. The Mt. San Antonio College District shall complete a Memorandum of Understanding (MOU) with participating transit agencies for campus public transit center projects. The MOU shall specify all financial, legal, insurance, operation and maintenance responsibilities for each party. Facilities Planning and Management shall ensure compliance.	Provision for legal agreements for operation and funding of the Public Transit Center.	Facilities Planning and Management
TR-46. The District shall negotiate an agreement with additional transit agencies serving the campus to provide an unlimited bus pass for a fixed student transportation fee per semester by January 1, 2018. Facilities Planning and Management shall ensure compliance.	Complete required traffic improvements by 2018	Facilities Planning and Management
TR-47. The Executive Board of Associated Students shall be given an opportunity to review and comment on campus public transit center issues prior to CMPCT final review. Facilities Planning and Management shall ensure compliance.	Provide opportunities for student feedback on preliminary plans for the public transit center.	Facilities Planning and Management
TR-48. The College shall meet with Cal Poly to discuss a joint Cal Poly campus shuttle service by July 1, 2017. Facilities Planning and Management shall monitor compliance.	Explore opportunities for shuttle use between Mt. SAC and Cal Poly.	Facilities Planning and Management
TR-49 to TR-58 are requirements for other transportation issues		
TR-49. When traffic access is allowed (gate controlled) at the southside leg of the Temple Avenue and Lot F driveway, manual traffic control (campus or City provided traffic control personnel) shall be utilized. The Athletics Department and Facilities Planning and Management shall ensure compliance.	Provision for required traffic controls along Temple Avenue at the Lot F intersection during special events when the Lot F intersection is not signalized.	Athletic Department and Facilities Planning and Management
TR-50. The District shall submit an application for a truck hauling plan prepared by a registered traffic engineer to the City of Walnut for all projects subject to the Walnut Municipal Code Sections 6-8. In general, WMC 6-8 addressed projects moving more than 5,000 cubic yards of earth on any public roadway. The	Compliance with requirement to submit Grading Plan and Truck Hauling Plan for City of Walnut review.	Facilities Planning and Management

District shall comply with all requirements of an approved truck hauling plan. Facilities Planning and Management shall ensure compliance.		
TR-51. Programming for the Auditorium should establish if an adjacent Parking Structure is desirable in Lot B within six months of certification of the Final EIR. A site specific study is required for the Auditorium and/or an adjacent parking structure. Facilities Planning and Management shall ensure compliance.	Explore advance planning needs for an additional parking structure near the Auditorium.	Facilities Planning and Management
TR-52. The City of Walnut shall consider restricting left-turn movements eastbound along Amar Road east of Country Hollow during the am peak hour, implementation of a resident parking program or restrictions on street parking during certain hours, to minimize student-related traffic in the adjacent neighborhoods west of Grand Avenue south of Collegewood Drive. The Public Works Department of the City of Walnut shall monitor compliance.	Provision for required vehicle turning movement restrictions for vehicular safety.	City of Walnut
TR-53. Truck hauling for Phase 2 grading of the PEP site shall be limited to 8 hours a day and a maximum of 18 trucks per hour. Facilities Planning and Management shall ensure compliance.	Truck hauling for PEP (Phase 2)	Facilities Planning and Management
TR-54. When a site plan is completed, a site specific analysis shall be completed for the Public Transit Center. All recommendations of the traffic analysis shall be completed and the project coordinated with the college, the City of Walnut, the Foothill Transit Agency and if required, the County of Los Angeles Metro Transit Authority. Facilities Planning and Management shall ensure compliance.		
TR-55. The Public Safety Department shall update their evacuation plans for an extreme emergency by January 1, 2017. The updated emergency evacuation plan shall refine the preliminary plan included in the Final EIR and distribute vehicular traffic from campus lots to Grand Avenue and Temple Avenue in the most efficient and safe manner as possible. Public safety officers shall be deployed to pre-assigned locations and tasks to direct vehicular traffic in pre-determined directions defined in the plan. Facilities Planning and Management shall ensure compliance.	Update emergency evacuation plans for immediate campus evacuation of all parked vehicles.	Facilities Planning and Management
TR-57. Beginning in 2015, whenever a traffic/parking study for a Facilities Master Plan has not been completed in five (5) years, a new parking study shall be completed. The parking study shall specify the total	Providing ample parking supply when enrollment changes.	Facilities Planning and Management

parking supply required and a timeframe for providing the required number of campus parking spaces. Facilities Planning and Management shall ensure compliance.		
TR-59. The Public Safety Department shall keep the Sheriff Department informed of anticipated major changes in circulation patterns, parking, and any special security needs related to campus construction and operation. Public Safety shall monitor compliance.	Communication with Sheriff Department	Public Safety Department
TR-60. A new traffic signal at the Kellogg Drive and Interstate-10 intersection shall be operational by 2020. *The California Department of Transportation District 7 is t*he Lead Agency.	Reduce cumulative impact to acceptable LOS	California Department of Transportation District 7
TR-61. The westbound approach at the Campus Drive and Temple Avenue intersection shall be restriped to convert the westbound right-turn lane to a shared through/right-turn lane by 2020. The District shall fund this improvement. The City of Pomona is the Lead Agency.	Reduce project impact at local intersection off-campus.	City of Pomona
TR-62. During the truck hauling period, the City of Walnut shall adjust the traffic signal timing at the Temple Avenue and Grand Avenue intersection from 9:00 am to 3:00 pm by laggings the WB Temple Avenue left-turn movement, posting a "No Right Turn on Red" sign for the eastbound Amar Road approach and adding MUTCD C44 (CA) "Trucks Entering Exiting" Sign along Grand Avenue at the north and south West Parcel driveways. The City of Walnut shall ensure compliance.	During truck hauling period for the West Parcel Solar project only.	Facilities Planning and Management
15. Utilities/Service Systems		
SS-01: Within six months of certification of the Final EIR, the Utilities Master Infrastructure Plan shall be updated to accommodate the projected 2019 – 2020 student enrollment and the facilities included in the buildout of the Facilities Master Plan Update in 2020. Facilities Planning and Management shall monitor compliance.	Resolution of phasing issues related to infrastructure, new facilitates and student enrollment increases.	Facilities Planning and Management
SS-02. The *Master Facilities Infrastructure Plan* shall be revised for buildout of the 2015 Facility Master Plan Update. The plan shall specify all revisions and additions to water lines from Three Valleys Municipal Water District's PM-1 connector to the campus, and lines within the campus needed for buildout of the 2015 Facility Master Plan Update. All recommendations of the approved infrastructure plan shall be included in	Ongoing provision for ample water supplies on campus.	Facilities Planning and Management

construction contracts and implemented. Facilities Planning and Management shall monitor compliance.		
SS-03. The college shall obtain permits and water commitments required by the Three Valleys Municipal Water District for water service to all projects. These requirements shall be included I construction contracts. TVMWD has requested advance notification whenever demand may increase by more than 50 percent so future planning may be completed. Facilities Planning and Management shall monitor compliance.	Ongoing provision for ample water supplies on campus.	Facilities Planning and Management
SS-04. The *Master Facilities Infrastructure Plan* shall be updated and shall specify all revisions and additions to sewer lines within the campus needed for buildout of the 2015 Facility Master Plan Update. All recommendations of the approved infrastructure plan shall be included in construction contracts and implemented. Facilities Planning and Management shall monitor compliance.	Ongoing provision for adequate sewer line capacity on campus.	Facilities Planning and Management
SS-05. The *Master Facilities Infrastructure Plan* shall be updated and shall specify all revisions and additions to the electrical distribution system within the campus needed for buildout of the 2015 Facility Master Plan Update. All recommendations of the approved infrastructure plan shall be included in construction contracts and implemented. Facilities Planning	Provision for adequate electrical system for buildout of the 2015 Facility Master Plan Update.	Facilities Planning and Management
SS-06. For each project, the college shall obtain all approval(s) required by Southern California Edison for electrical service. These requirements shall be included in construction contracts for each project. Facilities Planning and Management shall monitor compliance.	Ongoing provision for electrical service for new projects from SCE.	Facilities Planning and Management
SS-07. For each project**,** the college shall obtain all permits required by the Southern California Gas Company for natural gas service. These requirements shall be included in construction contracts and implemented. Facilities Planning and Management shall monitor compliance.	Ongoing provision for natural gas service for new projects from SCG.	Facilities Planning and Management
SS-08. The *Master Facilities Infrastructure Plan* shall be updated and shall specify all revisions and additions to solid waste collection systems, storage and transfer within the campus needed for buildout of the 2015 Facility Master Plan Update. All recommendations of the approved infrastructure plan shall be included in construction contracts and implemented. (Contracts with independent trash haulers are not included in these requirements). Facilities Planning and Management shall monitor compliance.	Provision for adequate solid waste facilities on campus for buildout of the 2015 Facility Master Plan Update.	Facilities Planning and Management

Source: SID LINDMARK, AICP, July 28,2017

Memorandum

Date: September 18, 2015

To: Ms. Mikaela Klein, Mt. San Antonio College

From: Fred Greve, Greve & Associates, LLC

Subject: West Parcel Solar Project – Vibration Analysis (Report #15-107A)

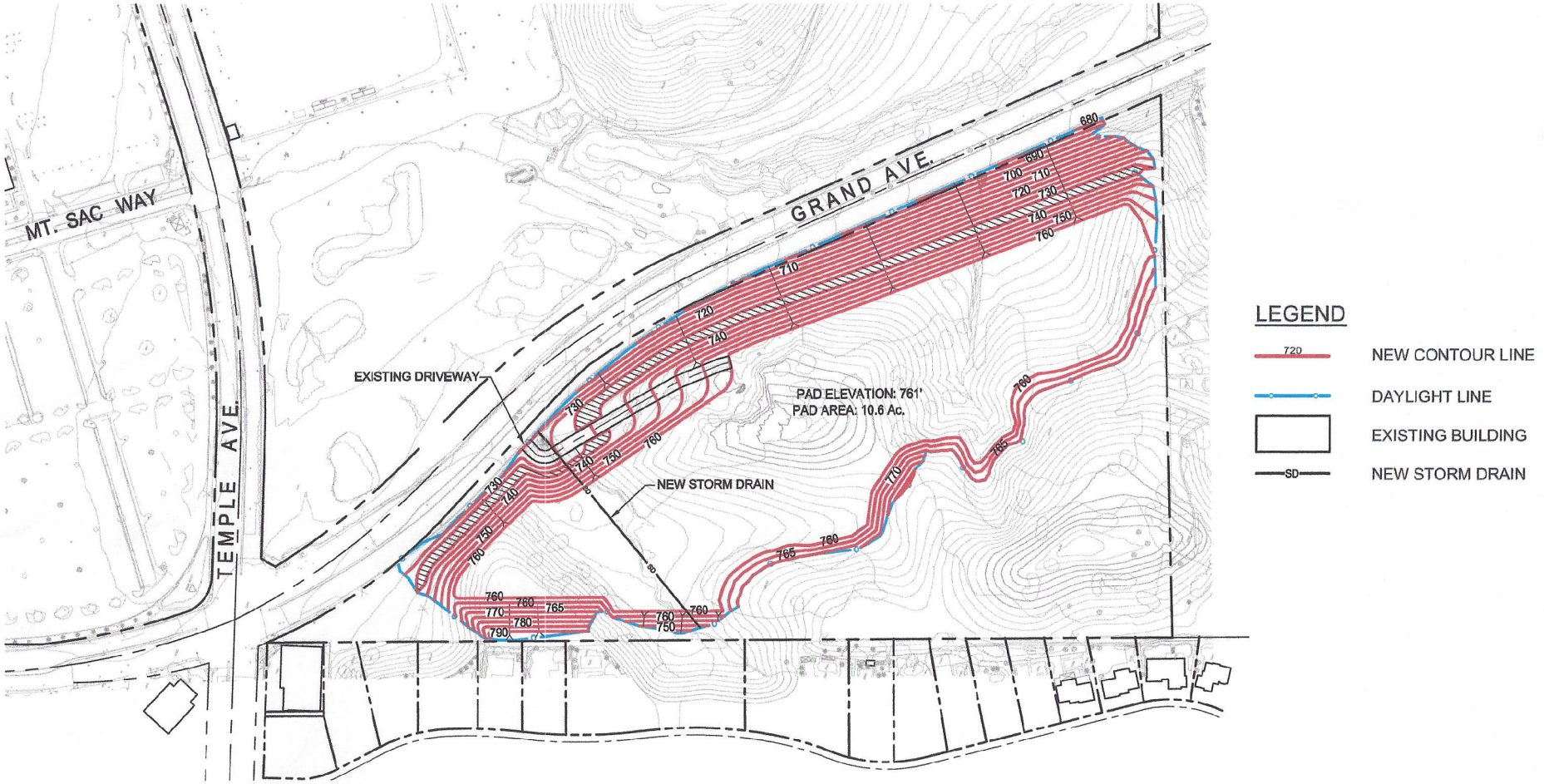
The analysis presented below examines the potential vibration impacts of the construction of the West Parcel Solar (WPS) project. The project will construct solar panels with a capacity of approximately 2.0 MW. The entire site is approximately 27.7 acres, and approximately 17.7 acres of the site will be graded. Substantial grading and import of dirt will be required for the project. The current grading estimates are 172,708 cubic yards of cut, 336,279 cubic yards of fill with a net import of 163,571 cubic yards. The import fill will come from the Athletic Complex East (ACE) area. The WPS site is a triangular parcel southwest of North Grand Avenue, east of homes along Regal Canyon Drive, and north of homes along Stonybrook Drive (refer to Exhibit 1). The main pad for the solar pads will be lower in elevation than the nearby homes, but some grading close to homes along Regal Canyon Drive will be necessary to construct slopes.

VIBRATION CRITERIA

In describing vibration in the ground and in structures, the motion of a particle (i.e., a point in or on the ground or structure) is used. The concepts of particle displacement, velocity, and acceleration are used to describe how the ground or structure responds to excitation. Although displacement is generally easier to understand than velocity or acceleration, it is rarely used to describe ground and structure borne vibration because most transducers used to measure vibration directly measure velocity or acceleration, not displacement. Accordingly, vibratory motion is commonly described by identifying the peak particle velocity (PPV). PPV is generally accepted as the most appropriate descriptor for evaluating the potential for building damage. The usual units of PPV are inches per second (in/sec).

638 CAMINO DE LOS MARES, SUITE H130-153, SAN CLEMENTE, CA 92673
VOICE: 949•466•2967 EMAIL: fred@greveandassociates.com

Exhibit 1 - Site Plan



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The California Department of Transportation (Caltrans) has published the "Transportation and Construction-Induced Vibration Guidance Manual" (June 2004). This document has become the standard by which construction projects are evaluated for their vibration potential in California.

The most critical concern is whether the use of heavy equipment will cause damage to surrounding buildings. The Caltrans manual identifies threshold criteria for vibration damage potential for various building types. Six categories are identified ranging from extremely fragile historic buildings to modern industrial buildings. The buildings surrounding the project site fall into one of two categories; new residential structures or modern commercial buildings. Both of these categories have a PPV threshold of 0.5 in/sec. Any vibration above this threshold would be considered as a significant impact.

The Caltrans manual also discusses the potential for feeling the vibration generated by the pile driving. Since the ability to feel the vibration is a short-term impact, this is considered to be more of an annoyance issue rather than an impact. The manual provides four categories for annoyance potential criteria. The criteria are presented in Table 1 .

Table 1 Vibration Annoyance Potential Criteria

Human Response	Maximum PPV (in/sec)
Barely Perceptible	0.01
Distinctly Perceptible	0.04
Strongly Perceptible	0.10
Severe	0.40

PROJECT INFORMATION/METHODOLOGY

The likely equipment to be used for the grading of the site includes scrapers, dozers, loaders and trucks. Outside of grading activities, very little heavy equipment will be used and vibration will not be a concern.

The Caltrans manual (referenced previously) provides a methodology for estimating the PPV value at a nearby receptor. The methodology uses (1) the distance from the equipment to the receptor, (2) the PPV of the equipment at 25 feet, and (3) an "n" value for the intervening ground. The distance to the receptors were measured off of the site plan and Google Earth. PPV values for a few pieces of equipment are provided in the Caltrans manual. Values for a large dozer, loaded truck, and a small dozer are provided in the manual, and probably cover

the range of heavy equipment that might be used during the grading phase. For these equipment Caltrans recommends an n value of 1.1. Caltrans points out that vibration from this equipment originates near the ground surface, and therefore modifying the n value may not be applicable. Caltrans also points out that an n value of 1.1 is very conservative (worst-case), and that other agencies such as the Federal Transit Administration (FTA) use a less conservative value of 1.5. The Caltrans equations were then used to project the vibration level at four distances. Specifically, the distances from equipment to homes modeled were 50, 200, and 500 feet. The 50 foot distance represents equipment operating very close to the homes which would happen on a very limited basis. Equipment may operate for extended periods of time at around 200 feet from residences. A 500 foot distance represents roughly the distance from the center of the solar panel site to the residences along Regal Canyon Drive.

RESULTS AND DISCUSSION

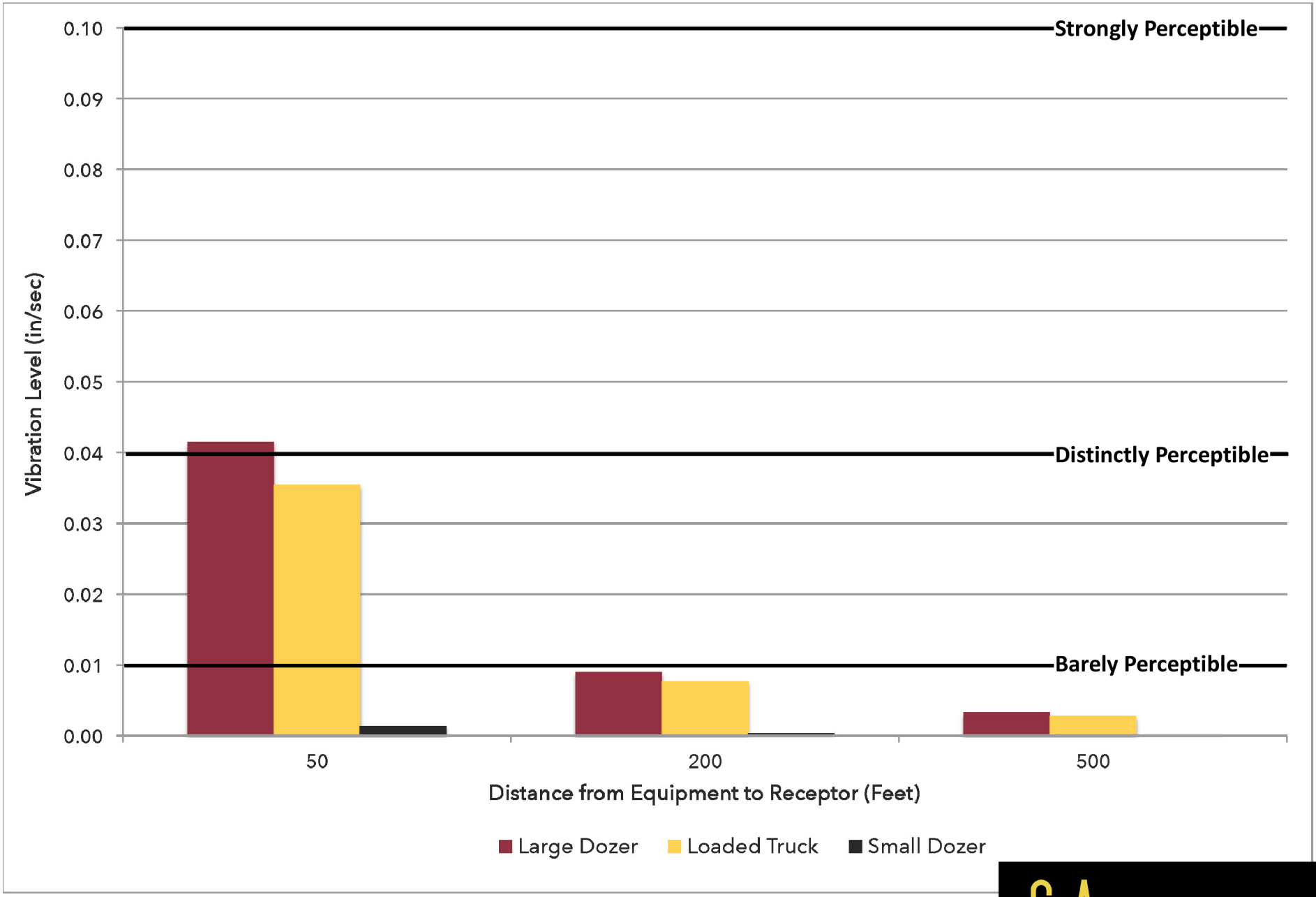
The PPV was calculated for three types of heavy equipment at three distances. The results are presented in Table 2 and in Exhibit 2. The PPV values range from 0.0001 to 0.04 inches per second.

Table 2 Vibration Potential at Key Sites

	Distance from Equipment to Receptor (Feet)		
Equipment	**50**	**200**	**500**
Large Dozer	0.04	0.01	0.003
Loaded Truck	0.04	0.01	0.003
Small Dozer	0.001	0.0003	0.0001

The vibration potential levels can be compared to the threshold for structural damage. The structural damage threshold is 0.50 in/sec. The highest forecast vibration level is 0.04 in/sec, and might occur when a large piece of heavy equipment must come near a residence. This level is well below the 0.50 in/sec threshold, and therefore, no structural damage is anticipated and no significant impacts will occur.

Exhibit 2 - Vibration Levels



G&A

The ability to detect vibration is also considered because of its potential for annoyance. On those occasions where a large piece of heavy equipment must operate near a home, the vibration is projected to reach 0.04 inches per second, which would be "distinctly perceptible." Smaller pieces of equipment, such as a small dozer, could operate within a 50 of a residence and it would have a vibration level of 0.001 inch per second and not be perceptible. The larger heavy equipment operating at 200 feet would be barely perceptible, and smaller equipment would not be perceptible at all. All equipment operating at 500 feet or more would not be perceptible. Since the pile driving activities are short term in nature, annoyance due to the ability to detect vibration is usually not used as the determinant for impacts. Few options are available for reducing vibration levels if it is desired.

MITIGATION MEASURES

No significant impacts are projected, and therefore, no mitigation measures are proposed.

Appendix

Vibration Calculation Sheet

Vibration Calculations for West Parcel Solar

	Distance from Equipment to Receptor (Feet)		
Equipment	**50**	**200**	**500**
Large Dozer	0.04	0.01	0.003
Loaded Truck	0.04	0.01	0.003
Small Dozer	0.001	0.0003	0.0001

General Data

"n" value		1.1	
Large Dozer	Reference PPV	0.089	in/sec @ 25 feet
Loaded Truck	Reference PPV	0.076	in/sec @ 25 feet
Small Dozer	Reference PPV	0.003	in/sec @ 25 feet

PSOMAS

DRAFT Project Specific
Water Quality Management Plan

For: **Mt. SAC South Campus Improvements – West Parcel**

1100 N. Grand Ave.
Walnut, CA 91789

Prepared for:

Mt. San Antonio College
1100 North Grand Avenue
Walnut, CA 91789
Telephone: 909-274-7500

Prepared by:
Michael Mulgrew, Project Engineer
Psomas
555 South Flower St., Suite 4300
Los Angeles, CA 90071-2405
Telephone: 213-223-1400

WQMP Preparation/Revision Date: July 2, 2015

OWNER'S CERTIFICATION

This project-specific Water Quality Management Plan (WQMP) has been prepared for Mt. San Antonio College by Psomas for the project known as South Campus Improvements - West Parcel at 1100 N. Grand Ave., Walnut, CA 91789.

This WQMP is intended to comply with the requirements of the County of Los Angeles which includes the requirement for the preparation and implementation of a project-specific WQMP.

The undersigned, while owning the property/project described in the preceding paragraph, shall be responsible for the implementation of this WQMP and will ensure that this WQMP is amended as appropriate to reflect up-to-date conditions on the site. This WQMP will be reviewed with the facility operator, facility supervisors, employees, tenants, maintenance and service contractors, or any other party (or parties) having responsibility for implementing portions of this WQMP. At least one copy of this WQMP will be maintained at the project site or project office in perpetuity.

The undersigned is authorized to certify and to approve implementation of this WQMP. The undersigned is aware that implementation of this WQMP may be enforceable under County of Los Angeles Water Quality Ordinance.

If the undersigned transfers its interest in the subject property/project, its successor in interest the undersigned shall notify the successor in interest of its responsibility to implement this WQMP.

"I, the undersigned, certify under penalty of law that the provisions of this WQMP have been reviewed and accepted and that the WQMP will be transferred to future successors in interest."

Owner's Signature	Date
Mikaela Klein	Senior Facilities Planer
Owner's Printed Name	Owner's Title/Position

Mt. San Antonio College
1100 North Grand Avenue
Walnut, CA 91789
Telephone: 909-274-7500

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APPENDICES

A. VICINITY MAP, WQMP SITE PLAN, AND RECEIVING WATERS MAP

B. SUPPORTING DETAIL RELATED TO HYDRAULIC CONDITIONS OF CONCERN

C. EDUCATIONAL MATERIALS

D. SOILS REPORT (FOR FILL PLACEMENT ONLY AT THIS TIME)

E. TREATMENT CONTROL BMP SIZING CALCULATIONS AND DESIGN DETAILS

F. AGREEMENTS (WHEN AVAILABLE) – CC&RS, COVENANT AND AGREEMENTS AND/OR OTHER MECHANISMS FOR ENSURING ONGOING OPERATION, MAINTENANCE, FUNDING AND TRANSFER OF REQUIREMENTS FOR THIS PROJECT-SPECIFIC WQMP

DRAFT

I. Project Description

Project Owner: Mt. San Antonio College
1100 North Grand Avenue
Walnut, CA 91789
Telephone: 909-274-7500

WQMP Preparer: Michael Mulgrew, Project Engineer
Psomas
555 South Flower St., Suite 4300
Los Angeles, CA 90071-2405
Telephone: 213-223-1400

Project Site Address: 1100 North Grand Avenue
Walnut, CA 91789

Development Name: Mt. San Antonio College

APN Number(s): 8709-023-917

Thomas Bros. Map: 639 G4

Project Watershed: San Gabriel River

Sub-watershed: San Jose Creek Reach 2

Project Site Size: 27 acres

Standard Industrial Classification (SIC) Code: N/A

Formation of Home Owners' Association (HOA) or Property Owners Association (POA):

Y ☐ N ☒

Additional Permits/Approvals required for the Project

AGENCY	Permit required
State Department of Fish and Game, 1602 Streambed Alteration Agreement	Y ☒ N ☐
State Water Resources Control Board, Clean Water Act (CWA) section 401 Water Quality Certification	Y ☒ N ☐
US Army Corps of Engineers, CWA section 404 permit	Y ☒ N ☐
US Fish and Wildlife, Endangered Species Act section 7 biological opinion	Y ☒ N ☐
Other *(please list in the space below as required)*	

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The Mt. SAC South Campus West Parcel project consists of rough grading activities, a new access roadway from an existing driveway, and associated drainage improvements on a 27-acre portion of the campus in order to construct an approximate 10-acre pad for a future solar array; no other structures are proposed for the project site. No materials will be stored on site; no waste is anticipated to be generated by project activities.

Mt. SAC is located in the San Gabriel Valley in southeast Los Angeles County, California, approximately 1.5 miles south of Interstate 10 and 2.5 miles west of State Route 57. The college is situated near the intersection of North Grand and Temple Avenues in the City of Walnut. It is within unsectioned land, Township 2 South, Range 9 East on the U.S. Geological Survey 7.5-minute San Dimas quadrangle map. Refer to Appendix A for a Vicinity Map, Site Plan, and Receiving Waters Exhibit identifying the following:

- Project site location and surrounding areas
- Location and identification of all structural BMPs
- Landscaped areas
- Paved areas
- Location of existing and proposed public and private storm drainage facilities
- Location of Receiving Waters to which the project directly or indirectly discharges
- Post-project topography

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II. Site Characterization

Land Use Designation or Zoning: School

Current Property Use: Undeveloped

Proposed Property Use: Solar array

Availability of Soils Report: Y* ☒ N ☐

Phase 1 Site Assessment: Y ☐ N ☒

*Soils Report available for fill placement only

Receiving Waters for Urban Runoff from Site

Receiving Waters	303(d) List Impairments	Designated Beneficial Uses	Proximity to RARE Beneficial Use
San Jose Creek Reach 2	Coliform Bacteria	MUND (P*) GWR (I) WARM (I) WILD (E)	N/A

MUND – Municipal and Domestic Supply
GWR – Ground Water Recharge
WARM – Warm Freshwater Habitat
WILD – Wildlife Habitat

(P) – Potential, asterisk denotes designation under SB 88-63 and RB 89-03
(I) – Intermittent
(E) - Existing

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III. Pollutants of Concern

General Work Activity/ Products With Potential Stormwater Pollutants	Specific Work Activity/Products With Potential Stormwater Pollutants	Pollutant Categories
Adhesives	• Adhesives, glues, resins, epoxy synthetics, PVC cement • Caulks, sealers, putty, sealing agents and • Coal tars (naphtha, pitch)	Oil and Grease, Synthetic Organics[1]
Asphalt paving/curbs	• Hot and cold mix asphalt	Oil and Grease
Cleaners	• Polishes (metal, ceramic, tile) • Etching agents • Cleaners, ammonia, lye, caustic sodas, bleaching agents and chromate salts	Metals, Synthetic Organics
Concrete / Masonry	• Cement and brick dust • Colored chalks • Concrete curing compounds • Glazing compounds • Surfaces cleaners • Saw cut slurries • Tile cutting	Metals, Synthetic Organics
Liquid waste	• Wash waters • Irrigation line testing/flushing	Metals, Synthetic Organics
Planting / Vegetation Management	• Vegetation control (pesticides/herbicides) • Planting • Plant maintenance • Vegetation removal	Nutrients, Metals, Synthetic Organics
Plumbing	• Solder (lead, tin), flux (zinc chloride), pipe fitting • Galvanized metal in nails, fences, and electric wiring	Metals, Synthetic Organics
Sanitary waste	• Portable toilets • Disturbance of existing sewer lines.	Nutrients
Soil preparation/amendments	• Use of soil additives/amendments	Nutrients
Solid waste	• Litter, trash and debris • Vegetation	Gross Pollutants
Utility line testing and flushing	• Hydrostatic test water • Pipe flushing	Synthetic Organics
Vehicle and equipment use	• Equipment operation • Equipment maintenance • Equipment washing • Equipment fueling	Oil and Grease

[1] Synthetic Organics are defined in Table 1.2 of the CASQA *Stormwater BMP Handbook Portal: Construction* as adhesives, cleaners, sealants, solvents, etc. These are generally categorized as VOCs or SVOCs.

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IV. Hydrologic Conditions of Concern

Impacts to the hydrologic regime resulting from the project may include increased runoff volume and velocity; reduced infiltration; increased flow frequency, duration, and peaks; faster time to reach peak flow; and water quality degradation. These changes have the potential to permanently impact downstream channels and habitat integrity. A change to the hydrologic regime of a Project's site would be considered a hydrologic condition of concern if the change would have a significant impact on downstream erosion compared to the pre-development condition or have significant impacts on stream habitat, alone or as part of a cumulative impact from development in the watershed.

This project-specific WQMP must address the issue of Hydrologic Conditions of Concern unless one of the following conditions are met:

- **Condition A:** Runoff from the Project is discharged directly to a publicly-owned, operated and maintained MS4; the discharge is in full compliance with Co-Permittee requirements for connections and discharges to the MS4 (including both quality and quantity requirements); the discharge would not significantly impact stream habitat in proximate Receiving Waters; and the discharge is authorized by the Co-Permittee.
- **Condition B:** The project disturbs less than 1 acre. The disturbed area calculation should include all disturbances associated with larger plans of development.
- **Condition C:** The project's runoff flow rate, volume, velocity and duration for the post-development condition do not exceed the pre-development condition for the 2-year, 24-hour and 10-year 24-hour rainfall events. This condition can be achieved by minimizing impervious area on a site and incorporating other site-design concepts that mimic pre-development conditions. This condition must be substantiated by hydrologic modeling methods acceptable to the Co-Permittee.

  This Project meets the following condition: **Condition A**.

  Supporting engineering calculations are included in Appendix B.

	50 year – 24 hour		100 year – 24 hour	
	Precondition	**Post-condition**	**Precondition**	**Post-condition**
Discharge (cfs)	90	90	105	105
Volume (cubic feet)	217,407	217,407	260,077	260,077

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V. Best Management Practices

V.1 Site Design BMPs

Project proponents shall implement Site Design concepts that achieve each of the following:

1) Minimize Urban Runoff
2) Minimize Impervious Footprint
3) Conserve Natural Areas
4) Minimize Directly Connected Impervious Areas (DCIAs)

Project scheduling included the development of a written plan that includes sequencing of construction activities and the implementation of BMPs while taking local climate (rainfall, wind, etc.) into consideration. The purpose was to reduce the amount and duration of soil exposed to erosion by wind, rain, runoff, and vehicle tracking, and to perform the construction activities and control practices in accordance with the planned schedule.

The landscape and site design was performed such that preservation of existing vegetation was maximized. Suitable applications include the following:

- Areas within the site where no construction activity occurs, or occurs at a later date. This BMP is especially suitable to multi-year projects where grading can be phased.
- Areas where natural vegetation exists and is designated for preservation. Such areas often include steep slopes and watercourse.
- Areas where local, state, and federal government require preservation. These areas are designated on a separate biological study.
- Areas where vegetation designated for ultimate removal can be temporarily preserved and be utilized for erosion control and sediment control.

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Table 1. Site Design BMPs

Design Concept	Technique	Specific BMP	Included		
			Yes	No	N/A
Site Design Concept 1	*Minimize Urban Runoff*	Maximize the permeable area.	☒	☐	☐
		Incorporate landscaped buffer areas between sidewalks and streets.	☒	☐	☐
		Maximize canopy interception and water conservation by preserving existing native trees and shrubs, and planting additional native or drought tolerant trees and large shrubs.	☒	☐	☐
		Use natural drainage systems.	☐	☐	☒
		Where soils conditions are suitable, use perforated pipe or gravel filtration pits for low flow infiltration.	☒	☐	☐
		Construct onsite ponding areas or retention facilities to increase opportunities for infiltration consistent with vector control objectives.	☐	☒	☐
		Other comparable and equally effective site design concepts as approved by the Co-Permittee.	☐	☐	☒

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Table 1. Site Design BMPs (Cont.)

Design Concept	Technique	Specific BMP	Included		
			Yes	No	N/A
Site Design Concept 2	*Minimize Impervious Footprint*	Maximize the permeable area.	☒	☐	☐
		Construct walkways, trails, patios, overflow parking lots, alleys, driveways, low-traffic streets and other low -traffic areas with open-jointed paving materials or permeable surfaces, such as pervious concrete, porous asphalt, unit pavers, and granular materials.	☐	☐	☒
		Construct streets, sidewalks and parking lot aisles to the minimum widths necessary, provided that public safety and a walk able environment for pedestrians are not compromised.	☐	☐	☒
		Reduce widths of street where off-street parking is available.	☐	☐	☒
		Minimize the use of impervious surfaces, such as decorative concrete, in the landscape design.	☒	☐	☐
Site Design Concept 3	*Conserve Natural Areas*	Other comparable and equally effective site design concepts as approved by the Co-Permittee (Note: Additional narrative required describing BMP and how it addresses Site Design concept).	☐	☐	☒
		Conserve natural areas.	☒	☐	☐
		Maximize canopy interception and water conservation by preserving existing native trees and shrubs, and planting additional native or drought tolerant trees and large shrubs.	☒	☐	☐
		Use natural drainage systems.	☐	☐	☒
		Other comparable and equally effective site design concepts as approved by the Co-Permittee.	☐	☐	☒

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Table 1. Site Design BMPs (Cont.)

			Included		
Design Concept	**Technique**	**Specific BMP**	**Yes**	**No**	**N/A**
Site Design Concept 4	*Minimize Directly Connected Impervious Areas (DCIAs)*	Residential and commercial sites must be designed to contain and infiltrate roof runoff, or direct roof runoff to vegetative swales or buffer areas, where feasible.	☐	☐	☒
		Where landscaping is proposed, drain impervious sidewalks, walkways, trails, and patios into adjacent landscaping.	☐	☐	☒
		Increase the use of vegetated drainage swales in lieu of underground piping or imperviously lined swales.	☒	☐	☐
		Rural swale system: street sheet flows to vegetated swale or gravel shoulder, curbs at street corners, culverts under driveways and street crossings.	☐	☐	☒
		Urban curb/swale system: street slopes to curb; periodic swale inlets drain to vegetated swale/biofilter.	☐	☐	☒
		Dual drainage system: First flush captured in street catch basins and discharged to adjacent vegetated swale or gravel shoulder, high flows connect directly to MS4s.	☐	☐	☒
		Design driveways with shared access, flared (single lane at street) or wheel strips (paving only under tires); or, drain into landscaping prior to discharging to the MS4.	☐	☒	☐
		Uncovered temporary or guest parking on private residential lots may be paved with a permeable surface, or designed to drain into landscaping prior to discharging to the MS4.	☐	☐	☒
		Where landscaping is proposed in parking areas, incorporate landscape areas into the drainage design.	☐	☐	☒
		Overflow parking (parking stalls provided in excess of the Co-Permittee's minimum parking requirements) may be constructed with permeable paving.	☐	☐	☒
		Other comparable and equally effective design concepts as approved by the Co-Permittee.	☐	☐	☒

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Non-applicable Site Design BMPs:

There are no natural drainage systems on the project site that can be utilized, however, the City storm drain this project is tributary to discharges to Snow Creek, a natural drainage course located on the opposite side of Grand Avenue from the project site.

On-site ponding and retention was not proposed due to the fill being placed at the project site in order to create the 10-acre pad. Water should not be retained or infiltrated into engineered fill due to stability concerns.

There are no proposed streets, parking areas, sidewalks, site paving, or building structures associated with this project, therefore none of the Site Design BMPs that deal with those items are applicable.

DRAFT

V.2 SOURCE CONTROL BMPS

Table 2. Source Control BMPs

BMP Name	Check One		If not applicable, state brief reason
	Included	Not Applicable	
Non-Structural Source Control BMPs			
Education for Property Owners, Operators, Tenants, Occupants, or Employees	☒	☐	
Activity Restrictions	☒	☐	
Irrigation System and Landscape Maintenance	☒	☐	
Common Area Litter Control	☒	☐	
Street Sweeping Private Streets and Parking Lots	☐	☒	No streets or parking lots
Drainage Facility Inspection and Maintenance	☒	☐	
Structural Source Control BMPs			
MS4 Stenciling and Signage	☒	☐	
Landscape and Irrigation System Design	☒	☐	
Protect Slopes and Channels	☒	☐	
Provide Community Car Wash Racks	☐	☒	No car wash facilities
Properly Design:			
Fueling Areas	☐	☒	No fueling areas
Air/Water Supply Area Drainage	☐	☒	No air/water supply
Trash Storage Areas	☐	☒	No trash storage
Loading Docks	☐	☒	No loading docks
Maintenance Bays	☐	☒	No maintenance bays
Vehicle and Equipment Wash Areas	☐	☒	No wash areas
Outdoor Material Storage Areas	☐	☒	No material storage
Outdoor Work Areas or Processing Areas	☐	☒	No work areas
Provide Wash Water Controls for Food Preparation Areas	☐	☒	No food preparation

The following additional source control post construction BMPs are proposed for the project site:

- Soil Binders - Soil binders consist of applying and maintaining a soil stabilizer to exposed soil surfaces. Soil binders are materials applied to the soil surface to prevent water induced erosion of soils. Soil binders also prevent wind erosion.
- Earth Dikes - An earth dike is a berm or ridge of compacted soil used to divert runoff or channel water to a desired location. Earth dikes are proposed on this project to divert runoff from stabilized areas and newly constructed slopes, and to direct runoff into the storm drain system.
- Landscape Irrigation Practices - Irrigation runoff provides a pathway for pollutants (i.e., nutrients, bacteria, organics, sediment) to enter the storm drain system. By effectively irrigating, less runoff is produced resulting in less potential for pollutants to enter the storm drain system.

Appendix D includes copies of the educational materials that will be used in implementing this project-specific WQMP.

V.3 TREATMENT CONTROL BMPS

Vegetated Swales have been proposed to be integrated into the overall site design and accommodate the layout of the proposed solar array. Vegetated swales are open, shallow channels with low-lying vegetation covering the side slopes and bottom that collect and slowly convey stormwater runoff to a downstream stormwater quality control measure, storm drain system, or receiving water.

Vegetated swales also provide pollutant removal through settling and filtration in the vegetation (usually grasses) lining the channels, provide the opportunity for stormwater runoff volume reduction through infiltration and evapotranspiration, and reduce the flow velocity. An effective vegetated swale achieves uniform sheet flow over and through a densely vegetated area for a period of several minutes.

Vegetated swales that are integrated into a project may use turf or other more intensive landscaping while swales that are located on the project perimeter, within a park, or close to an open space area may be planted with native plants.

Sizing criteria for vegetated swales shall be Urban Runoff quality design flow (QBMP).

Appendix E includes an outline of maintenance procedures necessary to sustain BMP effectiveness.

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Table 3: Treatment Control BMP Selection Matrix [1]

Pollutant of Concern	Treatment Control BMP Categories[2]							
	Veg. Swale & Veg. Filter Strips[3]	**Detention Basins[4]**	**Infiltration Basins, Infiltration Trenches, & Porous Pavement[5]**	**Wet Ponds or Wetlands[6]**	**Sand Filter or Media Filters**	**Water Quality Inlets**	**Hydrodynamic Separator Systems [7]**	**Manufactured/ Proprietary Devices[8]**
Sediment/Turbidity	H/M	M	H/M	H/M	H/M	L	H/M (L for turbidity)	U
Y ☒ N ☐	☒	☐	☐	☐	☐	☐	☐	☐
Nutrients	L	M	H/M	H/M	L/M	L	L	U
Y ☐ N ☒	☐	☐	☐	☐	☐	☐	☐	☐
Organic Compounds	U	U	U	U	H/M	L	L	U
Y ☐ N ☒	☐	☐	☐	☐	☐	☐	☐	☐
Trash & Debris	L	M	U	U	H/M	M	H/M	U
Y ☐ N ☒	☐	☐	☐	☐	☐	☐	☐	☐
Oxygen Demanding Substances	L	M	H/M	H/M	H/M	L	L	U
Y ☐ N ☒	☐	☐	☐	☐	☐	☐	☐	☐
Bacteria & Viruses	U	U	H/M	U	H/M	L	L	U
Y ☒ N ☐	☒	☐	☐	☐	☐	☐	☐	☐
Oils & Grease	H/M	M	U	U	H/M	M	L/M	U
Y ☐ N ☒	☐	☐	☐	☐	☐	☐	☐	☐
Pesticides (non-soil bound)	U	U	U	U	U	L	L	U
Y ☐ N ☒	☐	☐	☐	☐	☐	☐	☐	☐
Metals	H/M	M	H	H	H	L	L	U
Y ☐ N ☒	☐	☐	☐	☐	☐	☐	☐	☐

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Abbreviations:

L: Low removal efficiency H/M: High or medium removal efficiency U: Unknown removal efficiency

Notes:

(1) Periodic performance assessment and updating of the guidance provided by this table may be necessary.

(2) Project applicants should base BMP designs on the Los Angeles County Stormwater Quality Best Management Practice Design Handbook. However, project applicants may also wish to reference the California Stormwater BMP Handbook – New Development and Redevelopment (www.cabmphandbooks.com). The Handbook contains additional information on BMP operation and maintenance.

(3) Includes grass swales, grass strips, wetland vegetation swales, and bioretention.

(4) Includes extended/dry detention basins with grass lining and extended/dry detention basins with impervious lining. Effectiveness based upon minimum 36-48-hour drawdown time.

(5) Projects that will utilize infiltration-based Treatment Control BMPs (e.g., Infiltration Basins, Infiltration Trenches, Porous Pavement, etc.) must include a copy of the property/project soils report as Appendix E to the project-specific WQMP. The selection of a Treatment Control BMP (or BMPs) for the project must specifically consider the effectiveness of the Treatment Control BMP for pollutants identified as causing an impairment of Receiving Waters to which the project will discharge Urban Runoff.

(6) Includes permanent pool wet ponds and constructed wetlands.

(7) Also known as hydrodynamic devices, baffle boxes, swirl concentrators, or cyclone separators.

(8) Includes proprietary stormwater treatment devices as listed in the CASQA Stormwater Best Management Practices Handbooks, other stormwater treatment BMPs not specifically listed in this WQMP, or newly developed/emerging stormwater treatment technologies.

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V.4 EQUIVALENT TREATMENT CONTROL ALTERNATIVES

Not applicable, refer to the Los Angeles County WQMP.

V.5 REGIONALLY-BASED TREATMENT CONTROL BMPS

Not applicable, refer to the Los Angeles County WQMP.

DRAFT

VI. Operation and Maintenance Responsibility for Treatment Control BMPs

Operation and maintenance (O&M) requirements for all structural Source Control and Treatment Control BMPs will be identified in this project-specific WQMP at a future date. This project-specific WQMP shall address the following:

- Identification of each BMP that requires O&M.
- Description of O&M activities, the O&M process, and the handling and placement of any wastes.
- BMP start-up dates.
- Schedule of the frequency of O&M for each BMP.
- Identification of the parties (name, address, and telephone number) responsible for O&M, including a written agreement with the entities responsible for O&M.
- Self-inspections and record-keeping requirements for BMPs, including identification of responsible parties for inspection and record- keeping.
- Thorough descriptions of water quality monitoring, if required by the Co-Permittee.

A plan for the post construction funding and maintenance of these BMPs will be developed to address a period of five years, at a minimum, following construction.

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VII. Funding

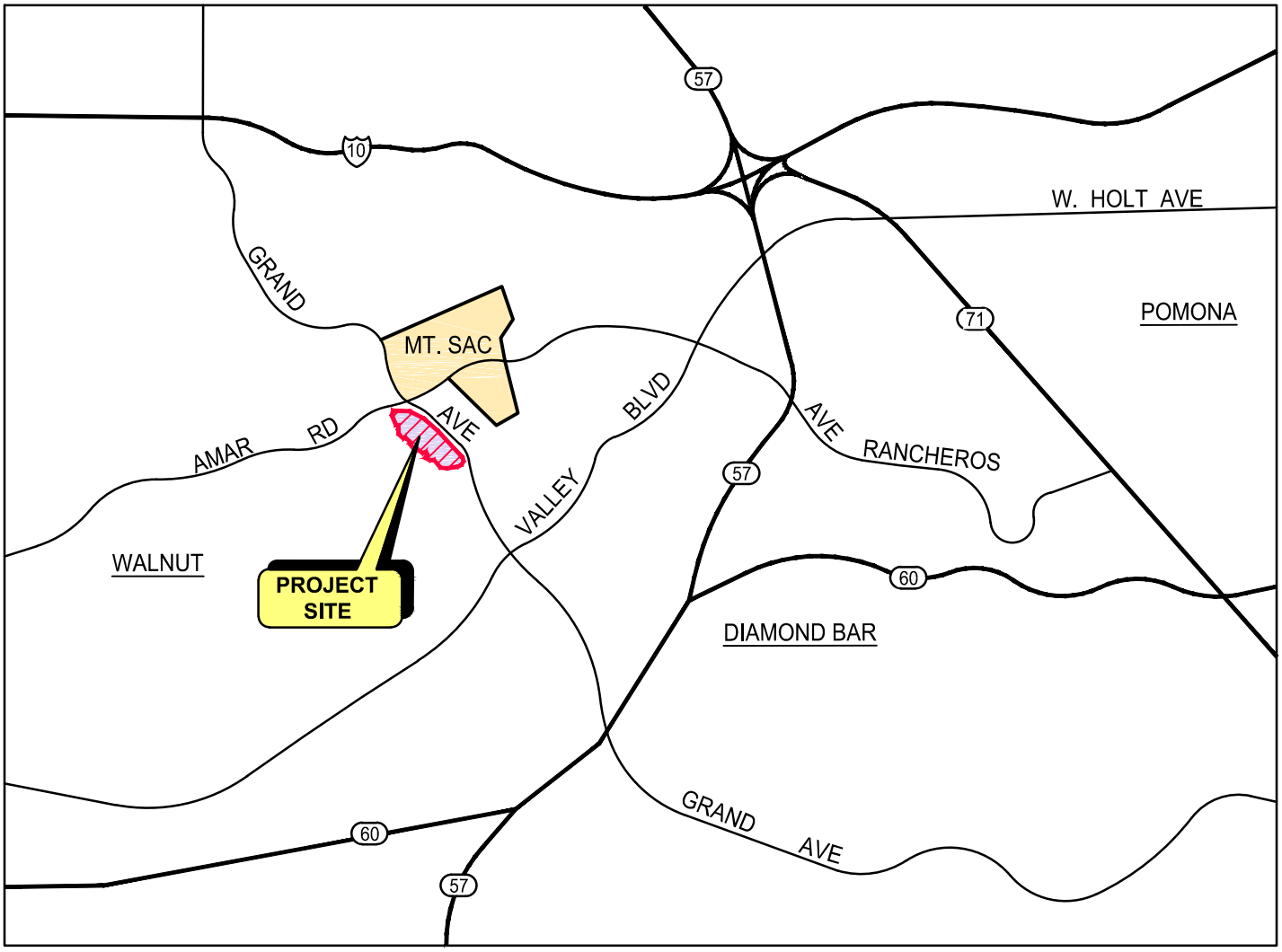
A funding source or sources for the O&M of each Treatment Control BMP identified in the project-specific WQMP will be identified at a future date. By certifying the project-specific WQMP, the Project applicant is certifying that the funding responsibilities have been addressed and will be transferred to future owners.

DRAFT

Appendix A

Vicinity Map, WQMP Site Plan, and Receiving Waters Map

DRAFT



Vicinity Map

NORTH
NOT TO SCALE

PSOMAS

DATE: 06-23-2015 REVISED ON:
JOB No:1HMC017000

SHEET 1 OF 3
WQ-01

Mt. SAC

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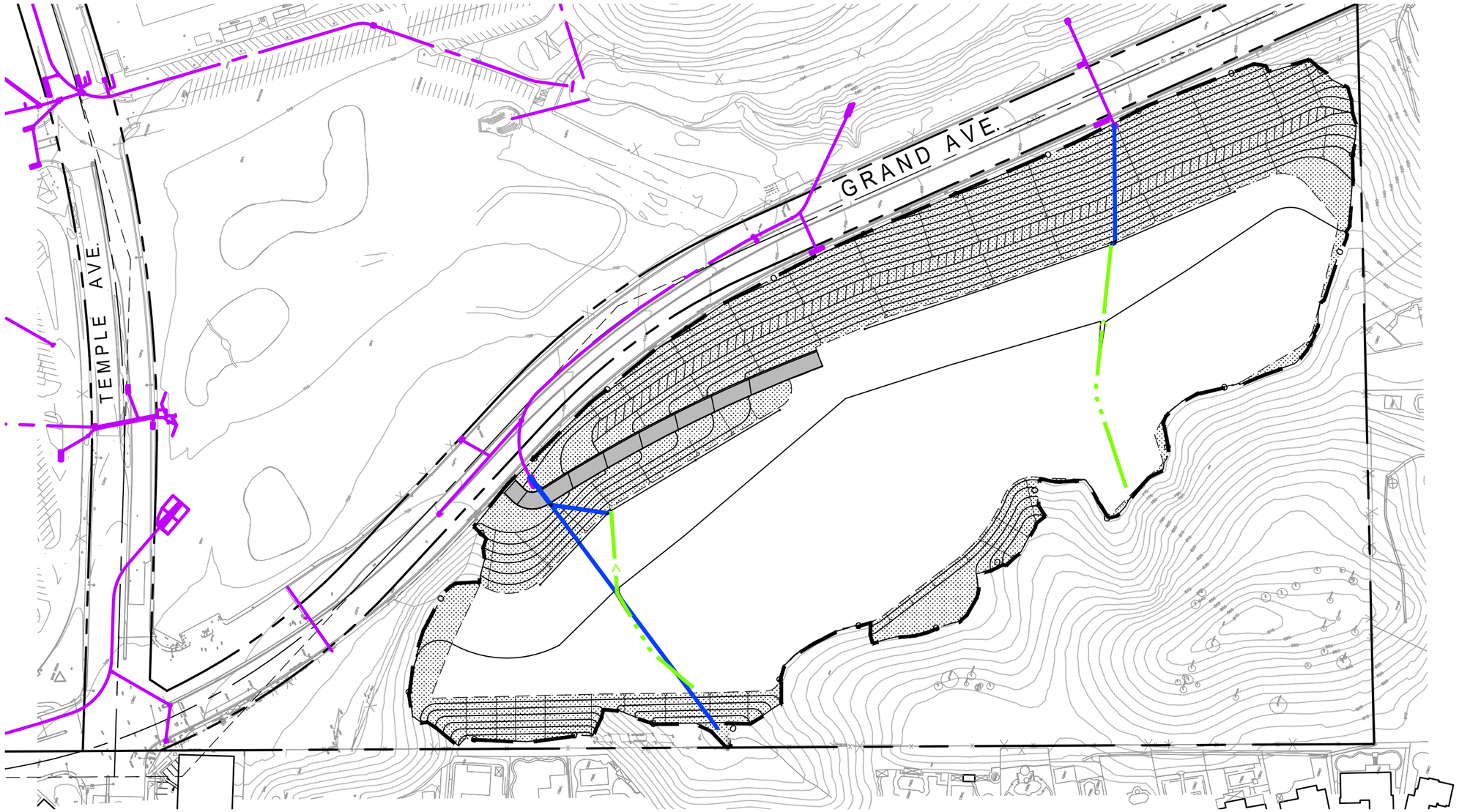


LEGEND:

- LIMIT OF WORK
- PROPERTY LINE
- RIGHT OF WAY LINE
- EXISTING STORM DRAIN
- NEW STORM DRAIN
- NEW VEGETATED SWALE
- PAVED AREA
- LANDSCAPE AREA

160' 80' 0' 160'

GRAPHIC SCALE

Note: For reduced sized prints, original scale is in inches

Mt. SAC

Site Plan Exhibit

PSOMAS

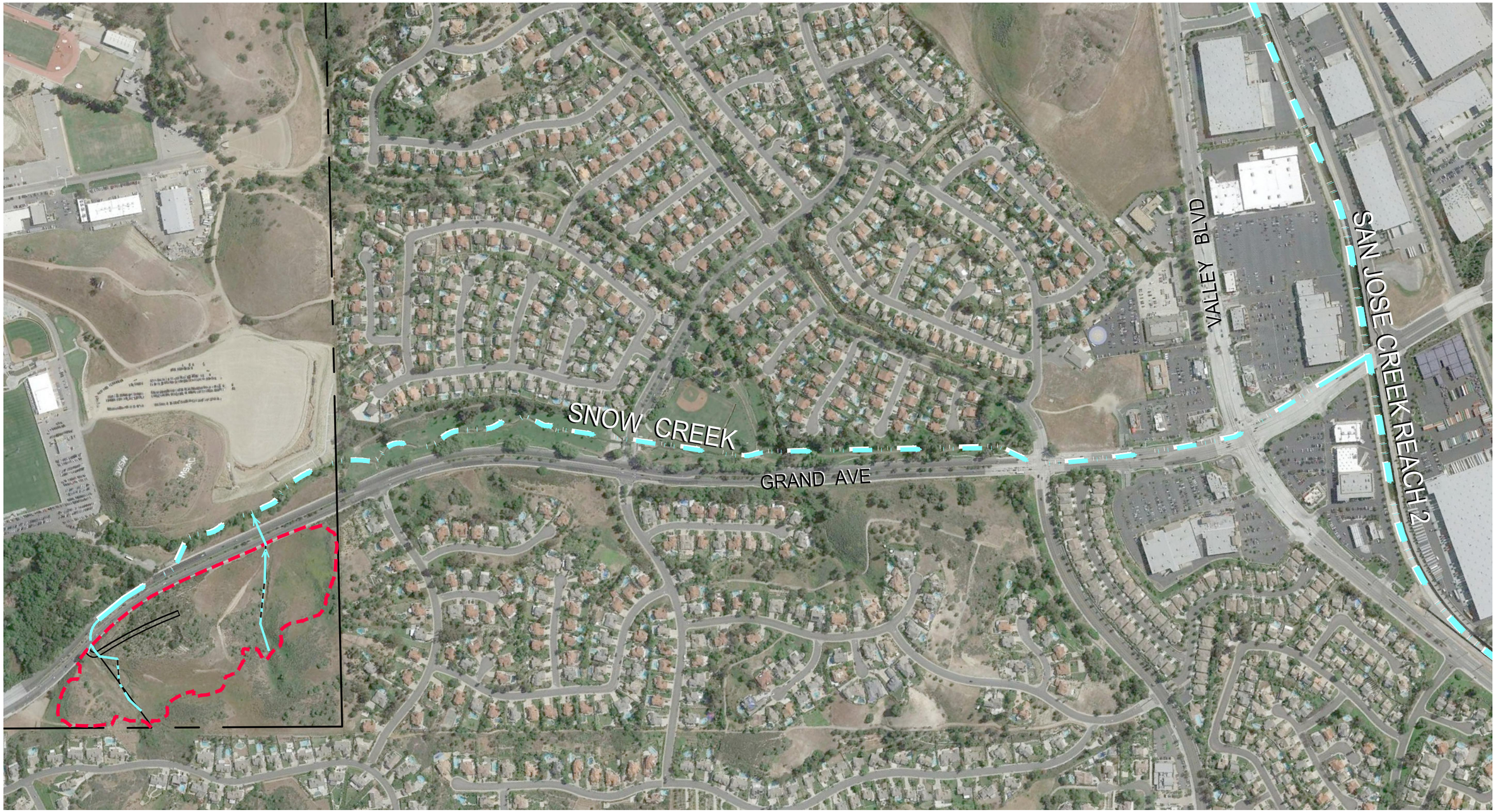
DATE: 06-23-2015 REVISED ON:

JOB No:1HMC017000

SHEET 2 OF 3

WQ-02

W:\Mt_SAC\1HMC017000\ENGR\EXHIB\WQ-02_Site-Plan.dwg Mon.,29 Jun.2015 - 5:14pm Plotted by: dhewlett



LEGEND:

PROJECT SITE

WATER CONVEYANCE

500' 250' 0' 500'

GRAPHIC SCALE

Note: For reduced sized prints, original scale is in inches

Mt. SAC

Receiving Waters Exhibit

PSOMAS

DATE: 06-23-2015 REVISED ON:

JOB No:1HMC017000

SHEET 3 OF 3

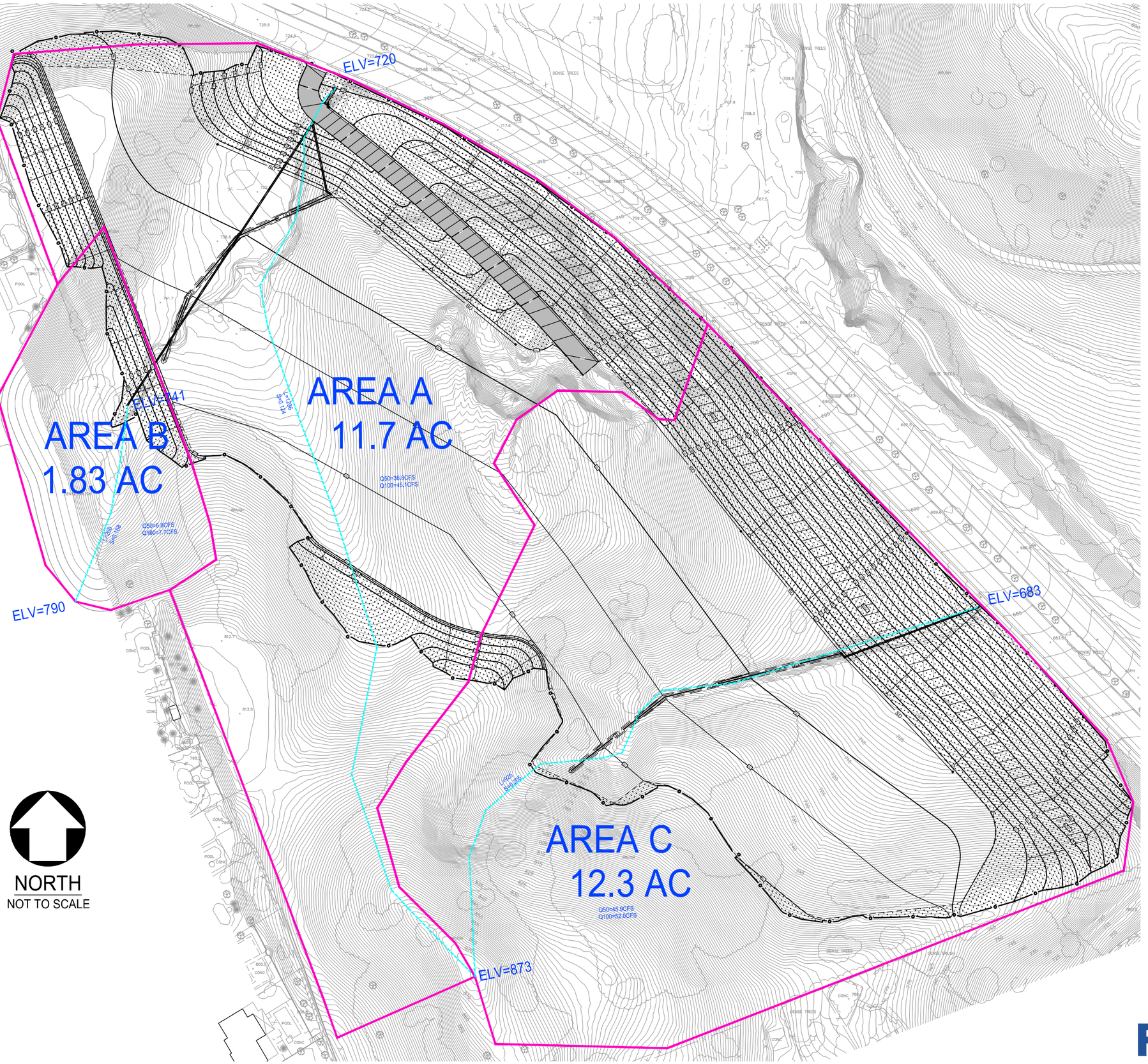
WQ-03

W:\Mt_SAC\1HMC017000\ENGR\EXHIB\WQ-03_Receiving-Waters.dwg Mon.,29 Jun.2015 - 5:04pm Plotted by: dhewlett

Appendix B

Supporting Detail Related to Hydraulic Conditions of Concern

DRAFT



Hydrology Map

PSOMAS

Peak Flow Hydrologic Analysis

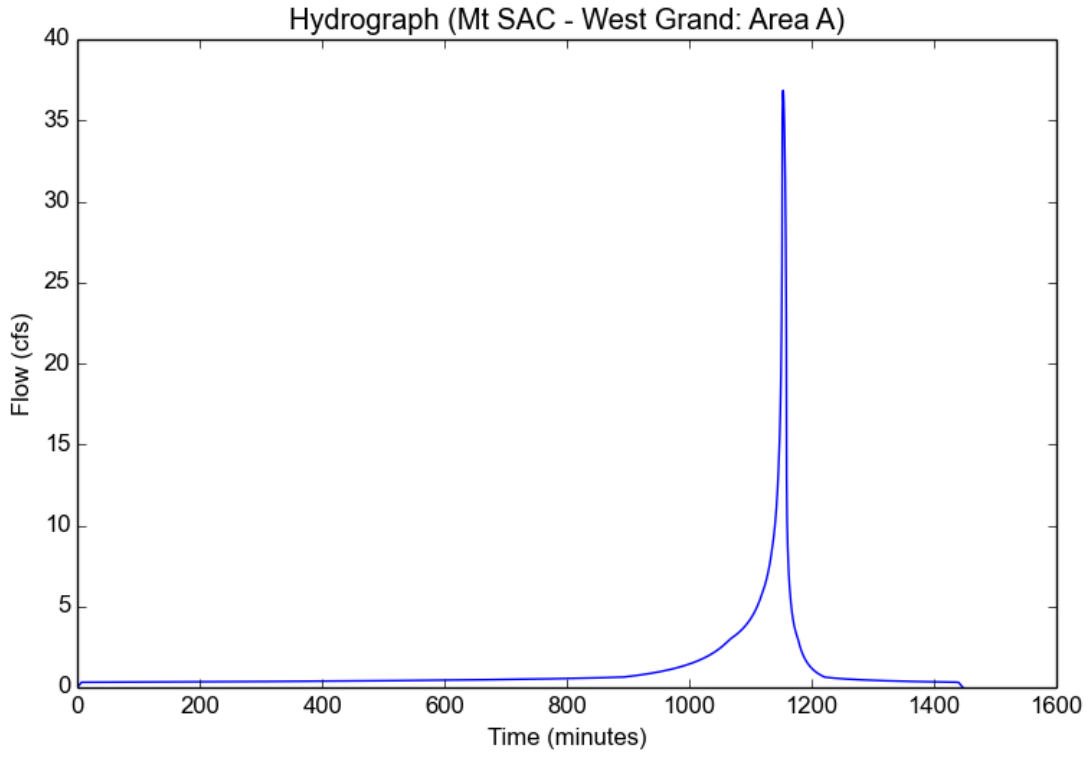
File location: W:/Mt_SAC/1HMC017000/ENGR/CALCS/Hydrology/Mt SAC - West Grand - Area A_50yr.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Mt SAC - West Grand
Subarea ID	Area A
Area (ac)	11.7
Flow Path Length (ft)	1236.0
Flow Path Slope (vft/hft)	0.124
50-yr Rainfall Depth (in)	6.8
Percent Impervious	0.1
Soil Type	17
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.8
Peak Intensity (in/hr)	3.4636
Undeveloped Runoff Coefficient (Cu)	0.9103
Developed Runoff Coefficient (Cd)	0.9093
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	36.8481
Burned Peak Flow Rate (cfs)	36.8481
24-Hr Clear Runoff Volume (ac-ft)	2.2605
24-Hr Clear Runoff Volume (cu-ft)	98468.9067



Peak Flow Hydrologic Analysis

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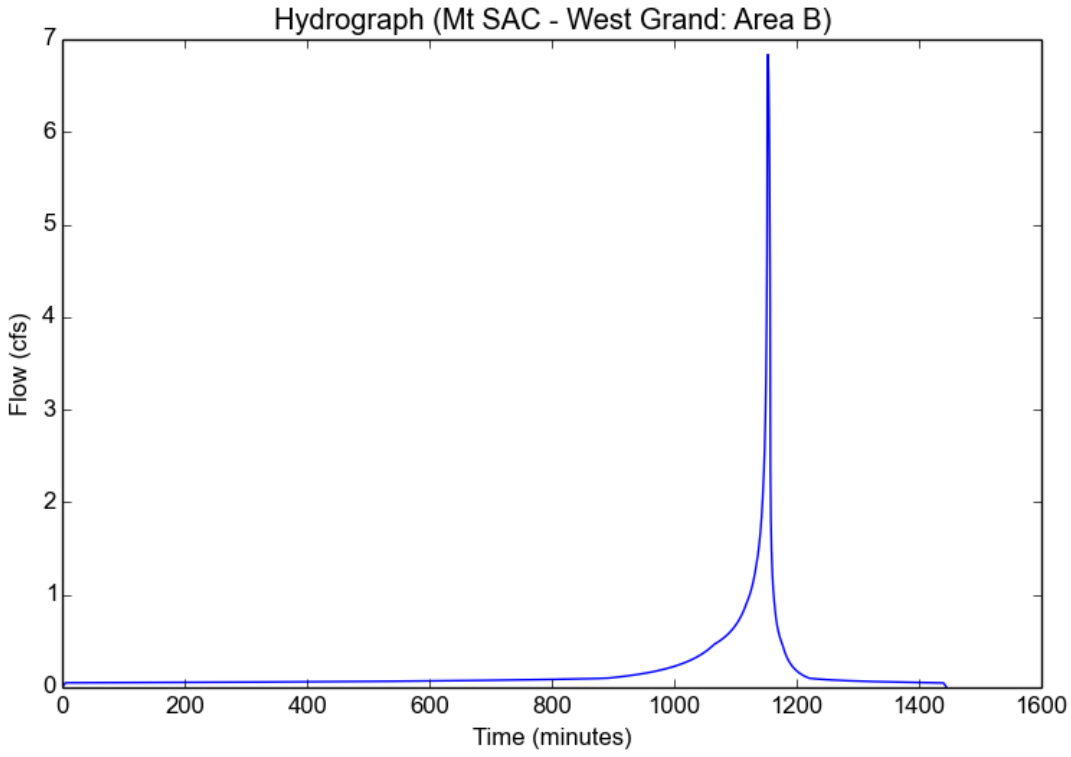
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Mt SAC - West Grand
Subarea ID	Area B
Area (ac)	1.83
Flow Path Length (ft)	260.0
Flow Path Slope (vft/hft)	0.188
50-yr Rainfall Depth (in)	6.8
Percent Impervious	0.1
Soil Type	17
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.8
Peak Intensity (in/hr)	4.0571
Undeveloped Runoff Coefficient (Cu)	0.9229
Developed Runoff Coefficient (Cd)	0.9206
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	6.8352
Burned Peak Flow Rate (cfs)	6.8352
24-Hr Clear Runoff Volume (ac-ft)	0.3536
24-Hr Clear Runoff Volume (cu-ft)	15403.8816



Peak Flow Hydrologic Analysis

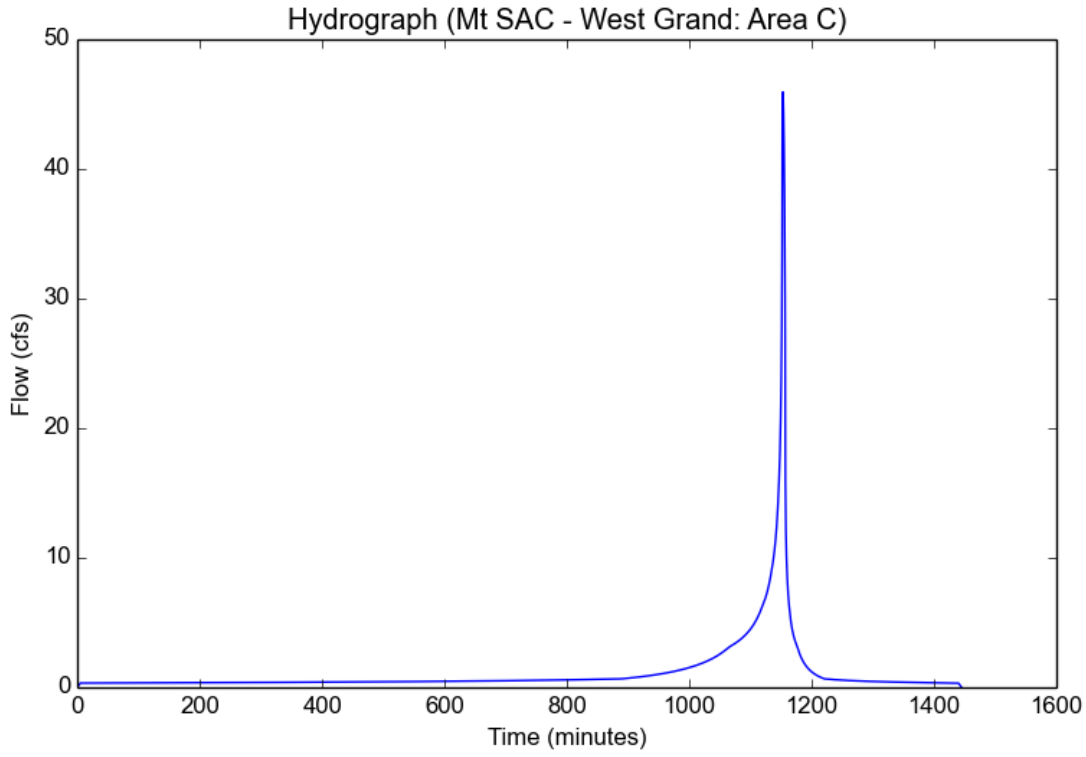
File location: W:/Mt_SAC/1HMC017000/ENGR/CALCS/Hydrology/Mt SAC - West Grand - Area C_50yr.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Mt SAC - West Grand
Subarea ID	Area C
Area (ac)	12.3
Flow Path Length (ft)	925.0
Flow Path Slope (vft/hft)	0.205
50-yr Rainfall Depth (in)	6.8
Percent Impervious	0.1
Soil Type	17
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.8
Peak Intensity (in/hr)	4.0571
Undeveloped Runoff Coefficient (Cu)	0.9229
Developed Runoff Coefficient (Cd)	0.9206
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	45.9413
Burned Peak Flow Rate (cfs)	45.9413
24-Hr Clear Runoff Volume (ac-ft)	2.3768
24-Hr Clear Runoff Volume (cu-ft)	103534.2861



Peak Flow Hydrologic Analysis

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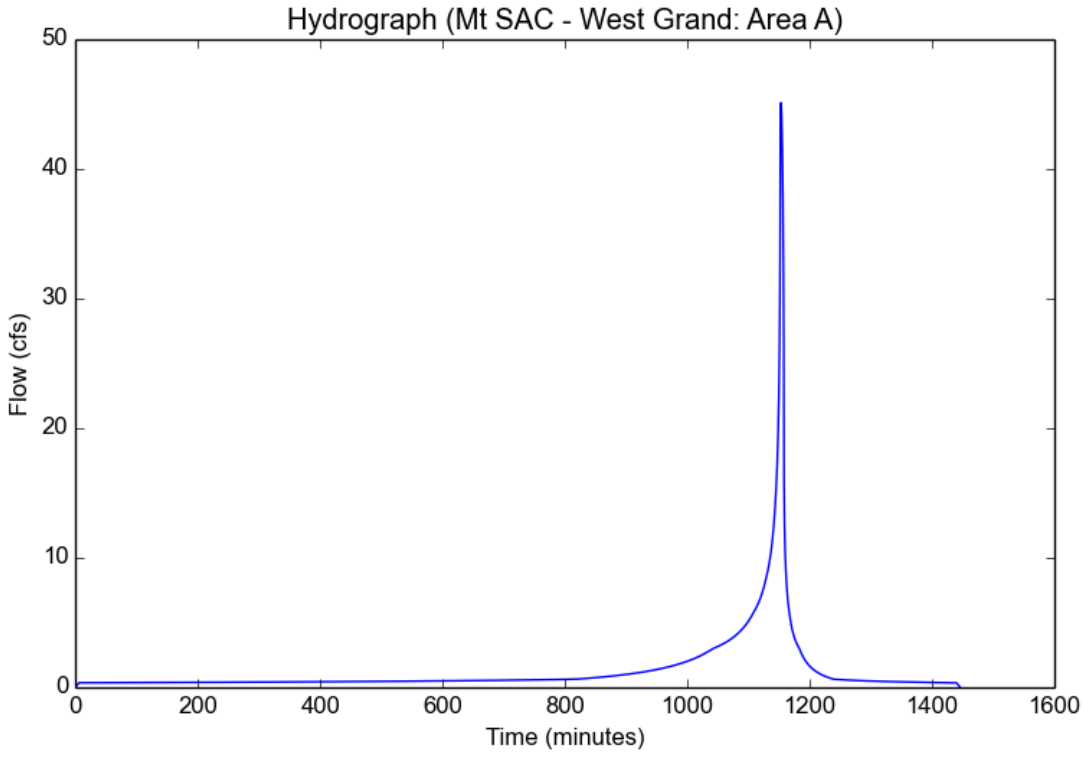
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Mt SAC - West Grand
Subarea ID	Area A
Area (ac)	11.7
Flow Path Length (ft)	1236.0
Flow Path Slope (vft/hft)	0.124
50-yr Rainfall Depth (in)	6.8
Percent Impervious	0.1
Soil Type	17
Design Storm Frequency	100-yr
Fire Factor	0
LID	False

Output Results

Modeled (100-yr) Rainfall Depth (in)	7.6296
Peak Intensity (in/hr)	4.1782
Undeveloped Runoff Coefficient (Cu)	0.9254
Developed Runoff Coefficient (Cd)	0.9228
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	45.1125
Burned Peak Flow Rate (cfs)	45.1125
24-Hr Clear Runoff Volume (ac-ft)	2.7043
24-Hr Clear Runoff Volume (cu-ft)	117799.1085



Peak Flow Hydrologic Analysis

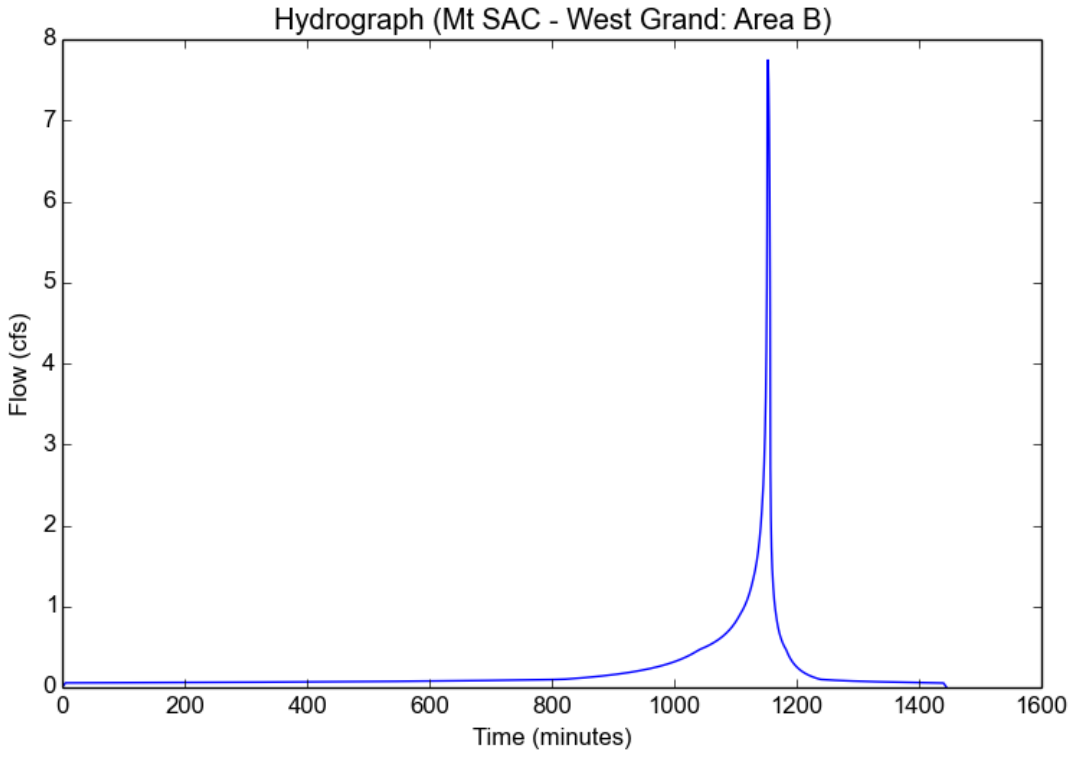
File location: W:/Mt_SAC/1HMC017000/ENGR/CALCS/Hydrology/Mt SAC - West Grand - Area B_100yr.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Mt SAC - West Grand
Subarea ID	Area B
Area (ac)	1.83
Flow Path Length (ft)	260.0
Flow Path Slope (vft/hft)	0.188
50-yr Rainfall Depth (in)	6.8
Percent Impervious	0.1
Soil Type	17
Design Storm Frequency	100-yr
Fire Factor	0
LID	False

Output Results

Modeled (100-yr) Rainfall Depth (in)	7.6296
Peak Intensity (in/hr)	4.552
Undeveloped Runoff Coefficient (Cu)	0.9329
Developed Runoff Coefficient (Cd)	0.9296
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	7.7438
Burned Peak Flow Rate (cfs)	7.7438
24-Hr Clear Runoff Volume (ac-ft)	0.423
24-Hr Clear Runoff Volume (cu-ft)	18426.6236



Peak Flow Hydrologic Analysis

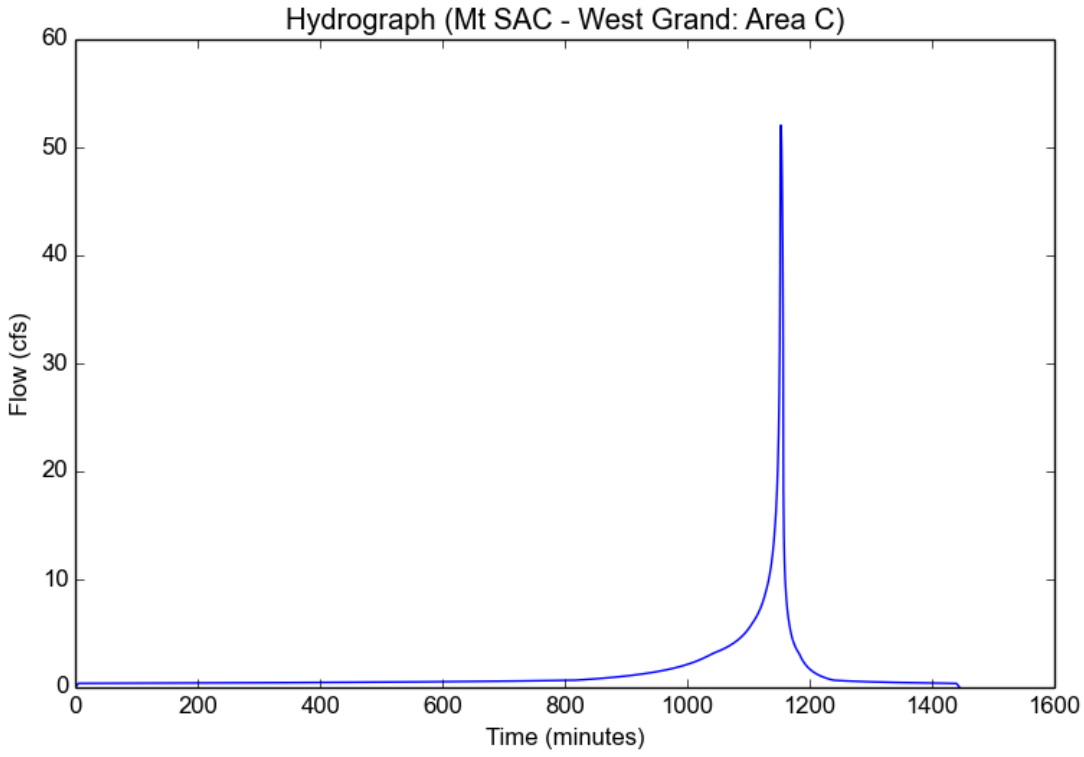
File location: W:/Mt_SAC/1HMC017000/ENGR/CALCS/Hydrology/Mt SAC - West Grand - Area C_100yr.pdf
Version: HydroCalc 0.2.0-beta

Input Parameters

Project Name	Mt SAC - West Grand
Subarea ID	Area C
Area (ac)	12.3
Flow Path Length (ft)	925.0
Flow Path Slope (vft/hft)	0.205
50-yr Rainfall Depth (in)	6.8
Percent Impervious	0.1
Soil Type	17
Design Storm Frequency	100-yr
Fire Factor	0
LID	False

Output Results

Modeled (100-yr) Rainfall Depth (in)	7.6296
Peak Intensity (in/hr)	4.552
Undeveloped Runoff Coefficient (Cu)	0.9329
Developed Runoff Coefficient (Cd)	0.9296
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	52.0485
Burned Peak Flow Rate (cfs)	52.0485
24-Hr Clear Runoff Volume (ac-ft)	2.8432
24-Hr Clear Runoff Volume (cu-ft)	123851.0766



Appendix C

Educational Materials

DRAFT

How can you help in your community?

Como puedes ayudar en tu comunidad?

Home & Garden

Casa y Jardines

- Properly use and store all hazardous household products, including cleaners, solvents and paints.

  Use y almacene de manera adecuada productos domésticos peligrosos, incluyendo limpiadores, solventes, y pinturas.

- Be an environmentally aware consumer. Buy non-toxic products for use in your home and garden whenever possible.

  Sea un consumidor consciente del medio ambiente. Compre productos que no sean tóxicos para su casa o jardin.

- Use pesticides, herbicides and fertilizers carefully and sparingly.

  Use pesticidas, herbicidas y fertilizantes cuidadosamente y a la medida justa.

- Conserve water and reduce the amount of runoff by not over-watering your lawn and garden.

  Conserve el agua y reduzca la cantidad de derrame no sobre-regando el y jardin.

- Use a broom rather than a hose to clean up garden clippings, dirt and litter from sidewalks, patios and driveways.

  Use una escoba en vez de la manguera al limpiar tierra y basura de las aceras, patios y caminos de entrada.

- Compost yard trimmings and leaves. Do not sweep them into the streets or catch basins.

  Convierta ramas y hojas en abono. No las barra a la calle o drenajes.

- Divert rain spouts and other sources of runoff onto grass or vegetation.

  Desvie los caños y otros recursos de derrame hacia el césped o la vegetación.

- Dispose of pet waste in trash cans. Leaving it on the lawn sends harmful bacteria into the storm drains whenever you water or when it rains.

  Deseche el excremento de los animales en botes de basura. Si se dejan en el césped, estos crearan bacterias dañinas que iran hacia los drenajes cuando se riege o cuando llueva.

- Donate unwanted paint, fertilizer, etc. to friends or community organizations.

  Regale pintura, fertilizante, etc. a sus amistades u organizaciones comunitarias.

Automotive

Automóviles

- When changing car fluids, use a drip pan to collect any spills. If a spill occurs, soak it up using an absorbent material such as kitty litter or sawdust and dispose of it properly.

  Cuando cambie lubricantes, use un envase debajo del goteo para contener cualquier derrame. Si un derrame ocurriera, limpielo usando cualquier material absorbente, como aserrín o "kitty litter", luego deseche de manera apropiada.

- Wash your car with biodegradable soap using as little water as possible. Shut off the hose while washing your car and then rinse.

  Lave su vehículo con jabón biodegradable usando la menor cantidad de agua posible. Cierre la llave del agua mientras lo lave y luego enjuágelo.

- Keep a trash bag in the car and use it! Do not throw anything out the window.

  ¡Mantenga una bolsa de basura dentro del carro y úsela! No arroje nada por la ventana.

- Keep up car maintenance to reduce leakage of oil, anti-freeze and other fluids.

  Dé un buen mantenimiento a su carro para reducir derrames de aceite, anticongelante u otros lubricantes.

- Buy batteries, anti-freeze and motor oil from stores that will recycle used products, or

  Take these items to a local Household Hazardous Waste roundup.

  Compre baterías, anticongelantes y aceites para motores en tiendas que reciclen los productos que ha usado, ó

  lleve estos productos a su centro de colección local de desechos domésticos peligrosos.

SPILL RESPONSE AGENCIES
AGENCIAS PARA EL CONTROL DE DERRAMES

City of Los Angeles
Stormwater Program Hotline
(800) 974-9794

Los Angeles County
(888) CLEAN-LA / 253-2652

RECYCLING & HAZARDOUS WASTE DISPOSAL
RECICLAGE Y DESECHO DE DESPERDICIOS PELIGROSOS

City of Los Angeles
Small Business Hazardous Waste Hotline
(800) 98-TOXIC / 988-6942

City of L.A. Recycling
(800) 773-CITY

Los Angeles County
Department of Public Works
(888) CLEAN-LA / 253-2652

TO REPORT ILLEGAL DUMPING
PARA REPORTAR ARROJOS ILEGALES

City of Los Angeles
Stormwater Program Hotline
(800) 974-9794

Los Angeles County
Department of Public Works
Illegal Dumping Hotline
(888) CLEAN-LA / 253-2652

TO REPORT CLOGGED CATCH BASINS
PARA REPORTAR DRENAJES TAPADOS

City of Los Angeles
Stormwater Program Hotline
(800) 974-9794

Los Angeles County
Department of Public Works
(888) CLEAN-LA / 253-2652

WATERSHED PROTECTION
CITY OF LOS ANGELES

www.LAstormwater.org

Illustration and Design: Oscar Amaro

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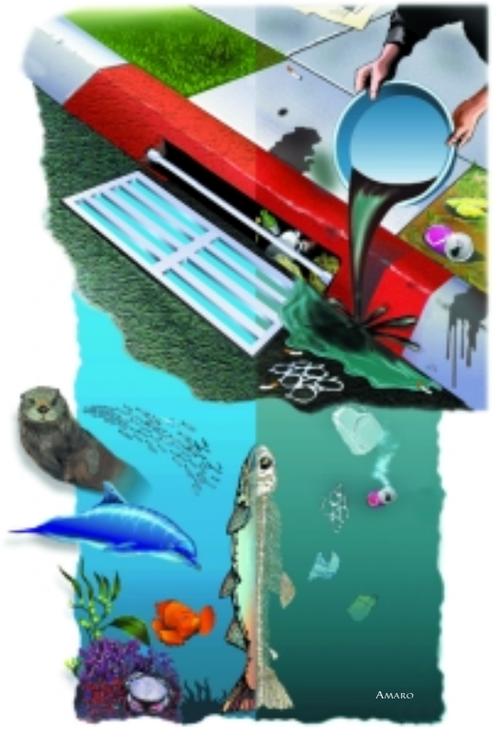
As a covered entity under Title II of the Americans with Disabilities Act, the City of Los Angeles does not discriminate on the basis of disability and, upon request, will provide reasonable accommodation to ensure equal access to its programs, services, and activities.

The Ocean Begins

El Oceano Empieza



In Your Neighborhood

En Su Vecindad

How So?

Water running off your yard, sidewalk or street flows down gutters to curbside openings called **catch basins**.

Curbside catch basin

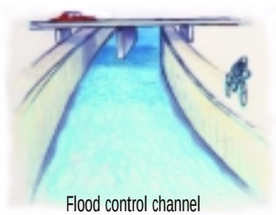
Underground storm drain tunnel

Anything carried by this runoff — pesticides, pet waste, oil and anti-freeze from leaky cars and trucks, foam containers and plastic bags — ends up trashing the beaches, polluting the ocean, and harming wildlife... and humans. This contaminated flow is the reason some of our most scenic beaches are closed to the public after a heavy rainstorm.

Just one quart of used motor oil dumped into a catch basin can pollute *250,000 gallons of ocean water!*

Unlike the wastewater from inside homes and businesses that flows to sewers and treatment plants, outside runoff water flows to the ocean untreated. That's because the storm drain system was designed to prevent flooding during heavy rains by quickly diverting billions of gallons of rainwater to the ocean.

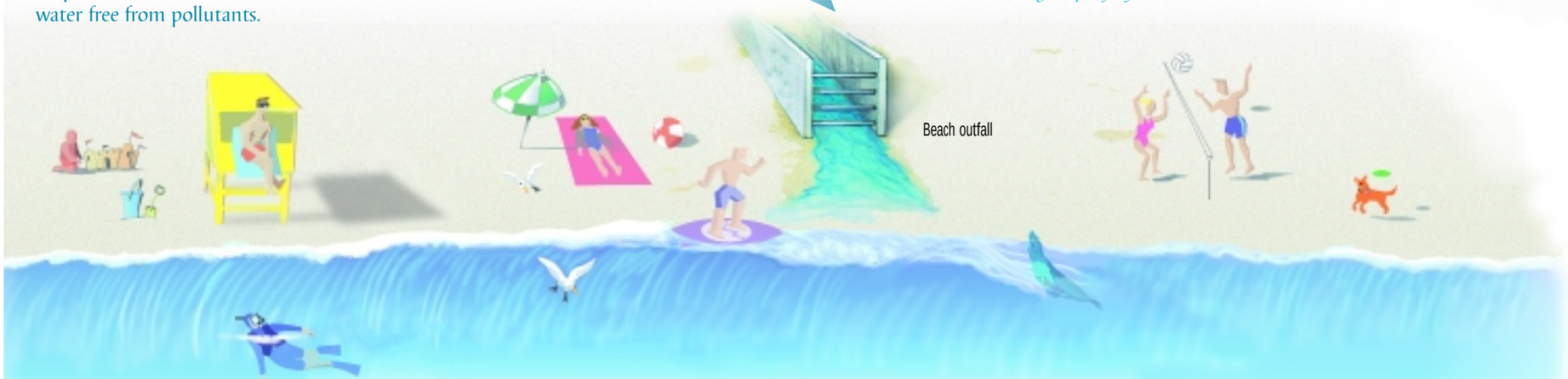
The open portions of this system are called flood control channels.



Flood control channel

Even during the driest day in Southern California, we produce tens of millions of gallons of runoff, the result of activities such as car washing, lawn watering and yard cleanup.

For our own protection, and for a cleaner ocean, we need to keep trash off the streets, out of catch basins, and runoff water free from pollutants.



Beach outfall

¿Cómo Puede Ser?

El agua que se desborda en jardines, aceras y calles se vierte a las cunetas, las cuales la transportan hacia las aperturas en las calzadas llamadas alcantarillas.

De allí, es vaciada al sistema del alcantarillado pluvial, el cual es una gran red de tuberías y canales que eventualmente terminan en el océano.

Cualquier cosa acarreada por este flujo, como por ejemplo pesticidas, excremento de animales, aceite o anticongelante derramados de carros y envases plásticos terminan ensuciando las playas, contaminando el océano, dañando a la fauna y al mismo tiempo a los humanos. Este flujo contaminado es la razón del cierre al público de algunas de nuestras playas más hermosas luego de una tormenta severa.

¡Basta un cuarto de galón de aceite de automóvil arrojado dentro del drenaje para contaminar 250,000 galones de agua marina!

A diferencia de las aguas que fluyen de las casas y negocios por medio del sistema de desagüe hacia las plantas de tratamiento, el agua que fluye por las calles va al océano sin ser tratada. El sistema de drenaje de lluvias es diseñado para prevenir inundaciones durante tormentas severas. Este sistema recoge rápidamente billones de galones de agua de las calles llevándolos directamente al océano.

Aún durante el día más seco en el sur de California se producen decenas de millones de galones de agua que fluyen por las calles como resultado de actividades tales como el lavado de carros, o riego y limpieza de jardines y patios.

Por nuestra propia protección debemos impedir que la basura llegue a nuestras calles y colectores de lluvia, así como asegurar que el agua que fluye hacias las calles, esté libre de contaminantes.

BIO-DEGRADATION TIMELINE

Depending upon their composition, products take different lengths of time to break down (bio-degrade) in the environment. Here are average times for these products.

Según la composición de los productos, estos varian en la cantidad de tiempo para descomponerse en el medio ambiente. Los siguientes son los periodos promedios para esos productos.

Paper towel/toalla de papel
2-4 weeks/*semanas*

Newspaper/*periódico*
6 weeks

Cardboard/*cartón*
2 months/*meses*

Tin can/*lata*
50 years/*años*

Polysterene cup
vaso de espuma plástico
50 years

Plastic bottle
botella de plástico
450 years

Disposable diaper
pañal desechable
450 years

- Every year, over 40 tons of trash washes up on our beaches.
- Approximately 80% of that trash could have been recycled.
- An average of 870,000 cigarette butts are tossed into the streets **every month.** These eventually wash into the storm drain system and onto the beaches and ocean. Fish and birds swallow cigarette butts often mistaking them for food, and die.
- The County of Los Angeles spends an average of $1.3 million cleaning the beaches after rainstorms every year.

NEIGHBORHOOD ACTION KIT

HANDS-ON ACTIVITIES TO PREVENT POLLUTION IN YOUR NEIGHBORHOOD AND WATERWAYS

Erase the Waste

BROUGHT TO YOU BY THE CALIFORNIA WATER BOARDS

Dear Resident:

As a Los Angeles area resident, we know that you care about your community, and want your children to grow up in clean and safe neighborhoods. But too often our local parks and playgrounds are tarnished by pollution – litter, fast food wrappers, cigarette butts and pet waste – and our beaches are closed due to the trash, pesticides, motor oil and other debris that are left in the streets to wash down the storm drains and out to our waterways, creating unsafe conditions. This problem – known as storm water pollution – is one that we must and can do something about.

The California Water Boards – the state and regional agencies responsible for protecting California's waters – have made reducing storm water pollution in Los Angeles County a top priority by sponsoring a two-year, $5 million storm water public education program, called *Erase the Waste*. This campaign uses advertising, news stories, special events and partnerships with local retailers, schools and community groups to inform and educate residents about the dangers of pollution, how it affects their neighborhoods and how it ultimately affects our waterways and our environment, as it makes its way from local storm drains directly into nearby creeks, rivers and the ocean. Residents can get involved and be part of the solution – with the ultimate goal of reducing pollution and improving the environment of our coastal and inland communities.

As part of this campaign, we are pleased to present you with the *Erase the Waste* Neighborhood Action Kit – an interactive resource that we hope will empower you to join our effort to erase the waste and take back your community from pollution and the associated risks that can threaten the health and safety of your family, community and area waters.

Why should you care about storm water pollution? Because with a population of almost 10 million residents in L.A. County, pollution is likely a part of your daily experience. Recent research estimates, that every month L.A. County residents drop almost one million cigarette butts in streets, parks and playgrounds and toss 830,000 pieces of trash on the ground, while dog owners fail to pick up after their pets 82,000 times. The fact is, nobody knows your community as well as you. And with your support, we can reduce these alarming statistics and lessen the amount of pollution in the Los Angeles area.

This *Erase the Waste* Neighborhood Action Kit contains a wide range of information and tools. Inside, you will find everything from tips on how to create a trash-free event, adopt your local park or neighborhood, or organize a clean up event with your family and neighbors, along with simple activities you can do with your children, and public speaking pointers, so that you can make a presentation on the issue to your local PTA or homeowners association.

If each of us commits to performing simple, preventive acts every day such as putting litter in the trash can and cigarette butts in ashtrays, picking up pet waste, using fertilizers and pesticides sparingly, using non-toxic products whenever possible and becoming involved in community clean ups, we would have a great chance of succeeding at our goal of ridding our neighborhoods of pollution.

The California Water Boards hope you find the tips and tools in this Neighborhood Action Kit (also available at www.erasethewaste.com) useful and appropriate for your family, neighborhood or organization, and that it motivates you to reduce pollution by erasing the waste.

Arthur G. Baggett, Jr.
Chair
California Water Boards

PRINTED ON RECYCLED PAPER

NEIGHBORHOOD ACTION KIT AT-A-GLANCE

THE KIT IS COMPRISED OF SIX SECTIONS:

SECTION I – CAMPAIGN BACKGROUND AND STORM WATER POLLUTION PREVENTION INFORMATION

This section contains:

- Background on the California Water Boards' *Erase the Waste* campaign
- Information and facts on the storm water pollution problem
- Profiles of those who pollute in L.A. County
- Good housekeeping practices that will help prevent pollution

SECTION 2 – HOW TO GET INVOLVED TO ERASE THE WASTE

This section focuses on pollution prevention information ranging from "Simple Tips for Individual Action," to neighborhood events, and from activities to do with children, to "Ideas for Large Groups and Organizations." Tips for organizing a successful clean up or pollution prevention event are included, as well as pre-event and day-of-event planning checklists. This section also includes a how-to sheet for developing partnerships and for reducing graffiti in your neighborhood.

This section also contains a template event flyer that can be adapted to individual events, a sample letter to solicit event partners and a sample release and indemnification form.

SECTION 3 – SPEAKING OUT TO ERASE THE WASTE

For many people, speaking in front of an audience is one of their worst fears. In "Speaking Out to Erase the Waste," the Neighborhood Action Kit provides:

- Ways to make speaking easier, by showing you how to develop a speech
- Pointers for speakers
- Basic facts and figures for your key messages

For large organizations, there is a how-to sheet for creating a formalized speakers bureau.

SECTION 4 – WORKING WITH MEDIA TO ERASE THE WASTE

The media can be a big asset in spreading the pollution prevention word, as well as helping gain support and resources for anti-pollution efforts.

"Working With Media to Erase the Waste" provides:

- Checklists for publicizing events and programs, and for maintaining media relationships.
- Information about a wide variety of media materials and activities, including a media advisory and release, pitch letter, letter to the editor, opinion-editorial (op-ed) article, calendar announcement, public service announcement, public affairs/news talk shows, media conferences and editorial board meetings. Templates and samples of many of these materials can be found at the end of this section.

SECTION 5- INFORMATIONAL MATERIALS TO ERASE THE WASTE

This section contains:

- Informational materials such as, flyers and posters that can be used to educate your neighbors and family about storm water pollution. Materials include:
  - *Erase the Waste* posters that relate to: (1) picking up pet waste; (2) putting cigarettes in ashtrays; (3) putting litter in the trash can; and (4) doing home improvement activities safely.
  - Flyers covering: (1) pet waste; (2) safe gardening; (3) litter prevention; and (4) safe home improvement.

SECTION 6 – ADDITIONAL RESOURCES TO ERASE THE WASTE

The final section of the Neighborhood Action Kit is a resource list that provides you with further information about a variety of topics under pollution prevention. The list is divided into eight categories:

- General Campaign Information
- Organizations That Hold Clean Up Events
- General Environmental and Storm Water Pollution Information
- Regulatory/Government Agencies
- *Erase the Waste* Community Advisory Council
- State, County and City Pollution Prevention Events
- L.A. County Household Hazardous Waste Events
- L.A. County Household Hazardous Waste Centers

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- 2004 L.A. County Household Hazardous Waste Collection Events
- Permanent Household Hazardous Waste Centers

SECTION 1

CAMPAIGN BACKGROUND AND STORM WATER POLLUTION PREVENTION INFORMATION

ERASE THE WASTE

LOS ANGELES COUNTY STORM WATER POLLUTION SOLUTIONS EDUCATION CAMPAIGN

BACKGROUND

Storm water pollution is a serious problem in Los Angeles County, with significant impacts on the region's water quality, environmental resources, plants and wildlife, and public health and safety. The issue also has significant economic impacts – as clean up measures are extremely costly, and poor water quality and unsafe beach conditions threaten Los Angeles' tourism-driven revenues.

To address this critical issue, the California Water Boards are sponsoring a comprehensive, two-year, $5 million public education program to measurably reduce storm water pollution in Los Angeles County. The Water Boards' primary mandate is to preserve, enhance and restore the quality of California's waters. This campaign – the first countywide storm water public education campaign under the Water Boards' auspices – is a further demonstration of the State's commitment to protect our inland, coastal and ground water sources and its priority focus to improve water quality to the benefit of Los Angeles County's nearly 10 million residents. Total campaign funding comes from California's Cleanup and Abatement Account (CAA), which derives funds from court judgments and administrative sanctions levied against corporate, government and industry polluters. All CAA funds, by law, must be used for clean water purposes, and do not represent taxpayer dollars.

CAMPAIGN OVERVIEW

The Water Boards' Los Angeles County-focused storm water public education effort is built around the theme, *Erase the Waste* – a positive, empowering theme that encourages all residents and stakeholders to take ownership of their communities, and help reduce and prevent storm water pollution in the local landscape.

The multifaceted, multiethnic campaign primarily reaches out to the region's "greatest polluters most likely to change their polluting behaviors" – an audience of more than seven million residents, approximately 72 percent of the total county population. This group represents all ethnicities, genders and levels of socio-economic status. The campaign also includes multiple opportunities to engage school-aged children, business and environmental stakeholders, and a diverse group of community-based organizations.

THE *ERASE THE WASTE* CAMPAIGN CONVEYS ACTION-ORIENTED POLLUTION PREVENTION MESSAGES TO RESIDENTS WHERE THEY LIVE, WORK, SHOP AND PLAY.

The *Erase the Waste* campaign conveys action-oriented pollution prevention messages to residents where they live, work, shop and play. The campaign places an emphasis on priority regional pollutants including trash, cigarette butts, animal waste, pesticides and fertilizers. The campaign also underscores the State of California's commitments to environmental justice and integrated environmental school education.

KEY CAMPAIGN ELEMENTS

- *Advertising* – A multi-media paid advertising campaign offers the first venue to deliver *Erase the Waste* messages to a mass audience. The campaign employs English and Spanish print, radio and television advertisements – including use of the first paid, network television advertising to address the storm water issue in the Los Angeles media market. The campaign uses a combination of dramatic and humorous approaches to illustrate the compelling human consequences of pollution and encourage pollution-reducing actions.

- *Community Outreach* – The campaign includes culturally relevant strategies and materials in multiple languages to reach diverse segments of L.A. County's population. Also, the campaign has taken a collaborative approach to educating the public by actively engaging key community leaders and organizations to be part of the campaign's development and implementation. *Erase the Waste* encourages residents to take action in preventing storm water pollution through its resource-based campaign Web site www.erasethewaste.com, the availability of this Neighborhood Action Kit, attendance at large-scale community fairs and festivals, and assistance from the *Erase the Waste* Water Improvement Network – a network of community-based organizations serving as local campaign "messengers."

- *Strategic Partnerships* – Innovative partnerships with retailers, corporations, municipalities and non-profit organizations, such as The Home Depot, Lowe's, Petco, 99 Ranch Markets, Los Angeles and San Gabriel Rivers Watershed Council and Heal the Bay, have been developed to increase the reach of campaign messages. Through these public-private partnerships, the campaign has invaluable opportunities to educate its partners' members and customers on storm water pollution issues through joint mailings, point-of-purchase displays, in-store promotions, distribution of campaign collateral and special discount programs.
- *Media Relations* – Ongoing strategic outreach is conducted to general market, environmental and ethnic news outlets to bring the issue of storm water pollution to the forefront of media coverage in Los Angeles. To keep this issue highly visible, outreach to the media includes development of policy-oriented news stories as events occur, seasonal tie-ins to the storm water issue and storm water pollution reduction resource articles. This effort underscores the California Water Boards' perspective on local and statewide storm water issues and raises visibility of the campaign's pollution prevention messages and educational efforts.
- *Youth Education* – Outreach to the youth of Los Angeles County serves as a vital segment of the campaign. Children can be powerful catalysts for change within their schools, homes and communities. By providing educational information on storm water pollution prevention, they will be able to create a long-term, positive change in the fight to prevent pollution. The campaign's efforts include the development and promotion of integrated water based education modules, as well as other means to reach children outside of the schools, including service learning projects and a public watershed education exhibit.
- *Business and Stakeholder Outreach* – Outreach is conducted to key business, political and environmental stakeholders to educate them on key storm water issues and keep them apprised of and engaged in campaign efforts.
- *Statewide Resources* – To support future storm water efforts statewide, the campaign is working with other environmental stakeholders to develop a Web-based statewide resource directory of storm water pollution prevention strategies and materials. This will be an important, sustainable tool for use by other municipalities, and will capture, categorize, evaluate and promote use of the "best of the best" in currently available storm water materials from throughout California.

THE WATER BOARDS' LOS ANGELES COUNTY-FOCUSED STORM WATER PUBLIC EDUCATION EFFORT IS BUILT AROUND THE THEME, *ERASE THE WASTE* - A POSITIVE, EMPOWERING THEME THAT ENCOURAGES ALL RESIDENTS AND STAKEHOLDERS TO TAKE OWNERSHIP OF THEIR COMMUNITIES, AND HELP REDUCE AND PREVENT STORM WATER POLLUTION IN THE LOCAL LANDSCAPE.

STORM WATER POLLUTION BASICS FACT SHEET

What is Storm Water Pollution and How is it Created?

Storm water pollution is a major environmental and public health issue in Los Angeles County, leading to unsanitary living environments, unhealthy surface waters, such as lakes, creeks and rivers, unhealthy ocean and beach conditions, and street and neighborhood flooding during the rainy season. It's created when trash, cigarette butts, animal waste, pesticides, motor oil and other contaminants left on the ground are washed or thrown directly into storm drains. This pollution mixes with millions of gallons of rainwater and flows untreated into local creeks, rivers and the ocean – polluting our waterways, as well as degrading neighborhoods and other natural resources.

How Big is the Storm Water Pollution Problem In Los Angeles?

With nearly 10 million people living in Los Angeles County, each resident's contribution to storm water pollution adds up quickly to create a serious public health situation. In a 1997 study conducted by Pelegrin Research Group, an estimate of the number of times per month that Los Angeles County residents engage in polluting activities was established, known as pollution volumetrics. According to an updated 2001 study, it is conservatively estimated that each month in L.A. County, residents:

STORM WATER POLLUTION IS CREATED WHEN TRASH, CIGARETTE BUTTS, ANIMAL WASTE, PESTICIDES, MOTOR OIL AND OTHER CONTAMINANTS LEFT ON THE GROUND ARE WASHED OR THROWN DIRECTLY INTO STORM DRAINS.

- Drop cigarette butts on the ground nearly 915,000 times
- Drop litter on the ground or out a car window more than 830,000 times
- Allow paper or trash to blow into the street more than 800,000 times
- Throw something in the gutter or down a storm drain nearly 280,000 times
- Empty a car ashtray into the street more than 40,000 times
- Hose leaves or dirt off a driveway or sidewalk into the street nearly 420,000 times
- Wash off paint brushes under an outdoor faucet more than 130,000 times
- Spray the garden or lawn with pesticide more than 210,000 times
- Walk a dog without picking up the droppings more than 82,000 times

In L.A. County, approximately 100 million gallons of contaminated water and debris drain through the storm drain system each dry day. That would fill the Rose Bowl 1.2 times. (On rainy days the flow can increase to 10 billion gallons per day).

What Are the Effects of Storm Water Pollution?

Public Health Risk – Serious health risks to people swimming or fishing in the Santa Monica or San Pedro Bay, especially within 400 yards of storm drain outlets.

- A study conducted by the Santa Monica Bay Restoration Project found that storm water pollution in the ocean leads to increased risk of viral infections, earaches, sinus problems, fever, flu and skin rashes and viral diseases such as hepatitis for those swimming in the ocean close to storm drain outfalls, especially following a rainstorm when litter and contaminants are flushed into the storm drain system. The Governor's Clean Beaches Initiative (CBI), funded by portions of four voter-approved bond measures, has already begun the clean up effort statewide through construction of diversion and treatment facilities.
- The Los Angeles County Department of Health Services recognizes the increased health danger associated with storm water pollution and has a standing rain advisory that "recommends that beach users avoid contact with ocean water, especially near flowing storm drains, creeks and rivers for a period of 3 days after rainfall ends."
- Heal the Bay's 2002-2003 Annual Beach Report Card on the health of Los Angeles County's beaches gave 56 percent of monitored beaches a failing grade during wet weather, meaning the conditions were hazardous to human health and would have adverse health effects to swimmers who enter the water.
- When bacteria levels exceed the State Standards, a warning sign is posted and swimmers are encouraged not to enter the water. Storm water contaminants are one of the main causes of increased bacteria levels at our local beaches. During 2002, there were 269 warnings posted on Los Angeles County beaches for a total of 1,181 days where the ocean was too polluted for human use.

STORM WATER POLLUTION BASICS FACT SHEET

Degradation of Natural Resources – Research conducted by regional agencies, respected environmental non-profit organizations and academic institutions have identified storm water pollution and urban runoff as the leading sources of pollutants to Los Angeles County's inland rivers, creeks, the ocean and beaches along the area's coastline. The widespread critical issue has reached a level that has prompted local, state and federal policymakers and regulatory agencies to enact and enforce more stringent storm water permit regulations, financial penalties and other compliance measures.

Economic Impacts – Beach attendance has dropped by 56 percent since 1983. The recreation and tourism industry is one of the top employers in the nation, and is a particularly valuable part of the Los Angeles coastal economy. Each year, Americans take more than 1.8 billion trips to water destinations, largely for recreation, spending money and creating jobs in the process. Activities related to the county's $2 billion annual tourism industry depend largely on the access and enjoyment of clean waters. If the perception of our beaches deteriorates, it poses broader implications for the region's financial growth.

Neighborhood Value and Involvement – When storm drains become clogged with trash and debris, it can result in street and neighborhood flooding during the rainy season. This water backup can lead to closed roads and increased traffic, and create an unhealthy environment of smelly and unsanitary conditions in communities, worsening local aesthetics and lowering property values. The cleanliness of communities has a further impact on the financial and personal investment residents make in their property, and contributes to the overall sense of community pride and civic engagement.

Ways to Reduce Storm Water Pollution

With the large population of L.A. County, even small, individual action steps to reduce storm water pollution can add up to big changes. Here are a few simple actions residents can take:

- THROW TRASH IN A TRASH CAN OR RECYCLING BIN (AS APPROPRIATE), NOT ON THE GROUND OR INTO THE STORM DRAIN
- CLEAN UP AFTER YOUR DOG EVERY TIME
- ALWAYS PUT YOUR CIGARETTE BUTTS IN AN ASHTRAY
- JOIN OR ORGANIZE A COMMUNITY CLEAN UP TO HELP PROTECT YOUR NEIGHBORHOOD
- REDUCE, REUSE AND RECYCLE MATERIALS WHENEVER POSSIBLE
- LEARN MORE WAYS TO REDUCE STORM WATER POLLUTION – LOG ON TO HTTP://WWW.ERASETHEWASTE.COM OR CALL 1(888)CLEAN-LA.

WITH THE LARGE POPULATION OF L.A. COUNTY, EVEN SMALL, INDIVIDUAL ACTION STEPS CAN ADD UP TO BIG CHANGES. LEARN MORE WAYS TO REDUCE STORM WATER POLLUTION – LOG ON TO WWW.ERASETHEWASTE.COM OR CALL 1(888)CLEAN-LA.

A PROFILE OF LOS ANGELES COUNTY RESIDENTS WHO POLLUTE

LOS ANGELES COUNTY RESIDENTS ARE...

- Overall, interested and concerned about neighborhood pollution and water quality
- Often unknowingly engage in polluting behaviors
- Willing to change behaviors that contribute to storm water pollution if given a good reason and simple action steps
- Highly motivated by the human consequences of pollution – particularly the health and safety of children – and a sense of personal responsibility

To maximize campaign resources and potential reductions in storm water pollution, the California Water Boards' *Erase the Waste* campaign focuses on three primary audience groups that comprise Los Angeles County's "greatest polluters most likely to change their polluting behaviors." Collectively, these residents make up approximately 72 percent of the L.A. County population, and represent all ethnicities, genders and levels of socio-economic status.

NEAT NEIGHBORS*

- Approximately 50 percent of Los Angeles County residents
- 4.5 million adults
- Middle to high income, home-owning, family-oriented professionals
- Avid recyclers, who want to keep their neighborhoods neat and clean
  - Hose off their driveways into the storm drains more than 200,000 times a month
  - Drop their cigarette butts on the ground nearly 375,000 times per month

RUBBISH REBELS*

- Approximately nine percent of Los Angeles County residents
- 405,000 adults
- Predominately single males in their teens and twenties
- This small group accounts for a disproportionately large amount of pollution, mainly due to blatant polluting behaviors
  - Dump their ashtrays in the street more than 20,000 times per month, accounting for 42 percent of all ashtrays dumped in the streets
  - Throw litter from their cars nearly 575,000 times per month
  - Drop trash directly into the storm drains more than 125,000 times per month

FIX IT FOUL UPS*

- Approximately 13 percent of Los Angeles County residents
- 1.2 million adults
- Devoted do-it-yourselfers, responsible for a large amount of pollution mainly related to working on their cars, homes and gardens
  - Fail to recycle used motor oil and other car fluids more than 124,000 times a month
  - Spray yards with pesticides that wash into the storm drains nearly 100,000 times a month
  - Hose down their driveways into the street more 85,000 times a month

* These audiences were originally identified (and given their nicknames) in a landmark population segmentation study conducted by Pelegrin Research Group (Glendale, California, May 1997). Pollution volumetrics – quantifiable estimates of each audience's polluting behaviors per month – were also identified and tracked though evaluation studies from 1997-2001.

COLLECTIVELY, THESE RESIDENTS MAKE UP APPROXIMATELY 72 PERCENT OF THE L.A. COUNTY POPULATION, AND REPRESENT ALL ETHNICITIES, GENDERS AND LEVELS OF SOCIO-ECONOMIC STATUS.

10 WAYS YOU CAN ERASE THE WASTE AND PREVENT STORM WATER POLLUTION

Storm water pollution is a serious issue in Los Angeles County – one that leads to increased health risks, neighborhood flooding, unsanitary living environments and unsafe ocean and beach conditions – as well as high costs to clean up tons of pollution each year. Storm water pollution is created when litter, animal waste, cigarette butts, pesticides, motor oil and other contaminants left on the ground are washed or thrown directly into storm drains, where this toxic soup clogs gutters, causing neighborhood flooding and pollution of our local rivers, creeks and the Pacific Ocean.

Through the *Erase the Waste* storm water pollution prevention campaign, the California Water Boards encourage all Los Angeles County residents to take the following simple, everyday actions to improve our region's water quality and quality of life:

1. Throw your litter in the trash can or recycling bin (as appropriate), not the street and never into the storm drain. Dispose of all trash properly – fast food wrappers, Styrofoam cups, bottles and paper – every time.

2. Always put your cigarette butts in ashtrays, not on the streets. Remember – our parks, playgrounds and beaches are not ashtrays. "Hold on to your butts" and help keep these places clean and safe for Los Angeles' children and families to enjoy.

3. Empty automobile ashtrays into the trash, not out your car window. Keep these toxic butts from polluting our waterways… while also minimizing the risk that children and pets will ingest, choke on or get burned from these dangerous pollutants. It will also minimize the risk of fires.

4. Pick up after your dog and dispose of waste in trash cans or the toilet. Bring extra bags on your walk to share with other pet owners. You can help cut down on the spread of disease carried by animal waste and maintain clean and healthy neighborhoods, beaches and waterways.

5. Take action. Organize or join in the clean up of a beach, river or community. Join with your neighbors to adopt a local park or playground and organize a clean up event. Do your part to keep your community and waterways healthy and clean and encourage others to participate. Get involved and beautify your neighborhood!

6. Reduce, Reuse and Recycle materials whenever possible. By following the Three R's, you will be creating less waste that could end up on our streets and contribute to further storm water pollution.

7. Limit use of pesticides and fertilizers year-round – especially during the rainy season. Excess pesticides and fertilizers applied to your garden and yard will wash away in the rain, straight into the storm drain system. Apply lawn and garden chemicals sparingly and follow directions.

8. Make it a practice to purchase non-toxic or less-toxic products for home and garden use. Dispose of all leftover toxic products (paint, household cleaners, pesticides, etc.) at a free monthly Household Hazardous Waste Collection Event. Call 1(888)CLEAN-LA to find an event near you.

9. Recycle your used motor oil and other automotive fluids by taking them to a certified used oil recycling center where it can be disposed of properly. For a location near you in Los Angeles County, call 1(888)CLEAN-LA.

10. Rake or sweep up sidewalks and driveways, rather than hosing them down. Using a hose forces debris and chemical residues into storm drains, which can clog gutters and lead to street flooding and polluted waterways.

FIND MORE POLLUTION PREVENTION TIPS AND ENVIRONMENTAL RESOURCES ON WWW.ERASETHEWASTE.COM

SECTION 2

HOW TO GET INVOLVED TO ERASE THE WASTE

HOW TO GET INVOLVED TO... Erase the Waste

In the 1960s, a major advertising campaign was launched to help in the fight to reduce litter in our communities. Laws were also enacted that stiffened fines for littering and illegal dumping. However, 40 years later, the problem remains, and has caused significant impacts to our environment and waters.

Under the "cause" and "effect" scenario, litter and other pollutants that are left on the ground and in the streets, are carried into the storm drains and then deposited into creeks, rivers, lakes and the ocean. The effect is costly, unsightly and unhealthy.

WHY PEOPLE LITTER

- Lack of knowledge about the problem
- Cost and convenience
- Attitudes
  - People don't feel a sense of ownership, even though areas such as parks and beaches are public property.
  - People believe someone else – park, maintenance or highway crews – will pick up after them.
  - People see that litter has already accumulated and figure a little more won't make a difference.

IF YOU ... OWN A HOME,
RUN A BUSINESS,
DRIVE A CAR,
JOG, HIKE OR BIKE,
SWIM IN THE OCEAN,
PAY TAXES, OR
CARE ABOUT GOOD HEALTH,
YOU SHOULD KNOW THAT LITTER AND OTHER POLLUTION IS MORE THAN AN EYESORE. IT IS UNSAFE, UNHEALTHY AND COSTLY.
YOU CAN COVER YOUR EYES AND PRETEND IT'S NOT THERE...OR DO SOMETHING ABOUT IT.

WHY GET INVOLVED IN *ERASE THE WASTE*

Litter is anything that should be recycled or put in a trash can, but instead ends up on sidewalks, streets, parking lots, roads, highways, the countryside or anywhere else it doesn't belong. It ranges from candy wrappers and beverage containers to cigarette butts, unwanted appliances and animal waste. Fighting litter requires each of us to play a very simple, but important role because:

- Children can injure themselves or become ill handling litter. And, litter ingested by pets and wildlife on land, and in water, threatens their lives. Litter provides a breeding ground for disease-carrying rats and insects.
- Litter is a serious problem that impacts public health, business and tourism.
- Litter discourages economic development because it impacts property values. Stores and businesses will not locate in a community that lacks the pride to effectively control litter and pollution. Litter reduces property value, because its sends a message that the community no longer takes pride in its appearance.
- Litter destroys the beauty of your neighborhood.
- Local and state agencies spend millions of taxpayer dollars on education and clean up activities, in an effort to combat the litter and pollution problem.
- Litterbugs are found among people of every age, sex, race and ethnic origin, at every level of society and in all geographic locations. Unfortunately, almost everyone is a litterbug at some time.

EVERY PERSON AND EVERY ACTION COUNTS:

SIMPLE TIPS FOR INDIVIDUAL ACTION

Here are a few simple tips to do your part on a daily basis. Further in this Neighborhood Action Kit, you will find more information, ideas, activities and resources to fight litter and storm water pollution in your community.

LITTER REDUCTION

- Make a resolution not to litter – and keep it! Always put your trash in a proper container. If one is not available, hold on to your trash until you find one.
- If you are a smoker, always put your cigarette butts in an ashtray or trash container, not on the ground. Butts are toxic and polluting, to say nothing about being dangerous to children and pets that might ingest them, choke or get burned.
- Always keep a trash bag in your car and use it. Grocery and produce bags work well.
- If you see rubbish, abandoned vehicles/furniture/appliances, graffiti or other pollutants, make a note of it and immediately report it to your city's public works or sanitation department.
- Report any illegal dumping of litter, debris or contaminants into local storm drain inlets, by calling 1(888)CLEAN-LA (1(888)253-2652).
- Set a good example. Don't be a litterbug. Inform others about the costs and dangers of littering.

REDUCE, REUSE, RECYCLE

- Participate in recycling programs. Curbside, drop-off and/or buy-back programs are available in every community.

PET WASTE

- Pick up after your pet every single time. Grocery and produce bags will work, plus there are many special bags and containers available in pet stores to make this job easier. This will help cut down on the spread of disease carried by animal waste and keep neighborhoods clean and healthy. Picking up dog waste is a County Ordinance and pet owners disregarding this law may be fined.

PET WASTE SHOULD ALWAYS BE PUT IN THE TRASH OR FLUSHED IN THE TOILET. NEVER WASH IT INTO THE GUTTER OR STORM DRAIN.

- Carry extra bags when walking your pet and share with other pet owners.
- Pet waste should always be put in the trash or flushed in the toilet. Never wash it into the gutter or storm drain.
- Carry extra bags in your car, so you are prepared when you travel with your pet.
- Post a friendly message in your yard or neighborhood park, reminding pet owners to pick up after their pets.

GARDENING AND LAWN CARE

- Limit use of pesticides and fertilizers year-round, but especially during the rainy season. Follow the directions on the packaging carefully.
- Never over water your yard after applying pesticides and fertilizers, and don't apply chemicals just before a rain. Both will cause excess pesticides and fertilizers to wash from the yard and into storm drains, contaminating our waterways.
- Never rake, blow or hose yard waste into the gutter. Soggy yard waste is a major contributor to clogged storm drains, and street and neighborhood flooding.
- Make it a practice to purchase non-toxic or less-toxic products for home and garden use. Buy only what you need. Store left-over products in leak-proof containers and clearly mark the contents. Dispose of all toxic products at a free monthly Household Hazardous Waste Collection Event. Call 1(888)CLEAN-LA (1(888)253-2652) to find an event near you.
- Use California-friendly plants in your yard or garden that use two-thirds less water than other plants. There are more than 6,000 native California-friendly plants. To get information about these plants and where to buy them, log on to http://www.bewaterwise.com.

INDIVIDUAL ACTION

HOME IMPROVEMENT PROJECTS

- Use water-based paints whenever possible and buy only the amount you need.
- Wash paint brushes in an inside sink, not outside where the dirty paint water runs into the gutter.

DISPOSE OF ALL LEFT-OVER TOXIC PRODUCTS, SUCH AS PAINT, HOUSEHOLD CLEANERS AND FERTILIZERS, AT A FREE MONTHLY HOUSEHOLD HAZARDOUS WASTE COLLECTION EVENT.

- If you have left-over paint, turpentine, glue or other toxic home improvement products take them to a Household Hazardous Waste Collection Event. Your old paint will be donated to a graffiti paint-out effort.
- Use non-toxic or less-toxic cleaning products as much as possible.

VEHICLE MAINTENANCE AND USE

- Make sure your car doesn't leak fluids on the driveway or streets.
- Always recycle your used motor oil and filter. Dumping motor oil and other toxic products down the storm drain is illegal. Call 1(888)CLEAN-LA for the location of a free Household Hazardous Waste Collection Event or an auto repair shop that recycles vehicle fluids.
- Whenever viable, wash your car on a surface that will absorb the water, or take your car to a car wash.
- Properly maintain your vehicle, and perform smog checks as governed by law. This will improve your car's performance, and limit the amount of pollutants that enter the air, and ultimately fall to the pavement, and wash into waterways.
- Carpool, walk or ride your bike, when possible. Limiting vehicle use reduces pollution.

GRAFFITI

- Erase or report graffiti quickly. Statistics show that the faster graffiti is erased, the slower it is to return. One of the best uses of old paint is graffiti removal. Donate your old paint to local graffiti abatement programs or take it to a Household Hazardous Waste Collection Event, where your paint will be used for graffiti removal purposes.

STATISTICS SHOW THAT THE FASTER GRAFFITI IS ERASED, THE SLOWER IT IS TO RETURN.

- Landscaping can also slow down the occurrences of graffiti vandalism. There are a variety of shrubs and vines that can be planted against walls and buildings. For example, the City of Long Beach has a Graffiti Landscape Grant Program from which residents and businesses can apply for financial assistance to plant these types of foliage.

EVERY PERSON AND EVERY ACTION COUNTS:
IDEAS AND ACTIONS FOR YOUR NEIGHBORHOOD

If you want to take a hands-on role in keeping your neighborhood clean and getting your neighbors involved as well, think about organizing a neighborhood clean up, a community garage sale, charitable donation drive or any one of a variety of ideas outlined in this Neighborhood Action Kit.

- Information about the activities and organizations mentioned on this sheet can be found in the resources section of this kit.

RIVER/BEACH CLEAN UPS

Any organization or individual can participate in programs that collect and remove debris from creeks, rivers, beaches and shorelines. This type of activity is designed to clean the area and raise general public awareness of marine debris pollution. Other clean up programs go beyond simply collecting and removing debris. Some programs record data on the numbers and types of debris and pollutants being found. Data collected from clean ups can be extremely important in convincing politicians to actively solve the marine waste problem and are useful at all levels of government.

The top 10 most frequently found marine debris items in the United States during the International Coastal Clean Up are: cigarette butts (23%); plastic pieces (6%); foamed plastic pieces and food bags/plastic wrappers (5% each); paper pieces, plastic lids and caps and glass pieces (4% each); glass beverage bottles and straws (3% each); and beverage cans and plastic beverage bottles (2% each).

Volunteer for a river or beach clean up. Some of these annual events and organizations include: Heal the Bay, California Water Boards' Clean Water Team, Santa Clarita River Rally, Friends of Los Angeles River Annual Clean Up, Ballona Creek Renaissance and California Coastal Clean Up. Other clean up events and organizations can be found in the resources section of this kit.

- See the "Sample Planning, Evaluation and Reporting Form" later in this section for information about collecting data on your clean up event.

COMMUNITY CLEAN UPS AND BEAUTIFICATION

Neighborhood clean ups can be a fun, easy and much needed activity that will make a positive impact in your community. Neighborhood clean ups can involve collecting litter and recyclables, painting out graffiti, planting trees and flowers, creating a mural and hauling away bulky items. Think in terms of an old fashioned block party or a block spring clean. What a great way to spend time with neighbors and friends, get some exercise and at the same time accomplish a worthwhile activity.

If you don't want to organize a neighborhood clean up, join an existing one. An example of an existing clean up program you and your neighbors can join is the City of Los Angeles' Operation Clean Sweep. L.A.'s Operation Clean Sweep conducts ongoing clean up programs in neighborhoods across the city every week. Check your respective city's Web site or call your public works department to see if your city has an organized beautification program you can join.

- See the "Sample Planning, Evaluation and Reporting Form" later in this section for information about collecting data on your clean up event and where to send the final report.

DOGGIE DO AT DOG PARKS

Whenever you hear about the possibility of creating a dog park in your neighborhood, get out and support it. If you already have a dog park in your neighborhood, make sure you and your family use it. These parks provide not only a safe place for your pet to run and play, but also makes cleaning up after your pet much easier. If there is not a dog park nearby, make sure you carry a bag when you are out with your pet to pick up after it. Also, carry extra bags to give others you see on your walks who might not have a bag. If your neighborhood park doesn't carry complimentary bags, think about getting the neighbors together to campaign before the local city council for park doggie do bags.

WATER MONITORING

Volunteer water quality monitoring can be an important component in a comprehensive water quality monitoring program. Volunteers can gather technical data to determine the environmental health of a watershed. Water quality monitoring by volunteers gives students and others practical experience, involves them in the monitoring and management of their watershed, and increases the knowledge of stakeholders about area waterways.

When volunteers receive proper training and proper quality assurance procedures are followed, volunteer monitoring data can be as reliable as data collected by professionals. There are several local water quality organizations that train and certify volunteers to collect and analyze the water quality at monitoring locations throughout the watershed.

Some of the water monitoring groups around Los Angeles County include: the Arroyo Seco Stream Team; Los Angeles River Water Quality Monitor; Heal the Bay; and San Gabriel River Watershed Water Quality Sampling. Information about these programs can be found in the resources section of this kit.

YOUR NEIGHBORHOOD

ADOPT-A-STREET CORNER, PARK, PLAYGROUND OR STORM DRAIN

Residents can adopt a public site near their home or business and routinely pick up litter and/or clean off graffiti when it appears at their adopted location. Since neighbors are the first to see graffiti and can remove it immediately, this approach is the most effective way to clean up this unsightly problem. You and your neighbors can care for your adopted spot during a weekly walk or as part of a scheduled neighborhood gathering. One example of an adopt-a-site program is Adopt-a-Beach sponsored by the California Coastal Commission.

YARD SIGNAGE

With the rising amount of home computers and simple desktop publishing software, more and more people have the capability to generate simple signs on 8½" x 11" paper (or smaller) that can be laminated. These simple signs can be staked or posted in your yard to remind dog walkers to "Please pick up after your dog" or passers-by to "Please don't litter my yard. It is not a trash can." You can use the verbiage on the posters and flyers included in the "Informational Materials to Erase the Waste" section of this kit for your yard signs. Sometimes this type of signage can be purchased at home improvement stores or nurseries.

PARTICIPATION IN LOCAL RETAILER EDUCATION EVENTS

Many nurseries and home improvement stores hold regular customer workshops. Talk to local retailers about the possibility of including workshop topics involving environmental protection. This would help supplement your own education efforts in the local community. Topics might include the following: safe use of fertilizers and pesticides for beautiful lawns and gardens; alternative products and practices for healthy lawns and gardens; environmentally safe car repairs; and simple and easy home repairs. Most of these workshop programs are free to customers and usually don't last more than a few hours on the weekend. Make time to suggest these alternative workshop themes to local retailers and encourage your neighbors to attend them to learn useful tips that help the environment.

CURBSIDE COLLECTION

Most communities in Los Angeles County have curbside collection or tree recycling programs. However, not everyone uses these services. Items such as Christmas trees or large objects shouldn't be placed in trash containers, and neighbors should be reminded to utilize services the local waste hauler has in place. Send out a handwritten reminder to your neighbors and friends about curbside collection or tree collection events. You can get this information by calling your city's public works or sanitation department.

COMMUNITY GARAGE OR RUMMAGE SALES

A community garage sale involves setting a designated date on which each household on your block (or designated area) holds their own garage sale. If multiple households are involved, the cost of signs, newspaper ads and other expenses can be split between all the participating households.

Community rummage sales are generally fundraisers for local charities. Community members contribute items to the event, and volunteers help staff booths to sell these items. Talk to your local library, schoolyard, park or retailer with a large parking lot for an event location.

By doing either of these activities you can reduce the amount of garbage that is sent to landfills or is improperly discarded, support your favorite charity and give your old possessions a new life with a different family.

DONATION DRIVES

Your neighborhood can encourage its residents to donate materials to their favorite charities. This might motivate infrequent donors to make a special effort to dig through garages and closets in search of reusable materials. It also encourages those who never donate to get involved. One kind of left-over product that can be put to good use is paint. Paint that is donated to graffiti reduction programs is used to paint-out graffiti in public places. Check the yellow pages under "Human Services Organizations," "Non-profit Organizations," or "Charities" for groups accepting donations, or call your city's public works department to find a graffiti abatement program for your paint.

- Information about the activities and organizations mentioned on this sheet can be found in the resources section of this kit.
- "Tips for Organizing a Successful Event," a "Pre-Event Planning Checklist," and a "Day-of-Event Checklist" can be found at the end of the "Getting Involved to Erase the Waste" section of this Neighborhood Action Kit.
- See the "Sample Planning, Evaluation and Reporting Form" later in this section for information about collecting data on your clean up event and where to send the final report. Individuals who return this form will receive a Certificate of Recognition from the California Water Boards. Return by fax to (916) 341-5252; Attn: Tom Mays.

EVERY PERSON AND EVERY ACTION COUNTS:
IDEAS FOR LARGE GROUPS AND ORGANIZATIONS

Community-based organizations with a large membership can implement on a larger scale any of the activities discussed in the "Ideas and Actions for Your Neighborhood" section, and with additional resources and outreach, larger activities can be considered. Any or all of these events can be conducted to coincide with major events such as Earth Day (April), America Recycles Day (November) or Pollution Prevention Week (September).

- Information about the activities and organizations mentioned on this sheet can be found in the resources section of this kit.

Some of these larger-scale activities include:

STORM DRAIN STENCILING

Have your organization stencil storm drain inlets in your neighborhood with a storm water pollution prevention message. A stenciling effort requires coordination with your city's public works department for permission to paint on sidewalks or streets. Many municipalities have a pre-approved stencil pattern that you must use. Your organization should also find out about specialty paints and application techniques. Call Heal the Bay at 1(800) HEAL-BAY (1(800) 432-5229) for information on their neighborhood stenciling program and to learn how to get involved.

ADOPT-A-BEACH OR WATERWAY, FORM A WATER MONITORING TEAM

This effort is similar to the activity described under the neighborhood activities, but with an organization behind you, it can grow in scope. With a large organization, an ongoing schedule can be established or a larger area can be "adopted" or monitored.

- See the "Sample Planning, Evaluation and Reporting Form" later in this section for information about collecting data on your clean up event and where to send a final report.

MANY OF YOUR ORGANIZATION'S MEMBERS MOST LIKELY WORK IN AN OFFICE. ENCOURAGE EACH OF THESE MEMBERS TO ORGANIZE AN OFFICE CLEAN UP EVENT IN THEIR RESPECTIVE PLACE OF WORK.

OFFICE CLEAN UP EVENTS

A large amount of bulky goods are generated from businesses and offices, including used paper. The U.S. Conference of Mayors sponsors its annual Clean Your Files Day to encourage offices to reuse and recycle paper (some communities also focus on other office supplies and equipment). Your office can also organize a swap meet or "white elephant sale" during Second Chance Week, a week created to encourage the reuse of these materials.

Many of your organization's members most likely work in an office. Encourage each of these members to organize an office clean up event in their respective place of work.

CURBSIDE EXCHANGES

Your organization might consider conducting a curbside exchange event, where a group of residents or businesses leave reusable goods on the curb to be picked up and put to use by other residents or businesses. Another location option for your "curbside" exchange is a local parking lot, such as a library or local business, where all goods can be brought to a single area. When developing your plans for an exchange event, don't forget to have a plan for proper disposal of goods remaining on the curb or in the parking lot.

A flyer with a signup sheet can be walked around to homes and businesses within a specific area. A follow-up flyer with a list of participating houses/businesses, the timeframe for the event, and the ground rules can be distributed the week prior to your curbside exchange. Think about distributing the follow-up flyer beyond the boundary of the participating area to attract a wider audience. Don't forget to remove your flyers after the event concludes.

LARGE GROUPS & ORGANIZATIONS

ELECTRONICS RECYCLING

More than 12 million computers are scrapped every year in the United States and many more old computers are being stored in closets and garages. With HDTV being implemented universally in 2006, and computer technology becoming obsolete every 18 months, the problem will continue to accelerate. Non-profit organizations can partner with city departments or computer retail stores for an electronics collection event. Usable equipment can be donated to schools or charitable organizations, unusable equipment can be taken to an e-waste collection event.

MORE THAN 12 MILLION COMPUTERS ARE SCRAPPED EVERY YEAR IN THE UNITED STATES AND MANY MORE OLD COMPUTERS ARE BEING STORED IN CLOSETS AND GARAGES.

USED BUILDING MATERIALS COLLECTION EVENTS

Windows, doors, lumber, plumbing fixtures and appliances can be reused for new construction and for refurbishing older buildings and homes. For example, Habitat for Humanity has established ReStores, a thrift shop that recycles quality surplus, new and used building materials. There are four ReStores in Southern California. Developing a used building materials event is an idea worth investigating.

ReStores in Southern California:

167 Lambert Street
Oxnard, CA 93030
(805) 485-6065

770 North Fair Oaks Avenue
Pasadena, CA 91103
(626) 792-3838

2121 Atlanta Avenue
Riverside, CA 92507-2441
(909) 784-9474

2165 South Grand Avenue
Santa Ana, CA 92705-5204
(714) 434-6202

HABITAT FOR HUMANITY HAS ESTABLISHED ReSTORES, A THRIFT SHOP THAT RECYCLES QUALITY SURPLUS, NEW AND USED BUILDING MATERIALS.

- "Tips for Organizing a Successful Event," a "Pre-Event Planning Checklist," and a "Day-of-Event Checklist" can be found at the end of the "Getting Involved to Erase the Waste" section of this Neighborhood Action Kit.
- A checklist of publicity activities your organization can undertake to publicize your efforts can be found in the "Working with Media to Erase the Waste" section.

TIPS FOR ORGANIZING A SUCCESSFUL ACTIVITY

As the organizer of a community event, you want to have a successful event without spending all your free time to do it. Here are some simple steps that all event organizers should consider to maximize their time and the success of their event.

1. **Pick an activity that is well-suited to your neighborhood, community or organization.** In selecting an activity, think about what the major problems are in your area. If you are uncertain about the major pollution issues in your community, contact your public works department, neighborhood action committee or local environmental group. This will help you select the activity that will make the biggest difference.
   - Concentrate on littered or graffiti'd areas not normally reached by ongoing programs.
   - Your area should be of workable size. It is important that you achieve total clean up with your available time and resources.
2. **Spend ample time in the planning stage.** It will save you time later. Invite a few neighbors for coffee or snacks, or have a staff or membership meeting. Brainstorm about tasks, resource needs (equipment and people), local business participation, and roles and responsibilities.

   Clearly define the goals of your event. For example, how many volunteers you would like to recruit, how large of an area to clean, how many pounds of trash to collect, etc. The satisfaction of a job well done starts with knowing exactly what you want to accomplish.

   Dependent upon the area(s) you've selected to clean up, you might need to obtain permission from the property owner or the City. At minimum, let your local law enforcement agency know your group will be conducting a clean up.

   Determine who will handle and dispose of the litter, yard waste, charitable donations and used equipment at the end of your event. Your city public works or sanitation department, waste hauler, recycling center or nearby charity store might be able to help. This resource may also help you weigh and/or sort your trash for record keeping purposes and for sharing with the California Water Boards.

   ■ See the "Sample Planning, Evaluation and Reporting Form" later in this section for information about collecting data on your clean up event and where to send a final report.
3. **Get help from fellow residents, local businesses and other organizations.** You need volunteers to do the planning work and the day-of-event work. Local businesses might be willing to help with trash containers, plastic bags, paint and paint brushes, hoes, rakes and refreshments. But you need to pick up the phone and ask.

   Here are some ideas for local partners and how they can get involved:
   - Hardware stores: Tips on safe use and storage of paints and chemicals; donations of tools and/or materials
   - Home improvement stores: Demonstrations on safe use of lawn products and proper home improvement practices; donations of tools and/or materials
   - Nurseries and gardening supply stores: Demonstrations on safe use of lawn products
   - Waste haulers and recycling centers: Help in clean up of waste gathered at your events
   - Fast food restaurants and donut shops: Advertising on paper cups and bags and at their establishment; refreshments for your event
   - Grocery and convenience stores: Advertising on grocery bags
   - Business associations/improvement districts: Funding, advertising or resources for your event
   - Environmental or other non-profit organizations: Organizing resources, advertising, networking opportunities, or developing handouts for your event
   - City/County public works and sanitation departments: Funding, organizing resources, or advertising your event

   ■ More information about forming partnerships is included in this section of the Neighborhood Action Kit.

   If you need more resources than your immediate neighborhood or organization can provide, here are some organizations that may offer volunteer support:
   - Youth — Boy Scouts, Girl Scouts, Campfire Girls, 4-H clubs, Future Farmers of America, faith-based groups
   - Service — Lions, Rotary, Kiwanis
   - Environmental — Sierra Club, TreePeople, Heal the Bay, Conservation Corps

ORGANIZING ACTIVITIES

- Schools — PTA, community colleges, trade schools, adult development centers
- Recreational — bass and fishing clubs, rowing clubs, soccer and softball leagues
- Marinas — yacht club members
- Business — chambers of commerce, trade associations, local retailers
- Homeowners — Homeowner and resident associations

A simple flyer or handwritten invitation can be used to recruit your immediate neighbors to join the effort. (A flyer template can be found at the end of this section.) For larger-scale activities involving any of the organizations listed above, let the organization recruit and coordinate their members and give you a report on the numbers you can expect. You can also draft a press release and send it to the local newspaper for placement in the community calendar section.

Prior to the event, all volunteers should receive information about what to wear (type of clothes, shoes, hat, gloves and sunscreen); time and location of designated meeting place; and tools to bring (if they have access to them). After the event, everyone should receive a thank-you note.

- See the "Working with Media to Erase the Waste" section in this kit for the proper formats for media materials.

4. **Get the word out.** Organizers of small neighborhood clean ups (one to two blocks) should tell their neighborhood weekly paper what they are doing to call attention to the problem and to draw volunteer support. After the event, they should also be contacted with a success story of the event. Facts and figures will interest every newspaper – how many people participated, how large of an area you cleaned, how many pounds or bags collected, number of bulky items removed, etc. You can find which papers publish in your neighborhood by looking in the free racks at the grocery store, outside convenience stores, in street containers and at neighborhood restaurants. Inside each paper you will find contact information for the publisher and who to contact.

- To generate greater media coverage or involvement for large-scale events, see the "Working with Media to Erase the Waste" section of this kit.

Another way to get the word out is by posting signs and flyers. You can use the ideas provided in the templates in this Neighborhood Action Kit. Also, make sure someone is assigned to remove the signs after the event concludes.

A final idea is to send "blast e-mails" or "blast faxes." This is usually a single page of information sent (or "blasted") to a list of people in groups. For example, if you have an e-mail address list for a group of neighbors, you can send a single e-mail to the entire group. The same type of list creation can be done for organizations, partners, businesses and media.

- A sample blast e-mail/fax can be found at the end of this section.

5. **Measure What You Collect and Tell the California Water Boards.** The Water Boards are very interested in hearing about the success of your event and the data you were able to collect. The "Planning, Evaluation and Reporting Form" at the end of this section can assist you in all phases of your event planning and reporting of data. The Water Boards will welcome receiving this form and learning about your clean up efforts. They will send you a Certificate of Recognition as an appreciation for your participation and interest in cleaning our environment.

- See the "Sample Planning, Evaluation and Reporting Form" later in this section for information about collecting data on your clean up event and where to send the final report.

ORGANIZERS OF SMALL NEIGHBORHOOD CLEAN UPS SHOULD TELL THEIR NEIGHBORHOOD WEEKLY PAPER WHAT THEY ARE DOING TO CALL ATTENTION TO THE PROBLEM AND TO DRAW VOLUNTEER SUPPORT.

DEVELOPING PARTNERSHIPS/SPONSORSHIPS

A partner in any of your pollution prevention activities can help in a number of ways including:

- Spreading the word about the problem and the event
- Providing in-kind services, products or funds
- Increasing your resources and budget
- Providing endorsement and support, particularly partnerships with elected officials
- Reinforcing working relationships
- Providing recources
- Producing how-to workshops for do-it-yourselfers and gardeners

STEPS TO DEVELOPING A SUCCESSFUL PARTNERSHIP

Step 1 — **Decide what you want or need, then prioritize;** for example, volunteer support, products, and endorsements.

Step 2 — **Brainstorm with neighbors, staff or friends about potential partners.** Create a list of potential partners based on your list of prioritized needs. Also, brainstorm on ways to acknowledge or recognize your partners' efforts and assign someone to ensure the acknowledgement or recognition happens. Here are some ideas of what you can give a partner: recognition in all publicity materials (e.g., flyer, media release); signage at the registration area; and/or acknowledgment from the city council or the homeowners association. At minimum, every partner should receive a personal thank-you note after the event that tells what their contribution accomplished.

See if anyone in your brainstorming group knows someone who works for a listed potential partner or has information that can help you contact the potential partner.

Find out everything you can about the potential partner's business; why should this particular business be interested in the problem or your activity.

SAY CONCISELY WHO YOU ARE,
WHAT YOU WANT, WHY YOU WANT IT,
AND WHAT THE PARTNER
GETS OUT OF IT.

Step 3 — **Ask for Assistance.** You can ask for bottles of water, volunteers, trash bags, publicity and/or money, or other services and supplies. Requests can be made by phone, introductory letter or e-mail. The approach is dependent on whether you (or someone else) know the potential partner and/or whether the partner knows about your effort or organization.

Before you make the contact, know exactly what you want to say, concisely:

- Who you are
- What you want (have specific ideas and a backup wish list)
- Why you want it
- What the partner gets out of it

Be prepared to be flexible. Leave the options open. Engage the potential partner in a discussion that can lead to new and different ideas.

Step 4 — **If you are successful in securing a partner – get it in writing.** Write a simple letter of understanding that both of you sign. It should state exactly what the partner has agreed to, what the timeframe is and what the partner will be given in return.

Make sure that you provide the partner with all the promised benefits; recognize their support through a thank-you letter or proclamation or other public acknowledgement. Send them copies of any media coverage about the event or activity.

■ A sample partnership letter can be found at the end of this section.

✓PRE-EVENT PLANNING CHECKLIST

Individuals and organizations can use the comprehensive list below in planning a variety of events. Select the tasks that apply to your event and ignore the remainder of the list.

- ☐ Apply for available grants (this requires several months of lead time). Neighborhood groups or non-profit associations may apply to local, regional or state organizations for funds to use in clean up activities. The U.S. Environmental Protection Agency has an on-line grant-writing tutorial at http://www.epa.gov/seahome/grants/src/msieopen.htm.

  While grant application requirements vary from agency to agency, they all require the following information: Name of group, contact person, type of activity, who or what the activity benefits, how many people are involved, a task or activities plan, what quantifiable outcomes are expected, how much money is being requested and what specific activities will be covered under the grant.

- ☐ Form an organizing group that includes neighbors; friends; members of your agency's staff; representative(s) of your partners including a waste hauler, participating organizations and/or a representative of the area targeted for clean up.

- ☐ Select a site location(s) for the clean up and estimate the types and amount of litter that needs to be removed.

- ☐ Determine the number of volunteers needed.

- ☐ Set goals that can be measured and recorded. For example, the number of volunteers involved; the number of trash bags filled; the number of bags of recyclables redeemed.

  - The sample reporting form at the end of this section can be used for both planning and reporting. In the first column you can write your target goal numbers (e.g., volunteers, sponsors) and in the second column, after the event, you can write what you actually accomplished.

  - You or your organization will receive a certificate of acknowledgement from the California Water Boards if you fax the completed form to the Water Boards after the event. Fax to (916) 341-5252; Attn: Tom Mays.

- ☐ Confer with site residents/occupants about what will be involved.

- ☐ Contact potential partners.

  - Tips for developing partnerships and a sample partnership letter can be found at the end of this section.

- ☐ Obtain a permit(s) or entry permission if either is required.

- ☐ Collect lists of organizations with potential volunteers.

- ☐ Contact organizations and request a specific number of volunteers (if more help is needed).

- ☐ Plan your publicity (media, speakers bureau, flyers, posters).

- ☐ Write and create promotional materials (e.g., flyers, media advisory, media release). Don't forget to remove any signs or flyers you post.

  - An *Erase the Waste* neighborhood clean up flyer template can be found at the end of this section and media material templates can be found at the end of the "Working with Media to Erase the Waste" section.

- ☐ Order volunteer giveaways (if budgeted).

- ☐ Inform local law enforcement about your clean up effort.

- ☐ Arrange for trash disposal and prepare for recyclables (CalMAX, charity shops, charitable organizations).

- ☐ Plan for refreshments.

- ☐ Plan for restroom facilities (if needed).

- ☐ Select a meeting point or main registration area for the day of the event.

- ☐ Prepare and send media advisories, public service announcements and stories to the local media. Make follow-up phone calls.

- ☐ Communicate with volunteers and/or organizations providing volunteers to inform everyone about: what to wear (type of clothes, shoes, hat, sunscreen); time and location of designated meeting place; and tools to bring (if they have access to them).

- ☐ Arrange for first-aid supplies or personnel to be on hand.

- ☐ Decide if you want or need to take pictures. These can be used on your Web site, in newsletters, for future publicity, grant and award applications, or just for fun.

✓DAY-OF-EVENT PLANNING CHECKLIST

Individuals and organizations can use the comprehensive list below for day-of-event tasks. Use the tasks that apply to your event and ignore the remainder of the list.

- ☐ Arrive early to set up the registration area and greet participants. Place directional signage if needed. Volunteers at large events should complete a registration sheet with detailed contact information and sign a release and indemnification form. (A sample form can be found at the end of this section.)
- ☐ Have your permit or written entry permission available if needed.
- ☐ Make sure your waste hauler has trash and recyclable containers and weight scales in position and is available for assistance.
- ☐ Give volunteers the following instructions (oral and written):
  - Project goals and project area description.
  - Restroom locations (if needed).
  - General safety rules:
    - Use caution when working along public streets. Work facing oncoming traffic.
    - Do not trespass on private property or neighbors' yards.
    - Do not pick up or touch: hypodermic needles, medical waste, condoms, chemical containers, dead animals or sharp items. Contact the event organizer and identify these materials for him/her.
    - Do not lift heavy/bulky items without assistance.
    - Drink plenty of water.
  - Location to receive empty bags and drop-off full bags of litter/recyclables.
  - Who to contact in case of emergency.
  - Where first-aid supplies are located.
  - When the event will conclude.
  - Where the water and/or other refreshments will be located.
- ☐ Give volunteers other options in case they finish early.
- ☐ Make sure all trash and recyclables are disposed of properly.
- ☐ Take pictures.
- ☐ Thank volunteers and distribute giveaways (if purchased). If possible, send a post-event thank-you letter to each volunteer.
- ☐ Complete the reporting form in this kit.
  - The sample reporting form at the end of this section can be used for both planning and reporting. In the first column you can write your target goal numbers (e.g., number of volunteers, number of sponsors) and in the second column, after the event, you can write what you actually accomplished. You or your organization will receive a Certificate of Recognition from the California Water Boards if you fax the completed form to the Water Boards after the event. Fax to (916) 341-5252; Attn: Tom Mays.

THE WATER BOARDS ARE VERY INTERESTED IN HEARING ABOUT YOUR EVENT. LET US KNOW ABOUT THE CLEAN UP ACTIVITIES HAPPENING IN YOUR COMMUNITY.

ACTIVITIES FOR KIDS

ANTI-LITTER AND BEAUTIFICATION ACTIVITIES TO DO WITH CHILDREN

LITTER

1. When you take your children for walks or to the park or beach, help them pick up trash such as paper, cups and food wrappers, and throw them in the nearest trash can. Teach them about dangerous litter, and to avoid handling these items.
2. Organize a neighborhood or park clean up with your children. Do it as part of a spring and fall cleaning schedule. If you don't want to organize a clean up, participate in one that someone else organizes.
3. If you are involved with your child's school, help organize a "litter drive" around the school as a recess or after-school activity.
4. Challenge your children and their friends to a photo contest. You can use inexpensive disposable cameras that will be recycled after processing. The objective is to take pictures of places with litter or graffiti that can be cleaned and fixed up.
5. If you have a pet, take a "pet pledge" with your children. Each of you pledges to always pick up after your pet. On your computer, or with crayons, create a pledge form that each of you can sign on behalf of your pet.
6. As a home art project, have your kids make litter bags for your car.

REUSE AND RECYCLING

1. On your walks, bring along a bag to collect recyclables, such as bottles and cans, and then take a trip to the nearest recycling center so your children can redeem them for piggy bank money.
2. When your child tires of or outgrows toys or clothes, talk to them about donating them to a charitable organization or giving them to someone who might need them and love them as much as your child did. Take your child with you to the donation center and let him/her help you unload the car. With your child, talk to the attendant about what happens to the donations and who benefits from them.
3. If you and your children have a lot of reusable items and want to make some money for their education fund, have your children help organize a garage sale. Involve your neighbors and their children.
4. Remind your children there are two sides of the paper when they draw and write, and encourage them to use both sides before recycling it. You can do the same with your grocery lists and telephone note pads.
5. Give your child a "cool" lunch box for school and use this instead of paper bags. Pack sandwiches and other lunch items in reusable plastic containers instead of wrapping them in paper or plastic wrap.

OTHER ENVIRONMENTAL LESSONS

1. Rule of thumb: Show your children by doing. Be a good example for them.
2. Add books and stories about nature and the environment to your children's reading library. Read the books to and with them.
3. Take your child to a local nursery or gardening center to pick out a shrub or tree to plant in a pot or in your yard. Planting a shrub or tree is fun and can help stop soil erosion by securing the soil with its roots. (Loose soil can get into waterways, and create pollution known as sedimentation.) They also provide beauty, shade, attract birds and will reduce carbon dioxide in the air. Native trees are especially good because they require fewer environmental resources, such as water. Every year, the tree or shrub will grow, giving your child a sense of accomplishment.
4. Grow small greenery in your house and have your children help care for them. Salad greens, flowers and herbs are easy to grow in containers on a sunny window sill.
5. Join a nature conservancy or environmental group and get involved with your child on group outings.
6. Attend a public hearing on an environmental issue. Take your children along with you.
7. If your child is in a scouting program, help them earn their nature/environmental badge(s).
8. Take family trips to parks, gardens, aquariums and natural history museums.

9. Help your child participate in his or her school science fair. Plan a project that demonstrates environmental health and safety.

10. Involve your child's school. The sooner positive environmental habits are instilled in children, the better our environment will become over the long term. Even on school campuses, many fun environmental activities can be undertaken by teachers and students, such as starting on-campus lunch recycling programs or conducting on-site water pollution monitoring programs. Through these activities, students see first-hand the benefits of environmental action and understand that they can make a difference. Go to http://www.swrcb.ca.gov and click on "water education" for more information about environmental resources for schools. Or for more education ideas and materials, go to http://www.treepeople.org, http://www.healthebay.org and http://www.projectwet.org.

11. For teachers – Jiminy Cricket's Environmentality Challenge provides an opportunity for your class and all other fifth grade classes in the State of California to "think green." It's a challenging and fun hands-on experience that will help fifth graders learn more about their environment and allows the State of California to show them why "it's cool to care" about the earth. The purpose is to encourage students to think and act environmentally at school, at home and in their community. In California, Jiminy Cricket's Environmentality Challenge is a partnership between The Walt Disney Company and the State of California's Environmental Education Interagency Network (CEEIN). CEEIN includes representatives from the California Environmental Protection Agency (including the California Water Boards), the Department of Education, the Department of Food and Agriculture, the State and Consumer Services Agency, the Resources Agency and the United States Fish and Wildlife Service. To learn more about this program, you can call the hotline at 1(800)290-0299 or visit the Web site http://www.oehha.ca.gov/ceein/jim/index.htm.

ANTI-GRAFFITI

THINGS YOU CAN DO TO HELP REDUCE GRAFFITI

1. Get educated. Learn about graffiti, how it impacts your community, and who is responsible for graffiti prevention and clean up in your area.

2. Donate your old, left-over paint to a graffiti abatement program in your neighborhood or take it to a Household Hazardous Waste Collection Event where it will be used to wipe out graffiti. Never dispose of paint down the drain or in the trash or street.

3. Report graffiti immediately to the appropriate authorities. Statistics show the faster graffiti is removed, the slower it is to return.

4. Organize a paint-out. Local paint dealers are often willing to donate paint and brushes for volunteers to use for graffiti clean up.

5. Plan a mural to cover a wall plagued with graffiti.

6. Coordinate a graffiti awareness campaign at your school or in the community.

7. Make a presentation on graffiti prevention to your school class or neighborhood group.

8. "Adopt-a-wall" in your school or community and make sure it stays clean and free of graffiti.

9. Plant trees or other greenery near a graffiti-plagued wall. Landscaping can also slow down the occurrences of graffiti vandalism. There are a variety of shrubs and vines that can be planted against walls and buildings. For example, the City of Long Beach has a Graffiti Landscape Grant Program from which residents and businesses can apply for financial assistance to plant these types of foliage.

10. Ask your community to install lighting in areas that are dark and often hit with graffiti.

11. For graffiti removal in the unincorporated areas of Los Angeles County, call 1 (800) 675-4357. The hotline is answered 24 hours a day, seven days a week and the County strives for a 48-hour response time. The hotline can also provide information about other agencies that provide graffiti removal when it is not the responsibility of Los Angeles County. These include: Parks and Recreation, Caltrans, Metropolitan Transit Authority (MTA), Metrolink, United States Post Office, Southern California Edison and the 88 cities within the county.

SAMPLE RELEASE AND INDEMNIFICATION FORM

(This form is provided for guidance only. It should not be considered as legal advice or taken in place of legal consultation.)

I, _____ , am a volunteer for the (EVENT NAME) being conducted by (ORGANIZING BODY [IES]) on (DATE) at (LOCATION).

I understand that I voluntarily assume all risk of accident, injury or damage, and release and forever discharge the producers, co-sponsors, employees, agents or representatives of the (ORGANIZING BODY [IES]) from any and all liability for personal injury or property damage of any kind sustained in association with or during participation in this event, regardless of whether such personal injury or property damage is caused by negligence of the producers, co-sponsors, employees, agents or representatives of the (ORGANIZING BODY [IES]).

I agree to indemnify and hold harmless the producers, co-sponsors, employees, agents or representatives of the (ORGANIZING BODY [IES]) from all liability, loss and expense, including, but not limited to damages, legal expenses and cost of defense in any matter arising during or from the participation in the (EVENT).

I further agree that I will abide by all applicable rules and regulations promulgated by the producers, co-sponsors, employees, agents or representatives of the (ORGANIZING BODY [IES]) and agree to follow the instructions of all volunteer supervisors who are connected with the (EVENT).

_____

Participant (signature)

_____

Participant (please print)

_____

Date

SAMPLE PLANNING, EVALUATION AND REPORTING FORM

COMMUNITY BEAUTIFICATION/CLEAN UP EVENT

(This form can be used as a planning, evaluation and reporting tool.)

Fax final report to (916) 341-5252; Attn: Tom Mays. You or your organization will receive a Certificate of Recognition from the California Water Boards.

Name of event: _____

Type of event: _____

Date: _____

Location: _____

Contact person: _____

Phone: _____ E-mail: _____

GOAL	PRE-EVENT PLANNING (the number you need or would like to obtain)	POST-EVENT ACTUAL (the number you actually obtained and counted after the event was over)
Number of volunteers		
Total amount of partner/sponsor money raised or in-kind contributions	$ Potential list:	$ Actual list:
Number of blocks cleaned OR size of area cleaned		
Number of bags of litter collected		
Number of pounds of litter collected		
Number of bags of recyclables collected		
Number of pounds of recyclables collected		
Number of incidents of graffiti painted over		
Amount of bulky items removed (appliances, furniture, etc.)		
Storm drain stenciling – number of stencils painted		

SAMPLE PLANNING, EVALUATION AND REPORTING FORM — PAGE 2

COMMUNITY BEAUTIFICATION/CLEAN UP EVENT QUESTIONS

1. What was the most common type(s) of trash found?

   a) cans **b)** tires **c)** packaging
   d) fast food containers **e)** plastic bags **f)** bottles

   Other (please specify): _____

   _____

2. Does it appear the site may be used as an illegal dumping spot (presence of appliances, tires, bags or trash, etc.), or do the trash items appear to have collected here at random? Share your findings with local public works staff and specify below:

   _____

   _____

3. Did you encounter any items that may pose a threat to human health? (e.g., medical waste, pet waste, diapers, human waste, pesticides, ponded-water in open cans or tires that breed mosquitoes, broken glass, etc.) Share with local public works staff, local authorities and specify below:

   _____

   _____

   _____

4. Does it appear that the trash can be traced to a particular group, organization, business or activity (e.g., restaurant litter, homeless encampments, etc.)? Use this information to contact your local public works department and/or local businesses, organizations for assistance. They might help develop an education program with you, or intervene on matters involving public health or safety.

   _____

   _____

   _____

5. List locations of the following (If applicable):

   Graffiti removal: _____

   _____

   _____

   _____

   Stenciling: _____

   _____

   _____

   _____

6. Has this site been the subject of a clean up effort in the past? If yes, please rate the level of site cleanliness prior to the event based on earlier clean ups:

   a) major improvement (Less than half the amount of trash) **b)** some improvement (Less than one-quarter the amount of trash)

   c) same **d)** worse

7. If the site is cleaner than in the past, please list what education efforts your group has done to make a difference (circle all that apply):

   a) door-to-door canvassing **b)** community flyers
   c) media coverage **d)** business/partner cooperation
   e) diversion (recycling efforts, etc.)

   Notes: _____

   _____

Answer these additional questions for streamside clean ups near creeks, rivers, lakes, bays and the ocean

1. Please describe the waterway by smell:

   a) rotten egg **b)** musky **c)** petroleum
   d) no odor **e)** other: _____

2. The top of the water is:

   a) foamy **b)** scummy
   c) oil sheen **d)** covered with pond weed
   e) covered with algae (if so, color: _____) **f)** other: _____

3. The water itself is:

   a) muddy **b)** milky
   c) brown **d)** clear
   e) other: _____

4. How deep is the water? _____

5. Do you see any creek life in or around the waterway? If yes, list below (e.g., crayfish, birds, insects):

   _____

   _____

6. Describe the waterway (circle all that apply):

   a) shaded with tall trees **b)** grass **c)** tall brush
   d) back yards **e)** no trees
   f) other (specify): _____

- Note to clean up teams: The Water Boards encourage you to revisit your site periodically to conduct clean ups, evaluate your effectiveness, work with local government, businesses and organizations to erase the waste.

Help Erase the Waste for our Kids' Sake

Community Clean Up Event Will Make Our Neighborhoods Safer for Children and Families

YOU'RE INVITED!

Help prevent pollution in our neighborhood and in our local waters by joining **[sponsoring organization]** as we host an *Erase the Waste* event.

Come and learn about ways to be a part of the solution and take action to prevent pollution.

Always throw trash in a trash can or recycling container, put cigarette butts in an ashtray and pick up after your dog every time.

Meet your neighbors and join us as we help protect the health of our neighborhood.

[MEETING PLACE]
[DATE] [TIME]
[ADDRESS]

Contact: [NAME]
[ORGANIZATION]
[PHONE NUMBER]

For more information about how to erase the waste in our community and waters, log on to www.erasethewaste.com or call 1 (888) CLEAN-LA.

Printed on recycled paper.

*** Community Clean Up Event in Our Area ***

[DATE]

HELP ERASE THE WASTE FOR HEALTHIER FAMILIES AND A HEALTHIER COMMUNITY

Community Clean Up Event Spotlights the Importance of Pollution Prevention

The *Erase the Waste* campaign aims to teach local residents about the simple steps we all can take to reduce storm water pollution in our community. Join community leaders, local youth groups and elected officials in a day of outdoor fun as we clean up our park and learn about the role each of us plays in keeping our community healthy and safe.

The *Erase the Waste* campaign encourages L.A. County's nearly 10 million residents to take ownership of their communities, help reduce storm water pollution by cleaning trash and pollution from the local landscape, and be part of the "pollution solution." For more information about how to erase the waste in your community, log on to www.erasethewaste.com or call 1 (888) CLEAN-LA.

The event begins at 10 a.m. and will run approximately two hours.
Refreshments will be served.

Location
[ADDRESS]

Directions
[Provide directions such as: Enter Longwood Park from Grant Avenue, near the intersection with Shallow Hill Way. Follow the *Erase the Waste* signs to the Picnic Area]

Contact Information
[Name, Phone Number, Extension]

SAMPLE PARTNERSHIP LETTER

[DATE]

[CONTACT NAME]

[NAME OF ORGANIZATION/BUSINESS, ADDRESS OF ORGANIZATION/BUSINESS]

Dear [CONTACT]:

Partnering with Erase the Waste is a great way to show your [CUSTOMERS/MEMBERS] that you care about the health of our community!

If [ORGANIZATION/BUSINESS] would like to:

- Demonstrate its commitment to the communities it serves
- Align itself with an important issue that impacts all of us
- Define itself as environmentally responsible

…then partnering with *Erase the Waste* is a great fit for your company/organization.

The State of California has made reducing storm water pollution in Los Angeles County a top priority. Storm water pollution is the greatest danger to water quality in Southern California and poses significant threats to public health and safety, natural resources and the region's economic vitality. With a high-density population of almost 10 million residents, the region creates an overwhelming volume of trash that ends up polluting our neighborhoods and waterways.

The *Erase the Waste* campaign encourages L.A. County's residents to take ownership of their communities, help reduce storm water pollution by cleaning trash and pollution from the local landscape, and be part of the "pollution solution." Among other tips, the campaign encourages residents to: throw trash in a trash can or recycling container, always put cigarette butts in an ashtray, pick up after their dog every time and join or organize a community clean up to help protect their neighborhood.

Let's work together to educate your customers on ways to Erase the Waste.

[Company/Organization] can help spread the word about storm water pollution prevention to the community by partnering with the *Erase the Waste* campaign. I'd like to invite you to consider:

- **Hosting a Community Clean Up** – organize, publicize and bring your group to a local event where we'll:
  - Beautify a local beach, park or playground
  - Share information on recycling and preventing pollution
- **Publicity** – Can you help us get the word out by running an announcement about our clean up on your Web site, in employee communications materials or placing a posting on your bulletin board?
- **In-Kind Donations** – Can your company/organization donate or lend equipment that can be used for our clean up, such as:
  - Brooms and rakes
  - Buckets, gloves and bags
  - Tables, chairs and microphones
  - Printing and advertising resources

We all share a responsibility for the health of L.A. County's communities, neighborhoods and beaches. Please join us in doing your part. For more information about how to erase the waste in your community, log on to www.erasethewaste.com or call 1 (888) CLEAN-LA.

We are eager to build a partnership with your company/organization. We will follow up with you in the next few weeks to discuss this opportunity. In the meantime, please feel free to call me at [TELEPHONE NUMBER] with any questions you may have.

Sincerely,

[NAME]

[NAME OF ORGANIZATION]

SECTION 3

SPEAKING OUT TO ERASE THE WASTE

SPEAKING OUT TO...

Erase the Waste

Speaking to others about pollution prevention is a very effective way to encourage them to take action to keep their neighborhood healthy and clean. However, chances are you have read or heard that public speaking is one of our greatest fears, but it really doesn't have to be. You'll find that if you start by speaking to a small group of people who are interested in learning about something you are passionate about, it's not that hard. Once you get comfortable with small groups, you can start expanding to larger groups.

Start out talking to your neighbors and don't forget to include your children and their friends.

Here are several ideas for small group talks with familiar people:

- Your neighbors during a homeowners association meeting or other neighborhood gathering
- Your child's Boy or Girl Scout troop, or similar organization meeting
- Your child's school class
- PTA meetings
- Your child's soccer or little league baseball team (you can use this opportunity to promote a litter-free event)
- Your place of worship
- A networking or civic group to which you belong

Here are a few ideas for subjects:

- Plan a neighborhood clean up. Tell them why it's important, how much time it will take and what they need to do.
- Share a community clean up/beautification success story. Talk about what you learned and what could be done next.
- Relate a personal experience(s) or things you've seen (piles of bulky items, excessive littering, reoccurring graffiti). Share your concerns about the health and safety of the community, your children and the environment.
- Talk about how the neighborhood can increase its recycling of Household Hazardous Waste, electronics and building materials.
- Provide ideas for a litter-free event.
- Describe approaches to reducing graffiti and tagging in your neighborhood. Talk about methods of removing graffiti from various surfaces.
- Have seasonal conversations about:
  - Spring gardens and yards – water conservation, effective fertilizing and pesticide use, recycling yard waste and safe storage of hazardous materials and supplies.
  - Winter – recycling Christmas trees; using less and reuse of holiday wrapping; how to reduce, reuse and recycle during the holiday period; New Year's resolutions to fight litter; keeping your neighborhood clean; using less toxic products around the house.
  - Back-to-school – purchasing school supplies made with recycled content; using lunch boxes with reusable sandwich containers instead of paper bags and disposable wrappers.

Once you've developed a comfort level in speaking to the neighbors, your friends and smaller groups of people, here are some organizations/groups you can contact to find other speaking opportunities or to join their speakers bureau:

- Chambers of commerce
- Visitors and convention bureaus
- Environmental groups
- Lawn and garden clubs
- Museums
- Rotary clubs
- Public hearings and meetings

ONCE YOU GET COMFORTABLE SPEAKING WITH SMALL GROUPS ABOUT POLLUTION PREVENTION, YOU CAN START EXPANDING TO LARGER GROUPS.

CREATING AN ORGANIZATIONAL SPEAKERS BUREAU

Speakers bureaus are groups of specially-trained representatives who can knowledgeably talk about a specific topic, process or program. Speakers bureau members can be organization staff members, or experts who come from the community as volunteer speakers. Speakers bureau members speak to public and private organizations and groups on educational topics, issues of concern, specific projects, programs or planning activities.

SPEAKERS BUREAU MEMBERS CAN:

- Provide in-depth information and expertise to the general public in a personal format.
- Put a human "face" on the organization.
- Listen to people's concerns.
- Answer questions.
- Build relationships with community members.

SPEAKERS BUREAUS ARE USEFUL AND COST-EFFECTIVE

- They expand possibilities for community education and participation.
- Speakers can also expand the distribution and public understanding of printed materials.
- Speakers bureaus can be integrated into a larger effort with a variety of other public involvement techniques.
- Speakers bureaus can address a wide variety of groups from civic to social, from professional to neighborhood, and from youth to special interest groups.
- Speakers bureaus help the community understand the organization and its work.

TIME – AS OPPOSED TO MONEY – IS THE LARGEST INVESTMENT INVOLVED IN DEVELOPING AND MAINTAINING A SPEAKERS BUREAU.

YES! IT'S EASY TO ORGANIZE A SPEAKERS BUREAU

Time – as opposed to money – is the largest investment involved in developing and maintaining a speakers bureau. In reality, the greatest time investment comes in the development stage. Once the speakers bureau has been developed, maintenance time can be minimal as long as the bureau manager keeps records on a regular basis.

Setting up and running a speakers bureau can be accomplished in six steps:

Step 1 —Determine who will be the manager of the speakers bureau

One person should be designated as the overall manager for the bureau to ensure accountability. The manager can then designate staff persons to assist or be responsible for activities.

Step 2 —Select the speech topics

It is recommended that you focus on four to five overarching topics. These can be advertised in your promotional materials to the general public. Within each of these topics, you can tailor sub-topics for each group.

Step 3 —Identify speakers for each topic

Since speakers are perceived as representatives of an organization, it is important that your organization selects and/or recruits people who are (1) knowledgeable about the topic and (2) willing to do the job. Speakers function as ambassadors and their work should represent an organization's best efforts. Remember, they become the "face" of the organization, reflecting its enthusiasm, attitude and expertise.

Step 4 — Prepare speakers and materials

You need to train and equip speakers for their presentations. Don't assume that because a person is knowledgeable about the subject, that they don't need a little training specific to presenting this knowledge to a group of listeners. In successful presentations the words are prepare, prepare,

SPEAKERS BUREAU

prepare, regardless of how well the speaker knows the subject. Prepare a core presentation or key talking points, as well as collateral materials to distribute at speaking engagements (e.g., fact sheets, tips, reprinted articles).

Step 5 — Promote your speakers bureau

Opportunities to promote your speakers bureau include: sending a media advisory to your local newspaper and public access TV station; adding a promotional page to your Web site; including a simple advertisement/notice in your organization's newsletter; posting a flyer on bulletin boards in public places; and sending reminder e-mails to your membership list, friends and colleagues.

- A publicity flyer and blast fax/e-mail template, which can be used for bureau publicity, can be found at the end of the "Getting Involved to Erase the Waste" section.
- A checklist of publicity activities for the speakers bureau can be found in the "Working with Media to Erase the Waste" section of this kit.

Step 6 — Schedule and track presentations

The initial task is to let groups and organizations know an expert speaker is available and willing to speak to the group. General categories of potential groups are listed earlier in this section. The best and easiest way to arrange speeches is to target existing meetings. These meetings have set formats and offer an existing audience.

Use letters or phone calls to arrange speaking opportunities. Note: if you send an initial letter, it should be followed up with a phone call. If you start with a phone call, you should confirm your phone conversation in a letter. Scheduling – as well as solicitation – is an ongoing process.

It is important to track the presentations made, so that you are able to make a complete report at the end of each quarter or year. You can also use this schedule to post on your Web site, as well as for use in funding applications for public education grants.

POINTERS FOR SPEAKERS

1. The single best way to have a successful presentation is to prepare properly.
2. The frequency of practice is better than the length of practice session.
3. Focus on what you have to say – not on the fact that you are saying it.
4. Using conversational language is the best way to assure common understanding among the members of the audience. Be careful about the use of jargon and slang. Be sure that everyone will understand what you mean.
5. Concentrate on clear, crisp articulation throughout the presentation.
6. It is not just what you say that counts…it's how you say it. If you mean what you say…say it like you mean it.
7. The expression on your face must match the meaning of the words you are using.
8. Always give the audience eye contact because: (1) it involves your audience; (2) it keeps you aware of their reactions to what you say; and (3) it helps you identify friends and foes.
9. An audience's initial impression of a speaker is made within the first three to four seconds the audience sees him or her.
10. Use visuals when appropriate – a picture can be worth a thousand words; however, if you don't want to talk about something, don't put it on a visual.
11. Stay with one major subject per visual.
12. If you want the audience to look at the visual, you look at it. If you want the audience to look at you, you look at them.
13. Find the farthest object in the room and project your voice to that object.
14. Don't handout materials or samples during your presentation.
15. Choose your questioners from varying positions in the room. Give the person asking the question your full attention. If you don't understand a question, make the questioner repeat it. Don't guess about the question or the answer.
16. Repeat all questions in your own words. This ensures you understand the question being asked and gives the rest of the audience a chance to hear the question. Repeating the question also gives you time to mentally compose the best answer.

For information about how to improve your public speaking skills, you can visit organizations such as Toastmasters at http://www.toastmasters.org.

HOW TO DEVELOP YOUR SPEECH

1. Decide why you are you talking to the group.
   - Are you selling an idea? ("Let's have a community clean up.")
   - Are you delivering information? ("We need to get the litter out of the streets and gutters, so it doesn't clog the storm drains and pollute the Los Angeles River.")
   - Are you explaining technical information? ("The Los Angeles River has high levels of bacteria due to the amount of animal waste being carried to it through urban runoff.")
2. Identify the people who will be listening.
   - Who are they?
   - Why are they there?
   - What are their interests?
   - What motivates them?
3. Pre-think what's important to the listeners (health, safety, convenience, noise, cost, time constraints).
4. Know what you want the listeners to do.
   - Say yes or no.
   - Sign up for a task.
   - Give an opinion or provide input.
   - Approve something.
5. What's your message?
   - This is the most important part of the presentation.
   - The message is what the listeners know, think or do after you have completed your speech.

BLUEPRINT FOR BUILDING YOUR SPEECH

WHAT IS YOUR MESSAGE?

For example... "The vacant lot on our block is dangerous for our children because it is full of tall weeds and trash. The litter is blowing into the street, clogging the storm drains and being carried to the Santa Clara River, polluting it. It is making our whole street look ugly and rundown."

SUPPORT YOUR MESSAGE WITH FACTS...

"There is a pile of broken bottles that can seriously injure a child."	"The weeds are providing cover for stray animals including rats, which are attracted to litter."	"The litter is blowing into our yards and into the street. I picked up a garbage bag full in my yard this week."	"Mr. and Mrs. Smith have their house on the market and a nearby dirty lot is creating a bad impression for buyers. This hurts the value of all of our houses."

CLOSE WITH YOUR MESSAGE AND ASK FOR WHAT YOU WANT...

"We have a serious problem as long as the vacant lot is overgrown and full of trash. I am concerned for my child's health and safety. And, I don't want the value of my house to suffer or see the neighborhood decline."	"I think we should take one hour this weekend and, as a group, do a clean up at the vacant lot."	"If we all bring trash bags, gloves and some yard equipment, we can make it look better and be safer in no time. Who will join me this weekend?"

SAMPLE SPEECH BASED ON THIS OUTLINE

Audience: Members of a homeowners association, annual meeting

Speaker: Homeowner, member of association

Good evening. My name is John Thomas and I live at 123 Morning Glory Circle.

I asked to be on tonight's agenda because I am concerned about the vacant lot on our block that is full of weeds, trash and possibly animals like rats. I have two children, ages eight and 10. I have told them not to play in that lot, but I realize it is tempting for them…as well as for some of your children. They play together and sometimes the temptation to explore is greater than my warnings.

In addition to my concern about our children's safety, I am also concerned about the way it makes our neighborhood look…and about the fact that some of the litter is blowing into other yards and into the street, which clogs the storm drains. Sometimes it is carried down the storm drain channel and then it ends up in the Santa Clara River, making it polluted and look ugly. Last year at the Santa Clara River Rally, more than 100 pounds of trash was collected. A lot of this trash is coming from neighborhoods just like ours. Once it enters the nearby waterways, it creates further problems by harming fish, wildlife, plants and water quality.

From personal experience in the past month, I have collected a 30-gallon trash bag of litter coming from the lot into my yard.

Lastly…Mr. and Mrs. Smith have put their house on the market and this lot is creating a bad image to potential buyers. Not only does this hurt the Smith's house, but it could also hurt the value of our own houses if it appears that we don't care about the way our neighborhood looks.

I believe this is a serious problem as long as the vacant lot is overgrown and full of trash. I am concerned for my child's health and safety. And, I don't want the value of my house to suffer or see the neighborhood decline.

I would like to propose that we organize a small neighborhood clean up event on Saturday, May 8. If everyone would commit one hour, we could have the lot cleaned up in no time.

I will volunteer to find the owner of the lot and get permission to pick up trash, mow it, trim the bushes and paint-out the graffiti on the fence posts.

Who will volunteer to help? [Pass around a signup sheet]

Who can bring litter bags? Clippers? A lawn mover?

Who has left-over paint in their garage and a paint brush?

Who will volunteer to dispose of the trash? And the recyclables?

Can everyone meet at 10 o'clock Saturday morning? I'm certain we can be done by noon. If enough people are interested, maybe we could conclude the morning with a picnic lunch.

This is a great response. Thank you. I will call everyone on the list the Wednesday before the 8th and touch base with you. See you on Saturday the 8th.

KEY MESSAGES: LITTERING, POLLUTION AND YOU

These are some important facts, figures and messages that you can share with your neighbors and contacts. Additional information about how to erase the waste in your community can be found at http://www.erasethewaste.com, 1 (888)CLEAN-LA or at any of the Web sites listed in the resources section of this kit.

ERASE THE WASTE STORM WATER PUBLIC EDUCATION CAMPAIGN

- The *Erase the Waste* campaign is the first State-funded countywide storm water public education campaign. The outreach includes Spanish and English paid television, radio and print media, media relations, outreach to community-based organizations, promotions with retailers and school-based environmental education.
- The *Erase the Waste* campaign is designed to primarily reach those residents identified through research as the "greatest polluters most likely to change their behaviors." This group comprises 72 percent of the county's population, more than seven million residents, representing all ethnicities, genders and socio-economic levels.
- The *Erase the Waste* campaign encourages L.A. County's nearly 10 million residents to take ownership of their communities and help reduce storm water pollution.

  Among other tips, the campaign encourages residents to: throw trash in a trash can or recycling container; always put cigarette butts in an ashtray; pick up after their dog every time; fix leaking vehicles; practice safe gardening and home improvement activities; join or organize a community clean up to help protect their neighborhood.
- The *Erase the Waste* campaign is being funded in its entirety by corporate and industry polluter fines through California's Cleanup and Abatement Account. No taxpayer funds are being used to underwrite this campaign.

THE *ERASE THE WASTE* CAMPAIGN ENCOURAGES L.A. COUNTY'S NEARLY 10 MILLION RESIDENTS TO TAKE OWNERSHIP OF THEIR COMMUNITIES AND HELP REDUCE STORM WATER POLLUTION.

STORM WATER POLLUTION

- In Los Angeles County, approximately 100 million gallons of contaminated water and debris drain through the storm drain system each dry day. That would fill the Rose Bowl 1.2 times. On rainy days the flow can increase to 10 billion gallons per day.
- Local Los Angeles County beaches, Santa Monica Bay and the Pacific Ocean suffer dramatically from the effects of storm water pollution. With storm drain outlets flowing directly into the ocean, millions of gallons of polluted water heads unfiltered to our beautiful beaches and bays each day. Storm water pollution increases bacteria levels at our local beaches, making ocean water too polluted for human use, leading to beach advisories, warnings and closures and creating serious health risks to people swimming or fishing in these areas.
- A study conducted by the Santa Monica Bay Restoration Project found that storm water pollution in the ocean leads to increased risk of viral infections, earaches, sinus problems, fever, flu, skin rashes and viral diseases such as hepatitis for those swimming in the ocean close to storm drain outfalls, especially following a rainstorm when litter and contaminants are flushed into the storm drain system.*
- Fifty-six percent of monitored L.A. County beaches received a failing grade during wet weather in Heal the Bay's 2002-2003 Beach Report Card, and beach attendance has also dropped 56 percent in the past 20 years – threatening tourist-related revenues.
- During 2002, bacteria levels at Los Angeles County beaches exceeded State water quality standards at numerous locations, leading to 269 warnings posted on Los Angeles County beaches for a total of 1,181 days where the ocean was too polluted for human use.
- Remember, whatever is discharged into the street or on the ground flows to a storm drain and eventually makes its way to the ocean. Never put anything but clean water into a gutter, open drainage ditch or down a storm drain. These all lead to our rivers, creeks, lakes and the ocean, with no water quality treatment along the way.

* Note: Scientific research data related to storm water pollution can be found at http://www.santamonicabay.org/uploads/library/texts/epistudyexecsumm.pdf

KEY MESSAGES

LITTERING AND RECYCLING

- Everyone's actions count when it comes to erasing the waste. There are nearly 10 million people residing in Los Angeles County and the small, individual actions by each of us to reduce litter and other pollution can add up to big changes.
- According to research, every month L.A. County residents:
  - Toss 830,000 pieces of trash on the ground
  - Allow paper or trash to blow into the street more than 800,000 times
  - Drop cigarette butts on the ground nearly 915,000 times
  - Empty a car ashtray into the street more than 40,000 times (cigarette butts pose imminent risks to child health and safety including the risk of swallowing, choking or burning themselves with discarded, toxin-laden butts)

PET WASTE

- According to research, every month L.A. County residents walk a dog without picking up the droppings more than 82,000 times.
- Animal waste contains disease-causing pathogens and harmful chemicals and nutrients, that when left on the ground, wash down storm drains and contaminate local waterways and beaches. There is a County Ordinance, which bans dog owners from leaving animal waste on public or private property. An owner disregarding this law may be fined.
- Throw away pet waste in the garbage – or flush it down the toilet; never wash it out into the street or into the storm drain. Carry extra bags when walking your dog and make them available to other pet owners.

GRAFFITI

- Old, partially-used paint that you want to discard is a valuable tool in fighting graffiti. Don't throw away your old paint; donate it to a local graffiti abatement program or take it to a Household Hazardous Waste Collection Event. They will use it to paint over graffiti.
- Graffiti communicates: gangs, drugs, crime, danger, a run-down neighborhood. Not only is graffiti unattractive, it lowers property values and encourages other types of crime and littering in neighborhoods. It visually demonstrates that the residents and businesses in the area do not care about the community's appearance and environment.
- Survey data shows that the quicker graffiti is eliminated, the slower it is to return. Most graffiti abatement programs have a goal of elimination in under 24 hours. Most cities have graffiti abatement teams that will remove graffiti from public property. You just need to report it.
- California State Law:
  - Graffiti damage up to $400 is punishable by up to one year in jail, a $10,000 fine or both.
  - Graffiti damage of $400 or more can be punished as a felony – even if the vandal is a minor – by up to three years in state prison and a fine of up to $50,000.
  - Graffiti on a place of worship can be treated as a felony punishable by up to three years in state prison.
  - Graffiti with acid or caustic substances can be punishable by up to three years in state prison and fines up to $50,000.
- Parents and guardians of minors who commit graffiti:
  - May be prosecuted for failing to supervise their children and sentenced to one year in jail and/or fined $2,500.
  - Are responsible for damage caused by willful misconduct of their children – including repairs and attorney fees up to $10,000.
  - Are liable for up to $25,000 in damages when a minor's willful misconduct results in injury to the property of another.
  - Can be ordered to maintain specific property graffiti-free for up to 240 days.

SECTION 4

WORKING WITH MEDIA TO ERASE THE WASTE

WORKING WITH MEDIA TO... Erase the Waste

One of the best ways to build awareness of the pollution problem, and gain support and resources for anti-pollution efforts is ongoing media coverage of the problem and solutions being undertaken by committed citizens groups and organizations.

It is not necessary to get on national television or in major daily newspapers. Local media and news outlets are always looking for local story ideas.

■ The following media material samples and templates can be found at the end of this section: media release and advisory; calendar advisory; public service announcements (PSAs); letters to the editor; op-ed piece.

TYPES OF MEDIA OUTLETS

- Newspapers
  - Daily
  - Weekly (many of these are free)
- Web sites
- Television
- Radio
- Newsletters

WHAT IS NEWS

News can be any type of story that is of interest to your local media outlets. The key when considering sending a news story to the media is does it have local impact? Your local media is only interested in stories for or about the community reader, listener or viewer.

News stories can be:

- An announcement or account of a local event (e.g., River Rally clean up event).
- What will or has happened to a local person or people (e.g., Jane Smith honored as Citizen of the Year for organizing 25 river clean ups over the past 10 years).
- Local information people need (e.g., More than 100 tons of litter are collected in the annual River Rally each year. This can be prevented if everyone puts litter in the trash can, instead of in the street.).

FROM THE MEDIA PERSPECTIVE

When you work with media on a larger scale by pitching stories or writing op-ed pieces, it is important to consider things from the media perspective. Here are some of the things an editor, reporter or news director will consider when assessing the value of your story:

- Impact or consequence – How many people does the event or idea affect, and how seriously does it affect them? To what extent is the information useful to their readership? Does anyone care?
- Proximity or locality – It is news only if it's happening within the media outlet's circulation or viewership area. If it's in another city or county, there is less interest.
- Timeliness – Today's news may be stale tomorrow. However, some issues of great impact are timeless. So, the best time to tell an important story is as soon as possible.
- Prominence – Names don't always make news. Still, happenings that involve well-known people or institutions are likely to be interesting even if not important.
- Novelty or drama – The unusual makes news. Firsts make news. Bizarre makes news. "When a dog bites a man it is not news because it happens often. But, if a man bites a dog, that's news."
- Conflict – Many reporters spend most of their time covering conflict – whether lawsuits, politics, crime or sports. Conflict is both a contributing and complicating factor in news.

HOW TO FIND YOUR LOCAL MEDIA OUTLETS

There are several ways to find out what local media covers your neighborhood and how you can contact them. Some of these include:

- In news racks
  - Affixed to sidewalks
  - In convenience stores and local eating establishments
  - At supermarkets and grocery stores
- Yellow Pages under "Newspapers," "Radio Stations," "Broadcast Companies" and "Television"
- Local library
- Civic and business organizations' newsletters
- Internet search engines such as Yahoo, Google, Alta Vista or others

COMPILING A MEDIA LIST

If you or your organization plans to conduct ongoing media relations or publicize regularly scheduled events or activities, create and maintain a list of local media outlets that cover environmental issues. A good media list should have the following information:

- Reporter/editor's name
- Title/position
- Name of publication or media outlet
- Mailing address
- Phone number
- Fax number
- E-mail address
- Preferred method of receiving information
- Deadline information

When compiling your media list be sure to include print (newspapers and magazines) and electronic media (television, radio and Internet) in general and ethnic markets. Some examples include daily and weekly papers; wire services (e.g., Associated Press), local television affiliates, radio news programs, local radio and television talk shows and targeted magazines. Remember to include alternative media outlets, such as newsletters and Web sites published by groups including the local chamber of commerce, community service organizations or environmental advocacy organizations.

- At the end of this section, you will find media material templates including: a media advisory/alert, media release, pitch letter, letter to the editor, calendar announcement and public service announcements (PSAs).

✓ MEDIA RELATIONSHIPS CHECKLIST

To develop and maintain a good working relationship with the media:

1. Make their jobs easy
   - Give them information that is accurate, thorough and within their deadline.
   - Schedule phone interviews at convenient times or in-person interviews at accessible locations.
   - Provide additional resources or references when appropriate.
2. Make sure spokespersons are accessible when needed. The spokespersons should:
   - Always know what the facts are at the time.
   - Never lie when they don't want to reveal the answer. To a reporter, an official caught in a lie makes a better story than the truth.
3. Make sure all of your contact information is accurate and that someone will respond.
4. Keep the media informed of relevant news about your organization or issue.

The following actions guarantee a bad relationship with the media:

1. Don't respond quickly (or at all) to their inquiries.
2. Fail to respect their deadlines.
3. Provide inaccurate or incomplete information.
4. Send them irrelevant news or "fluff."
5. Call them repeatedly about your event or story.

PUBLICITY

✓CHECKLIST: PUBLICIZING YOUR PROGRAM OR EVENT

A good publicity program will help you recruit participants, partners and sponsors, as well as call attention to the pollution issue and what your group or organization is doing to fix the problem. A good publicity program can also demonstrate to the general public that the organization is concerned about the effects of pollution and litter and their effects on city beautification and public health/environmental protection.

Here are some pointers for designing and implementing your publicity program:

1. If you schedule your clean up campaign or program in conjunction with another major event (e.g., Earth Day or California Coastal Clean Up), you can take advantage of publicity that is already being generated.
2. Distribute a media calendar announcement well in advance of the event or program launch telling "Who, What, When, Where, Why and How." In addition to your regular media list, don't forget to include Web sites, newsletters, or high school and college newspapers. You can also register your event on related Web sites such as http://www.choose2reuse.org and/or on your partner/sponsors' Web sites.
3. Prepare a flyer explaining the event or program and distribute it widely. Make the "call to action" and contact information visible and easy to understand. Your distribution list should include: media outlets, libraries, public bulletin boards, chambers of commerce, schools, youth centers, businesses, public counters and places of worship.
4. Talk to your local newspaper, radio and cable television station about running public service announcements and stories several days before the event.
5. To aid the media in preparing a story, develop fact sheets specific to the problem and solution, distribute a media release, and/or write a pitch letter with an already-written or "canned" story.
6. Send an e-mail to friends, colleagues and organization staff asking them to announce the event or program at all meetings they attend. Notify your city government officials. Make sure you remind your speakers bureau members to include announcements in their presentations. Obtain a proclamation from your mayor or city council. These proclamations can commemorate the day, or recognize the neighborhood or an individual's efforts.

A GOOD PUBLICITY PROGRAM WILL HELP YOU RECRUIT PARTICIPANTS, PARTNERS AND SPONSORS, AS WELL AS CALL ATTENTION TO THE POLLUTION ISSUE.

CORE MATERIALS FOR YOUR MEDIA RELATIONS TOOLKIT

The most common types of materials you will use when working with the media are:

- Media advisories or alerts
- Media releases
- "Canned" articles
- Pitch letters
- Letters to the editor and opinion-editorial pieces
- Media information kits

MEDIA ADVISORY OR ALERT

The purpose of a media advisory or alert is to notify reporters of important information being announced or the date of a press conference or media event. Sent out in advance of the announcement or event, the alert briefly and clearly summarizes "Who, What, When, Where, Why and How."

For daily publications or broadcasts, you should follow-up with reporters or editors one to two days before the announcement or event to pitch the story, or confirm their interest or attendance. For weekly publications or cable TV shows, follow-up at least one week in advance.

MEDIA RELEASE

The purpose of a press release is to generate media coverage of an event, announcement or new development, or to provide insight or additional information about an ongoing issue, product or policy. Distributing a media release allows you to package the information, story and quotes the way you would like them covered.

For events or breaking news, the release is typically issued the same day as the news occurs (at a press conference, by fax or e-mail), although you may issue it in advance of the event. For issues, product or policy updates, the release should be timed to maximize effectiveness of the message.

Four tips for writing a media release:

1. Define your purpose. What message do you want to send to the community about storm water pollution? (Samples of key messages/facts and figures can be found in the "Speaking Out to Erase the Waste" section of the Neighborhood Action Kit.)
2. Before you write the release, identify the core information: "Who, What, When, Where, Why and How." This information should be in the first and second paragraph of your release. Many times, if the reporter doesn't see the importance of the story in these paragraphs, he or she stops reading and throws it away.
3. Details. Write down the supporting key points for your core information, such as background information on littering and pollution or your organization's work in this area. This information is in paragraphs three and four. Quotes from a main spokesperson can and should be used to provide or support the details. (Your spokesperson can be a member of your speakers bureau.)
4. Be sure to include:
   - Contact information – identify the organization issuing the release with a current contact name, phone number and e-mail address. Make sure the person will always be available and that the phone number and e-mail address are correct. You also should include your organization's Web site address.
   - Description of your organization – this should be standard information included as the last paragraph of any release you distribute.

PITCH LETTER

The purpose of a pitch letter is to explain to a reporter, editor or news director why he or she should cover your story or address your issue. A pitch letter is not used for breaking news stories. With that in mind, you should not expect instant coverage in the next day's paper or on the evening news.

Two tips for writing a pitch letter:

1. It should make the case of how your story relates to their audience, why it is interesting or relevant and how it is newsworthy.
2. The pitch letter may be a follow-up to a phone conversation with a reporter and generally accompanies other written materials such as fact sheets, case studies, press releases or other program materials that serve as background information for the reporter.

LETTERS TO THE EDITOR AND OPINION-EDITORIAL PIECES

Another way to reach opinion leaders and educate your community about pollution prevention is to submit letters to the editor and opinion-editorial (op-ed) pieces. Op-ed pieces and letters to the editor should be written in the same fashion as a media release, with the most important information at the beginning of the letter. For maximum impact, a senior member of your organization should sign letters to the editor and op-ed articles.

Letters to the editor are usually written in response to specific news articles, current local community issues or a publication's coverage of a particular issue or news event.

Five tips for writing a letter to the editor:

1. Call your local paper to inquire about guidelines on length, deadlines and whether the letter will be edited. Editors will likely choose a few short letters rather than a long one. Be brief.
2. Write immediately when you see a topic that catches your eye, or one that can be tied to storm water pollution or related environmental issues.
3. The letter should be factual. Support statements with localized statistics or facts.
4. Stick to the issue. Avoid partisan or divisive remarks.
5. Don't send generic letters. Editors are less likely to print them.

Opinion editorials are written to frame and position specific issues from a particular point of view, and are not a direct response to an article. However, the subject of an op-ed must be timely and of relative importance to the newspaper's readers.

Five tips for writing an op-ed piece:

1. Offer a forceful opinion.
2. Provide well-documented, well-researched facts and arguments.
3. Make sure your essay adds to the public's knowledge of storm water pollution issues.
4. Provide insight on issues that are relevant to the local area.
5. Make sure the essay is clear, organized and interesting.

■ "Letters to the Editor" and "Op-Ed Article" templates are provided at the end of this section.

PRE-WRITTEN OR "CANNED" ARTICLES

Small local publications that don't have a large reporting staff may accept a pre-written or "canned" article and run it with little editing. In larger local publications, however, the "canned" article may be used to spur a reporter to cover your story. In this case, your pre-written article may provide the basic facts for the reporter's story, but he or she may develop their own angle. Remember weekly and monthly publications require a much longer lead-time than daily publications. Be sure to contact the publication to determine submission deadlines.

MEDIA INFORMATION KITS

Media kits are packets of information that can be distributed at a press conference or event, or given to a reporter to provide background information for an interview or news story. The information included should be relevant, brief and easy to scan for the main ideas. Make sure the information included in media kits is always kept current and before you hand over a kit to a reporter, reconfirm that all the information is correct, relevant and current.

Media kits can include:

- Media release
- Fact sheet on the event, issue and/or project
- Fact sheet on latest relevant statistics and research
- Photographs, slides or electronic art of appropriate logos, images or diagrams
- Brochures and other printed program materials
- Relevant media coverage from other noted publications
- Statistical data or studies related to storm water pollution and/or the story being covered by the reporter
- Current contact information, in case a reporter has a need for further information. This should include your Web site address, if you have a site dedicated to storm water pollution information.

ADDITIONAL MATERIALS TO ADD TO YOUR MEDIA RELATIONS TOOLKIT

In addition to the key media tools just detailed, there are several other tools you can use in your media relations outreach. These include:

- Press conferences and media events
- Calendar announcements/bulletin boards
- Feature stories
- Radio and television: public affairs shows/news talk shows/commentaries
- Commentaries/editorials
- Public service announcements (PSAs)
- Web sites and e-mails

PRESS CONFERENCES AND MEDIA EVENTS

Hosting a press conference or event should be used strategically, particularly in or near large metropolitan areas. Much of your media outreach can be handled by issuing press releases and directly contacting reporters. However, if your announcement is particularly newsworthy or visual, then holding a press conference or inviting the media to attend your event might be appropriate.

How can you tell if a media conference or media event is the right move for other forms of neighborhood involvement? Do you have something breaking to announce; will it be worth the reporters' time to travel there; do you have great visuals with lots of color and interesting speakers; and can you accomplish the same results through a phone call, pitch letter or media release?

One good example of a visually interesting event is a large-scale neighborhood or river clean up, where you have hundreds of volunteers in action, and key speakers, such as elected officials, providing good sound bites for local reporters.

When planning a press conference or media event, consider:

- The location of the event *
- The time it is held *
- What other newsworthy events are happening on that day or time *
- Will the location help tell your story? (i.e., in front of a storm drain clogged with litter)
- Is it centrally located, easy to find and reach?
- Is there plenty of accessible parking?
- Can signage be displayed?
- Will television and radio stations be able to transmit clear signals to their studios?
- For television and print photographers, is the location visually appealing? Are there visuals you can add, such as littered gutters or waterways, clean up activities, etc.?
- Is there enough room for reporters and broadcast equipment, as well as, enough electrical outlets?
- Do you need to bring in a public address system, chairs, risers or tables?
- What directional or information signage do you need?
- Is there wind or background noise (airplanes, traffic) that may make it difficult for radio or television outlets to hear your spokespeople?

* These issues are critical in determining if and/or when to hold a press conference in large metropolitan areas, such as Los Angeles County. Distances are great, time is limited and competition is fierce for news coverage. On any given day, 30 to 40 media events or announcements occur.

CALENDAR ANNOUNCEMENTS

To increase the visibility of your meetings, events or public participation forums, consider submitting location information for local media outlet calendar listings. The calendar listings (also referred to as announcements or bulletin boards) are the section of the newspaper, or a time slot on radio/television where community events and activities are listed or announced. To increase the likelihood of having your meeting included in the calendar section, send your announcement well ahead of the event.

FEATURE STORIES

The key distinction between a feature story and a news story or editorial is that a feature story has the purpose of both informing and entertaining the reader and does not advocate a position.

Features can be profile stories on people or places or they can take a strong human-interest angle. A good human-interest story is built around the premise that the reader can easily identify with the subject or event. It involves a fellow human being and a situation that could happen to, or involve, the reader. However, the human-interest aspect of the story outweighs its value as a straight news story.

Often community publications don't have a lot of staff and usually can't send a reporter or photographer to cover your event or take pictures. However, it is always a good idea to take pictures of your local efforts and include those with the information sent to the smaller papers.

PUBLIC AFFAIRS AND NEWS TALK SHOWS

Equivalent to the editorial pages of a newspaper are the public affairs and talk shows on radio and television. When deciding if radio or television is an appropriate medium for your issue, consider what makes your topic newsworthy or air-able. Again, comparable to print media, your messages should be clear, concise, timely, interesting and relevant to listeners. It helps if your representative is a well-known community leader or an expert.

Radio and television public affairs and news talk shows can be forums for in-depth discussions of issues affecting your community. The first step in getting on the air is to familiarize yourself with the public affairs and news talk programs on radio and television stations in your area. Most are on AM radio or cable television stations. Be sure to acquaint yourself with the format of the programs, noting whether they feature in-studio guests, live call-ins, panel discussions or taped programming.

COMMENTARIES/EDITORIALS

Some local radio and cable television stations accept commentaries/editorials from listeners. For on-air commentaries, call the radio, cable or television station and ask them if they accept commentaries/editorials from listeners/viewers. Find out their protocol. Do they want to see a script; what are their commentary length requirements (30-60 seconds); and how do they want to receive it (fax, regular mail, e-mail, etc.)?

PUBLIC SERVICE ANNOUNCEMENTS (PSAs)

PSAs are free "mentions," usually on radio stations, that give concise information about an event (date, time, location, contact information) or a "tip" that is of benefit to the public (e.g., pick up after your pet; this type of pollution can be a health risk to your children).

Thirty seconds is usually the maximum length a radio station will run a PSA, however, call the station to obtain the station's PSA requirements, including length and lead-time.

PSAs can be submitted in written format, to be read by the station's announcer, or pre-recorded on an audio or digital tape (this can be expensive and must follow the electronic needs dictated by the station).

Five tips for writing a PSA:

1. Give the radio station a choice of two or three lengths (e.g., 10 seconds, 20 seconds, 30 seconds). Make sure you accurately time your PSA, whether it is submitted in writing or pre-recorded.
2. Make sure you have taken the "service" approach and are providing specific and valuable information for the local listening audience.
3. Limit your PSA to one main topic. Avoid extra words, particularly adjectives.
4. Close your PSA by asking people to take an action whenever possible.
5. If you submit a pre-recorded PSA, use a professional recording studio with broadcast-quality equipment. Home tape recorders aren't good enough for producing broadcast-quality tapes.

   Important reminder: Don't forget your non-English stations for all of these radio and television public affairs and public service opportunities. The ideal is to send in-language materials to non-English outlets. However, if that is not possible, it is recommended you check with your respective media outlets to find out their policies pertaining to this subject.

WEB SITES AND E-MAIL

The Internet provides another important medium to increase public awareness of your issue. While Internet access for all socio-economic groups is still a concern, the so-called "digital divide" is rapidly closing and most media have Internet access and e-mail boxes.

Include your organization's Web address on all your communication materials. The Web site can include storm water pollution prevention facts, what your organization is doing to prevent pollution, business regulations and information, copies of media and other educational materials, a place for commentary, frequently asked questions, links to other related Web sites and a host of other important information. Be sure to keep your Web site up-to-date by adding current information and materials regularly.

Other features of your Web site could include:

- Links to other resources related to littering or water pollution
- "Contact us" links to your media liaison and your speakers bureau manager

E-mail can be a very cost-effective means to contact media. E-mail addresses should be researched and included on your media list. Dependent upon your computer's mail manager, you might be able to set up a media e-mail group.

HANDLING CALLS FROM REPORTERS

When you get a call from a reporter working on a story, it can be tempting to answer his or her questions immediately. However, even seasoned media spokespeople can run into trouble when they try to do an interview "cold."

Instead, when a reporter calls, get as much information as possible about:

1. The news outlet (if you are not familiar with it)
2. The angle of the story he or she is working on
3. A list of questions the reporter would like answered
4. Who else has been interviewed
5. The reporter's deadline

Tell the reporter that you need this background, so that you can be sure to give him or her the most appropriate information. In some cases, after listening to the reporter's needs, you may determine that you are not the best spokesperson for the interview, or that another person who is an expert on the subject matter should join you for the interview. Make sure you (or the designated spokesperson) calls the reporter back well before the deadline with the information they requested. Before returning the call, take time to organize your key messages and practice saying them. Pull together pertinent facts and figures, so that you have them in front of you when you do the interview. If the reporter has questions you cannot answer, or if you need more time to gather information, call the reporter back well before the deadline and tell to them.

For tracking and internal record-keeping, it is important to document both proactive and reactive media contacts.

WORKING WITH ETHNIC MEDIA

Southern California is culturally and ethnically rich. Therefore, approaches used to inform the media must also be diverse. Local communities have ethnic- and language-specific newspapers, television channels, radio stations and magazines that should be utilized and seen as partners in your media relations outreach.

TAILORING YOUR MESSAGES FOR ETHNIC MEDIA

Keep in mind that ethnic media has a specific audience. This should be considered when developing a message for that particular community. What works for the general market media might not be as effective within ethnic communities.

CONTACTING ETHNIC MEDIA

Although ethnic media utilizes general industry resources (e.g., wire services) to learn about news stories, specific publications and television and radio programs should be targeted when trying to reach a particular ethnic community.

While most reporters at ethnic print and broadcast media outlets speak English, it is advisable, and sometimes required for your radio and television spokesperson to speak the language of the listening or viewing audience. Additionally, if possible and/or needed, adapt your key media informational pieces such as releases, fact sheets or pitch letters into the language of the media outlet. If this is not possible, it is important to check with the outlet to ask about their policy on this matter.

If you choose to invite ethnic media to your press conference or event, make sure that you have the same materials and resources available in the appropriate languages (if possible and/or needed). Try to have at least one spokesperson fluent in those languages to address the ethnic media. To assist you in this effort, you might also consider seeking the support of a translating service.

If someone within your organization cannot accurately adapt media materials, check your local listings for translation services. Be sure to have a native speaker review your translated documents to ensure that your messages don't get lost in the translation.

KEEP IN MIND THAT ETHNIC MEDIA HAS A SPECIFIC AUDIENCE. A MESSAGE THAT WORKS FOR THE GENERAL MARKET MEDIA MIGHT NOT BE AS EFFECTIVE WITHIN AN ETHNIC COMMUNITY. WORK TO DEVELOP A MESSAGE THAT WILL RESONATE WITH THAT PARTICULAR COMMUNITY.

MEDIA SPOKESPERSONS: INTERVIEW PREPARATION

Use the following tips when presenting key messages in interviews and presentations:

1. Be prepared and knowledgeable. Prior to the interview or meeting, write down your main messages and memorize a few statistics or examples to support your messages.
2. Give your main message point first in a concise, positive, complete sentence. Illustrate your point whenever possible with a few brief statistics. Follow with two or three of your other major message points.
3. Keep answers as concise and focused as possible, but not so brief as to be uninformative or appear evasive. Don't ramble or go off on tangents.
4. Position yourself as an expert source. Make sure that your credentials and years of experience are known.
5. Use your organization's name whenever possible instead of generic pronouns, such as "we" or "our."
6. Always tell the truth. Be as direct and concise as possible when answering questions. Don't give out information that you think may be true; it could cause embarrassment if discovered later to be false. Say "I don't know the answer now…" and get back with additional information if possible.
7. Assume everything is on the record. Assume everything you say will be used in a news story. Even the way you decline to answer can convey information to a reporter.
8. Keep your audience in mind. Avoid slang/technical jargon that the audience will not understand.
9. Keep your cool. Do not be ruffled or upset by questions. Keep control of the interview or presentation; politely correct inaccurate information and do not allow yourself to become defensive.
10. Don't repeat a negative question in your answer. Use positive words with which you feel comfortable.
11. Don't try to fill up silence. When finished answering a question, wait for the next one.
12. Assist the reporters. Help put reporters in touch with experts. Make an extra effort to give them background or additional materials. Make sure you provide the information they need in a timely fashion. If you do not have something they need, tell them when you can get it to them or refer them to where they can find it.

HELP PUT REPORTERS IN TOUCH WITH EXPERTS. MAKE AN EXTRA EFFORT TO GIVE THEM BACKGROUND OR ADDITIONAL MATERIALS. MAKE SURE YOU PROVIDE THE INFORMATION THEY NEED IN A TIMELY FASHION. IF YOU DO NOT HAVE SOMETHING THEY NEED, TELL THEM WHEN YOU CAN GET IT TO THEM OR REFER THEM TO WHERE THEY CAN FIND IT.

SAMPLE LETTERS TO THE EDITOR

SAMPLE LETTER #1

Dear Editor:

Thank you for your coverage of the [community clean up] held on [date]. Events such as this have a dual purpose: they make our neighborhoods cleaner and safer and they let the members of our community know that by working together, we can keep our community clean, healthy and safe. And, by cleaning up our neighborhoods, we also keep these pollutants from entering the storm drains and polluting our nearby waters.

Storm water pollution poses a danger to community and family health. When water quality in Southern California is allowed to decline, it creates significant threats to fish, wildlife, public health and safety, natural resources and the region's economic vitality. In other words, everyone is affected negatively by storm water pollution: kids, families and even business owners and the environment.

But we don't have to put up with pollution, as events such as the one recently held in our community prove. By changing selfish behaviors such as dropping cigarette butts in streets, parks and playgrounds, tossing trash on the ground and out car windows, and failing to pick up after dogs, we can make our community healthier. But it's up to each of us to be aware that we are a major part of the problem, and can easily be a major part of the solution.

Sincerely,

[NAME]
[TITLE, ORGANIZATION (if applicable)]

SAMPLE LETTER #2

Dear Editor:

Regarding your recent article about water quality in our area [title of article, date], I'd like to suggest that one of the reasons we are experiencing a decrease in water quality in Southern California can be found in our own neighborhoods.

With the large population of Los Angeles County, even small, individual actions to reduce storm water pollution can add up to big changes. When we throw our trash on the ground or fail to pick up after our animals, we increase our children and families' risk because trash and animal waste carry harmful, disease-spreading bacteria to children and families in their local neighborhoods. The pollution also ends up in our storm drains, which lead directly to our waterways. This is known as storm water pollution.

The California Water Boards recently launched a campaign, called *Erase the Waste*, aimed at reducing storm water pollution and safeguarding the health of L.A. County residents. Among other tips, the campaign encourages residents to throw trash in a trash can or recycling container, always put cigarette butts in an ashtray, pick up after their dog every time and join or organize a community clean up to help protect their neighborhood.

For more information about how to erase the waste in your community, log on to www.erasethewaste.com or call 1 (888) CLEAN-LA.

Sincerely,

[NAME]
[TITLE, ORGANIZATION (if applicable)]

SAMPLE LETTER #3

Dear Editor:

Regarding your article on the decision to ban smoking on public beaches [title of article, date], I'd like to draw your attention to another benefit besides clean air.

It's estimated that L.A. County residents improperly dispose of 915,000 cigarettes butts each month. That means kids are at risk of swallowing, choking or burning themselves with discarded, toxin-laden butts. It also means that our environment is affected, as cigarette butts end up in the water, causing harm to fish and wildlife.

Even seemingly harmless acts such as using the sand as an ashtray have a ripple effect on the health of our community, the health of our children and the health of our environment. For more information about how to erase the waste in your community, log on to www.erasethewaste.com or call 1 (888) CLEAN-LA.

Sincerely,

[NAME]
[TITLE, ORGANIZATION (if applicable)]

SAMPLE OPINION-EDITORIAL

REDUCING STORM WATER POLLUTION IS EVERYONE'S RESPONSIBILITY

Would you believe that small, everyday actions can make or break the health of a community? Each day, millions of poor decisions ranging from stubbing out a cigarette on the ground to pouring used motor oil down a storm drain have a negative cumulative effect on the health of our communities and our waters. But thanks to an innovative campaign by the California Water Boards, called *Erase the Waste*, residents of L.A. County are learning about their role in safeguarding the health of our families and our communities by keeping our water, beaches and neighborhoods clean.

According to research, every month L.A. County residents drop 915,000 cigarette butts in streets, parks and playgrounds, toss 830,000 pieces of trash on the ground, and dog owners fail to pick up their dog's droppings 82,000 times. Why should you care? Because on land, trash and animal waste carry harmful, disease-spreading bacteria to children and families in their local neighborhoods. Once it passes from the land to the storm drain system, and enters the waterways, those who come into contact with the water may face an increased risk of viral infections, earaches, flu, skin rashes and viral infections such as hepatitis. The water pollution also threatens fish, wildlife and the environment.

The State of California has made reducing storm water pollution in L.A. County a top priority. Storm water pollution is the greatest danger to water quality in Southern California and poses significant threats to public and environmental health and safety, natural resources and the region's economic vitality. With a high-density population of almost 10 million residents, the region produces an overwhelming volume of storm water pollution.

The *Erase the Waste* campaign encourages L.A. County's nearly 10 million residents to take ownership of their communities, help reduce storm water pollution by keeping the local landscape free of litter and pollution, and becoming part of the "pollution solution." Among other tips, the campaign encourages residents to: throw trash in a trash can or recycling container, always put cigarette butts in an ashtray, pick up after their dog every time and join or organize a community clean up to help protect their neighborhood.

Here in [NAME OF YOUR AREA], we already have hosted several community clean up days and are planning to hold more. [INSERT INFORMATION ABOUT THE PARTICULAR ACTIVITY SUCH AS HOW MANY ATTENDED AND HOW MANY POUNDS OF WASTE WERE DISPOSED OF, ETC.]

We all share a responsibility for the health of L.A. County's communities, neighborhoods and beaches. Please join us in doing your part. For more information about how to erase the waste in your community, log on to www.erasethewaste.com or call 1 (888) CLEAN-LA.

[An organization staff member or director should sign the editorial.]

SAMPLE MEDIA ADVISORY

*** MEDIA ALERT * MEDIA ALERT * MEDIA ALERT ***

[NAME OF AREA] CLEAN UP DAY LETS RESIDENTS
BE PART OF THE POLLUTION SOLUTION

Simple behavior changes can reap big rewards for kids' health

WHAT: To help safeguard the health of children in our community, the [NAME OF ORGANIZATION] is hosting a community clean up day in [NAME OF CITY] as part of L.A. County's *Erase the Waste* campaign (www.erasethewaste.com). In addition to pitching in to remove litter, discarded cigarette butts and other trash, residents will learn about how small, simple actions such as littering can contribute to inland and storm water pollution. They will also get tips on how to change their polluting ways.

WHY: Trash and animal waste carry harmful, disease-spreading bacteria to children and families in their local neighborhoods. According to research, every month L.A. County residents drop 915,000 cigarette butts in streets, parks and playgrounds; toss 830,000 pieces of trash on the ground; and dog owners fail to pick up their dog's droppings 82,000 times. Once this pollution reaches the waterways through the storm drain system, it affects fish, wildlife and water quality.

WHERE: [NAME OF PARK]
[Intersection or Address]

WHEN: [DATE] [TIME]

WHO: [NAME OF COMMUNITY GROUP OR ORGANIZATION]
[LIST STAFF NAMES, TITLES], Mayor Mary Doe, concerned residents

VISUALS: Piles of trash collected, kids and adults removing trash from our park

CONTACT: [NAME]
[NAME OF ORGANIZATION]
(XXX) XXX-XXXX

# # #

SAMPLE NEWS RELEASE

[Organization Letterhead]

FOR IMMEDIATE RELEASE CONTACT: [NAME]
(XXX) XXX-XXXX

[ORGANIZATION NAME] HOSTS SUCCESSFUL *ERASE THE WASTE* COMMUNITY CLEAN UP

Event Reclaims Community from Polluters, Inspires Local Residents to Play an Active Role In the Health of Their Community and Their Families

LOS ANGELES [DATE] – [ORGANIZATION NAME] today hosted a community clean up event at a local park to beautify the area and to illustrate the concept that everyone can play a role in neighborhood protection and storm water pollution prevention. More than [NUMBER] pitched in, collecting over [NUMBER] bags of trash.

"The California Water Boards have made reducing storm water pollution in Los Angeles County a top priority. Not only is it the greatest danger to water quality in Southern California, it also poses significant threats to public health and safety, natural resources and the region's economic vitality," said [NAME, TITLE].

Participants not only picked up litter, they also learned about actions they can take in the future to make a difference in their community, such as used oil recycling, adopt-a-playground, holiday tree recycling and graffiti paint-outs. Today's event is part of the Water Boards' *Erase the Waste* campaign, which encourages L.A. County residents to take ownership of their communities, help reduce storm water pollution by cleaning the local landscape and becoming part of the "pollution solution."

-more-

[ORGANIZATION NAME] Hosts Successful Community Clean Up

Page 2

"With the large population of Los Angeles County, even small, individual actions to reduce storm water pollution can add up to big changes," said [NAME, TITLE]. "We're asking everyone to do their part for the health of the community."

With a high-density population of almost 10 million residents, the region has an overwhelming volume of storm water pollution contributed to by residents. According to research, every month L.A. County residents, conservatively: drop 915,000 cigarette butts in streets, parks and playgrounds; toss 830,000 pieces of trash on the ground; and dog owners fail to pick up their dog's droppings 82,000 times. Storm water pollution has been linked to increased risk of viral infections, earaches, flu, skin rashes and viral infections like hepatitis, in those who come into contact with the polluted water.

Among other tips, the campaign encourages residents to: throw trash in a trash can or recycling container (as appropriate); always put extinguished cigarette butts in an ashtray; pick up after their dog every time and; join or organize a community clean up to help protect their neighborhood and local waters. For more information about how to erase the waste in your community, log on to www.erasethewaste.com or call 1 (888) CLEAN-LA.

Erase the Waste is the California Water Boards' two-year, $5 million storm water public education campaign to reduce storm water pollution in L.A. County and improve the environment of its coastal and inland communities. The campaign is the first State-funded countywide storm water public education campaign and includes the first use of paid advertising addressing the issue in Los Angeles.

# # #

SAMPLE CALENDAR ADVISORY

CALENDAR ADVISORY • CALENDAR ADVISORY • CALENDAR ADVISORY

[ORGANIZATION NAMES] Team Up for a Community Clean Up at [NAME OF AREA]

Community Clean Up Event Will Make Our Neighborhoods Safer for Children and Families

WHAT: Help prevent pollution in our neighborhood and waters by joining [SPONSORING ORGANIZATIONS] as they host an *Erase the Waste* clean up event. Come and learn about ways to help be a part of the solution, by always throwing trash in a trash can or recycling container, putting cigarette butts in an ashtray and picking up after your dog every time. Meet your neighbors and join us as we help protect the health of our neighborhood.

WHY: Storm water pollution is created when litter, animal droppings, cigarette butts, motor oil, fertilizers, pesticides and other pollutants end up on the ground and are washed into the storm drains. This pollution mixes with millions of gallons of rainwater and flows untreated into local creeks, rivers and the Pacific Ocean, polluting our waterways, as well as degrading neighborhoods and other natural resources.

VISUALS: [ORGANIZATION NAMES], families and community members picking up trash, sorting recyclables and handing out *Erase the Waste* information packets.

WHEN: [DATE] [TIME]

WHERE: [LOCATION]

BACKGROUND: *Erase the Waste* is the California Water Boards' two-year, $5 million storm water public education campaign to reduce storm water pollution in L.A. County and improve the environment of its coastal and inland communities. The campaign is the first State-funded countywide storm water public education campaign and includes the first use of paid advertising addressing the issue in Los Angeles. For more information about how to erase the waste in your community, log on to www.erasethewaste.com or call 1 (888) CLEAN-LA.

CONTACT: [NAME]
[NAME OF ORGANIZATION]
(XXX) XXX-XXXX

# # #

SAMPLE PUBLIC SERVICE ANNOUNCEMENTS

30 SECONDS

You're invited to a community clean up on [DATE], at [LOCATION] in [NAME OF AREA]. It's part of *Erase the Waste*, a program that encourages L.A. County's nearly 10 million residents to take ownership of their communities, help reduce storm water pollution in our neighborhoods, and be part of the "pollution solution." Remember, all of us share the responsibility for keeping our children, families and neighborhoods healthy and our waters pollution-free. For more information about how to erase the waste in your community, log on to www.erasethewaste.com or call 1 (888) CLEAN-LA.

10 SECONDS

L.A. County's *Erase the Waste* campaign reminds you that all of us share the responsibility for keeping our children, families, neighborhoods and waters healthy. For more information about how to reduce harmful pollution in your community, log on to www.erasethewaste.com or call 1 (888) CLEAN-LA.

SECTION 5

INFORMATIONAL MATERIALS TO ERASE THE WASTE

Use a garbage can for trash and recycle reusable materials. Never throw trash on the street or out your car window. To learn more ways to keep your neighborhood and waters healthy, clean and pollution free, visit **www.erasethewaste.com** or call **1(888) CLEAN-LA.**

Erase the waste

PROJECT Pollution PREVENTION

Brought to you by the California Water Boards

Clean up after your dog every single time. Do your part to keep your neighborhood and waters clean, healthy and pollution free. For more tips, visit **www.erasethewaste.com** or call **1(888) CLEAN-LA.**

Erase the waste

PROJECT Pollution PREVENTION

Brought to you by the California Water Boards

Make sure to place your extinguished cigarette butts in an ashtray or garbage can every single time. To learn more ways to keep your neighborhood and waters healthy, clean and pollution free, visit **www.erasethewaste.com** or call **1(888) CLEAN-LA.**

Erase the waste

PROJECT Pollution PREVENTION

Brought to you by the California Water Boards

Improve your home without harming your community.

Home improvement products such as paint, fertilizers and pesticides contain toxic chemicals that can be harmful to your neighborhood and waters. Use these products sparingly and according to directions. When cleaning up after a project, make sure to dispose of them safely and properly at a free Household Hazardous Waste Collection Event. To find an event near you, visit **www.erasethewaste.com** or call **1 (888) CLEAN-LA.**

Erase the waste

PROJECT Pollution PREVENTION

Brought to you by the California Water Boards

Keep our neighborhoods and waters healthy and clean.

Every month, LA County residents drop litter on the ground almost 1 million times. Things like litter, cigarette butts and animal waste left on the street create dirty neighborhoods and cause a health threat to the community. They can also wash into storm drains, leading to flooding and pollution of local waterways. Prevent pollution in your community and waters by following these simple tips:

- ❑ Reduce, Reuse, Recycle.
- ❑ Throw extinguished cigarette butts in an ashtray and trash in a trash can every single time.
- ❑ Clean up your pet's waste by throwing it in the trash.
- ❑ Organize or join in the clean up of a beach, river or community.
- ❑ Use pesticides and fertilizers sparingly and never apply them prior to rainstorms.
- ❑ Take unwanted paints, yard chemicals and automotive fluids to a free Household Hazardous Waste Collection Event. Visit **www.erasethewaste.com** or call **1(888) CLEAN-LA** to locate an event near you.

To learn more ways to keep your neighborhood and waters healthy and clean, visit **www.erasethewaste.com**

Erase the waste

Brought to you by the California Water Boards

PROJECT Pollution PREVENTION

Printed on recycled paper.

When nature calls, make sure you pick up.

LA County has 3 million dog owners. Imagine how unhealthy LA would be if no one picked up after their pets. Dog waste carries bacteria, and if left on the ground, can make people sick. It can also wash into storm drains, polluting your community and local waterways. Dog owners can help prevent pollution by taking these simple steps:

- ❑ Pick up after your pet every single time. Check with your pet store for products that make picking up easy.
- ❑ Throw away pet waste in the garbage; never wash it into the gutter or storm drain.
- ❑ Carry extra bags in your car, so you are prepared when you travel with your pet.
- ❑ Get involved in a pet group and remind others to pick up after their pets.

To learn more ways to keep your neighborhood and waters healthy and clean, visit **www.erasethewaste.com** or call **1 (888) CLEAN-LA**

Erase the waste

Brought to you by the California Water Boards

PROJECT Pollution PREVENTION

Printed on recycled paper.

Keep your yard green without harming your community.

Each month, LA County residents spray their yards with pesticide more than 210,000 times. Without proper use and disposal, pesticides and fertilizers used in your yard can cause a health threat to neighborhoods, families and waters. These products can run off into storm drains, leading to pollution of your community and local waterways. Prevent pollution by taking these easy steps:

- ❑ Use pesticides and fertilizers sparingly, by spot applying. Consider using non-toxic or less-toxic products.
- ❑ Avoid over watering after applying pesticides or fertilizers.
- ❑ Never apply pesticides or fertilizers before it rains.
- ❑ Bag or compost yard waste.
- ❑ Take unwanted products to a free Household Hazardous Waste Collection Event. Visit **www.erasethewaste.com** or call **1 (888) CLEAN-LA** to locate an event near you.

To learn more ways to keep your neighborhood and waters healthy and clean, visit **www.erasethewaste.com**

Erase the waste

Brought to you by the California Water Boards

PROJECT Pollution PREVENTION

Printed on recycled paper.

Improve your home without harming your community.

Each month, LA County residents wash off paintbrushes under an outdoor faucet more than 130,000 times. Toxic paint products rinsed or dumped outside can result in a health threat to your neighborhood and waters. These products can run off into storm drains, leading to pollution of your community and local waterways. When cleaning up after a painting project, prevent pollution by following these easy steps:

- ❑ Never dump paint or related products into the gutter or storm drain.
- ❑ Clean water-based paint from brushes in any sink, never outside with a hose.
- ❑ Clean oil-based paint from brushes with paint thinner, which can be filtered and reused.
- ❑ Donate unused paint to local anti-graffiti organizations or reuse it for touch ups.
- ❑ Take unwanted paint or related products to a free Household Hazardous Waste Collection Event. Visit **www.erasethewaste.com** or call **1(888) CLEAN-LA** to locate an event near you.

To learn more ways to keep your neighborhood and waters healthy and clean, visit **www.erasethewaste.com**

Erase the waste

Brought to you by the California Water Boards

PROJECT Pollution PREVENTION

Printed on recycled paper.

SECTION 6

ADDITIONAL RESOURCES TO ERASE THE WASTE

ADDITIONAL RESOURCES TO...

GENERAL CAMPAIGN INFORMATION

California Water Boards – State and regional government boards that strive to protect water quality and beneficial uses for the state of California.
Erase the Waste Public Education Campaign
Public Affairs Office **Phone: (916) 341-5263**
1001 I Street
P.O. Box 100
Sacramento, CA 95812
Fax: (916) 341-5252
E-mail: tmays@exec.swrcb.ca.gov
Web site: http://www.erasethewaste.com

ORGANIZATIONS THAT HOLD COMMUNITY CLEAN UP EVENTS NEAR YOU/HOW TO GET INVOLVED

Ballona Lagoon Marine Preserve – Provides education about natural resource protection.
P.O. Box 9244 **Phone: (310) 306-6744**
Marina del Rey, CA 90295
Fax: (310) 306-6744
E-mail: myrna-d@attbi.com

California Coastal Commission – Hosts Coastal Clean Up Day and COASTWEEKS.
Public Education Department **Phone: (800) 262-7848**
45 Fremont Street **or (415) 904-5200**
San Francisco, CA 94105-2219
Fax: (415) 904-5400
Web site: http://www.coastal.ca.gov

Earth Resource Foundation – Hosts the Great Earth Walk and numerous "Hold on to Your Butt" beach clean ups.
230 East 17th Street #208 **Phone: (949) 645-5163**
Costa Mesa, CA 92627
Fax: (949) 645-5173
E-mail: sbarger@triaxis.com
Web site: http://www.earthresource.org

Heal the Bay – Committed to providing workable solutions to the problems threatening Santa Monica Bay and all of Southern California's coastal waters; sponsors monthly beach clean up events and Beach Emergency Response clean ups.
3220 Nebraska Avenue **Phone: (800) HEAL-BAY**
Santa Monica, CA 90404 **or (310) 453-0395**
Fax: (310) 453-7927
or (310) 496-1902 (10 pages or more)
General programs information e-mail:
programs@healthebay.org
Information e-mail: info@healthebay.org
Web site: http://www.healthebay.org

Hollywood Beautification Team – Local chapter that participates in the Great American Clean Up.
P.O. Box 931090 **Phone: (323) 463-5180**
Hollywood, CA 90093
Fax: (323) 463-2619
Web site: http://www.hbteam.org

Keep California Beautiful – Hosts the Great American Clean Up, which is the nation's largest organized litter prevention, beautification and community improvement event.
3914 Murphy Canyon Road **Phone: (858) 505-9936**
Suite A-218
San Diego, CA 92123
Fax: (858) 505-9940
E-mail: kcbeee@aol.com
Web site: http://www.keepcaliforniabeautiful.com

Keep Downey Beautiful – Local Keep America Beautiful chapter that participates in the Great American Clean Up.
Carol Rowland – Coordinator **Phone: (562) 904-7159**
Fax: (562) 869-7365
E-mail: crowland@downeyca.org

Keep Glendale Beautiful – Local Keep America Beautiful chapter that participates in the Great American Clean Up.
Sandra Rodriguez **Phone: (818) 548-2877**
Public Education Specialist
141 North Glendale Avenue, Room 118
Glendale, CA 91206-4996
Fax: (818) 240-7239
E-mail: sanrodriguez@ci.glendale.ca.us
Web site: http://www.ci.glendale.ca.us/government/cdh/ns/cleanup.asp

Los Angeles & San Gabriel Rivers Watershed Council – An organization of community groups, government agencies, business and academia working cooperatively to solve problems in the watershed.
700 North Alameda Street **Phone: (213) 229-9945**
Los Angeles, CA 90012
Fax: (213) 229-9952
Web site: http://www.lasgrwc.org/contact.html

TreePeople – Inspires the people of Los Angeles to take personal responsibility for the urban forest and local environment by training and supporting them as they plant and care for trees and improve the neighborhoods in which they live. They also host several environmental and tree care events.
12601 Mulholland Drive **Phone: (818) 753-4600**
Beverly Hills, CA 90210
Fax: (818) 753-4635
E-mail: info@treepeople.org
Web site: http://www.treepeople.org

30-Minute Beach Clean Up – Hosts monthly clean up events and participates in the annual Coastal Clean Up event.
5209 The Toledo #1 **Phone: (562) 439-2681**
Long Beach, CA 90803
Fax: (562) 439-2681
E-mail: JustinRudd@aol.com
Web site: http://www.beachcleanup.org

GENERAL ENVIRONMENTAL AND STORM WATER POLLUTION INFORMATION

California Water Boards – State and regional government boards that strive to protect water quality and beneficial uses for the state of California.
Erase the Waste Public Education Campaign
Public Affairs Office **Phone: (916) 341-5263**
1001 I Street
P.O. Box 100
Sacramento, CA 95812
Fax: (916) 341-5252
E-mail: tmays@exec.swrcb.ca.gov
Web site: http://www.erasethewaste.com

Arroyo Seco Foundation – Involved in the Arroyo Seco restoration.
539 East Villa Street #2 **Phone: (626) 584-9902**
Pasadena, CA 91101
Fax: (209) 633-5510
E-mail: info@arroyoseco.org
Web site: http://www.arroyoseco.org

Ballona Creek Renaissance – Plants trees during Earth Day and hosts clean up events.
P.O. Box 1068 **Phone: (310) 839-6896**
Culver City, CA 90232
E-mail: jim.lamm@ballonacreek.org
Web site: http://www.ballonacreek.org

California Materials Exchange – Conserves energy, resources and landfill space, by helping businesses find markets for non-hazardous materials they have traditionally discarded.
E-mail: calmax@ciwmb.ca.gov **Phone: (877) 520-9703**
Web site: http://www.ciwmb.ca.gov/calmax

California Regional Environmental Education Community (CREEC) Network – Resource for environmental education programs and also hosts several environmental events.
Cherylin Leong **Phone: (818) 623-4876**
12601 Mulholland Drive
Beverly Hills, CA 90210
Fax: (818) 753-4645
E-mail: cleong@treepeople.org
Web site: http://www.creec.org/region11

Clean Water Team – Citizen monitoring program of the California Water Boards.
Erick Burres **Phone: (213) 576-6788**
E-mail Address: eburres@rb4.swrcb.ca.gov
Web site: http://www.swrcb.ca.gov/nps/mission.html

County of Los Angeles Materials Exchange Program – Provides free service to help people find markets to properly discard surplus material.
Jennifer Nguyen **Phone: (626) 458-3580**
County of Los Angeles Department of Public Works
Environmental Programs Division
900 South Fremont Avenue, 3rd Floor Annex
Alhambra, CA 91803-1331
Fax: (626) 458-3593
E-mail: jenguyen@dwp.co.la.ca.us
Web site: http://www.ladpw.org/epd/lacomax

ADDITIONAL RESOURCES

Earth 911 – Provides information about conserving resources and the environment.
7301 East Helm, Building D **Phone: (480) 889-2650**
Scottsdale, AZ 85260
Fax: (480) 889-2660
Web site: http://www.earth911.org

Green Seal – Promotes products and services that cause less pollution and provides valuable environmental resources.
1001 Connecticut Avenue, NW **Phone: (202) 872-6400**
Suite 827
Washington, DC 20036-5525
Fax: (202) 872-4324
E-mail: greenseal@greenseal.org
Web site: http://www.greenseal.org

Ocean Conservancy – Additional information on beach clean ups, including the newsletter Coastal Connection.
1725 DeSales Street, NW **Phone: (202) 429-5609**
#600
Washington, DC 20036
Fax: (202) 872-0619
Web site: http://www.cmc-ocean.org

People for Parks – Advocacy group enhancing recreational opportunities and preserving the public park system.
3250 Ocean Park Boulevard **Phone: (310) 399-9719**
#300
Santa Monica, CA 90401
Fax: (310) 399-9716
E-mail: info@peopleforparks.org
Web site: http://www.peopleforparks.org

Recycled Products Purchasing Cooperative (RPPC) – Seeks to conserve natural resources by providing recycled copy paper and products at competitive prices.
Phone: (800) 694-8355
E-mail: information@recycledproducts.org
Web site: http://www.recycledproducts.org

Santa Monica BayKeeper – Hosts environmental clean up events and promotes water pollution prevention methods to preserve the local coastal waters.
P.O. Box 10096 **Phone: (310) 305-9645**
Marina del Rey, CA 90295
Fax: (310) 305-7985
E-mail: info@smbaykeeper.org
Web site: http://www.smbaykeeper.org

Santa Monica Bay Restoration Commission – Seeks to restore and protect the Santa Monica Bay and its resources; hosts environmental education workshops.
320 West 4th Street, Suite 200 **Phone: (213) 576-6615**
Los Angeles, CA 90013
Fax: (213) 576-6646
E-mail: smbrc@rb4.swrcb.ca.gov
Web site: http://www.santamonicabay.org

Santa Monica Mountains Conservancy – Seeks to preserve, protect, restore and enhance treasured pieces of Southern California.
570 West Avenue 26 **Phone (323) 221-8900**
Suite 100
Los Angeles, CA 90065
Fax: (323) 221-9001
Web site: http://www.smmc.ca.gov

Santa Monica Mountains National Recreation Area – Hosts events and recruits volunteers to protect and preserve natural resources.
401 West Hillcrest Drive **Phone: (805) 370-2301**
Thousand Oaks, CA 91360
Fax: (805) 370-1850
Web site: http://www.nps.gov/samo

Sierra Club, Los Angeles Chapter – Serves as a resource for local environmental programs and environmental current events.
3435 Wilshire Boulevard, #320 **Phone: (213) 387-4287**
Los Angeles, CA 90010-1904
Fax: (213) 387-5383
E-mail: info@angeles.sierraclub.org
Web site: http://www.angeles.sierraclub.org

REGULATORY/GOVERNMENT AGENCIES

California Water Boards – State and regional government boards that strive to protect water quality and beneficial uses for the state of California.
Erase the Waste Public Education Campaign
Public Affairs Office **Phone: (916) 341-5263**
1001 I Street
P.O. Box 100
Sacramento, CA 95812
Fax: (916) 341-5252
E-mail: tmays@exec.swrcb.ca.gov
Web site: http://www.erasethewaste.com

California Department of Water Resources – Manages the water resources of California.
1416 Ninth Street **Phone: (916) 653-5791**
Sacramento, CA 95814
Fax: (916) 653-4684
Web site: http://www.dwr.water.ca.gov

California Environmental Protection Agency (CAL/EPA) – California voice for Environmental Protection Agency seeks to restore, protect and enhance the environment.
1001 I Street
P.O. Box 2815
Sacramento, CA 98512-2815
Web site: http://www.calepa.ca.gov

California Integrated Waste Management Board – Promotes a zero waste California in partnership with local government, industry and the public.
1001 I Street **Phone: (916) 341-6000**
P.O. Box 4025
Sacramento, CA 95812-4025
http://www.ciwmb.ca.gov

City of Los Angeles Department of Water and Power – Regional agency that supports environmental efforts that will improve the quality of life in the City of Los Angeles.
Green LA **Phone: (800)GREEN LA**
Energy Efficiency for a Green LA
L.A. Department of Water and Power
111 North Hope Street
Los Angeles, CA 90012
Web Site: http://www.ladwp.com/library/statichtml/homepage_greenla.html

County of Los Angeles Department of Public Works – Responsible for environmental services and programs, the design, construction, operation, maintenance and repair of roads, bridges, airports, sewers, water supply, flood control and water conservation facilities.
900 South Fremont Avenue **Phone: (888) CLEAN-LA**
Alhambra, CA 91803
Web site: http://www.888cleanla.com

L.A. Regional Water Quality Control Board – Protects ground and surface water quality in the Los Angeles Region.
320 West 4th Street **Phone: (213) 576-6600**
Suite 200
Los Angeles, CA 90013
Fax: (213) 576-6640
Web site: http://www.swrcb.ca.gov/~rwqcb4

United States Environmental Protection Agency – Office of Water Resources – National entity that protects human health and safeguards the natural environment: air, water and land.
Ariel Rios Building **Phone: (202) 272-0167**
1200 Pennsylvania Avenue, NW
Washington, DC 20460
Web site: http://www.epa.gov/ow/index.html

ERASE THE WASTE COMMUNITY ADVISORY COUNCIL (CAC)

Members of the CAC offer counsel on the strategic direction of the community engagement component of the California Water Boards' *Erase the Waste* public education campaign.

Asian Pacific Islander Small Business Program
Cooke Sunoo, Director **Phone: (213) 473-1603**
231 East Third Street, Suite G106
Los Angeles, CA 90013
Fax: (213) 473-1601

Association of Community Organizations for Reform Now
John Jackson, Head Organizer **Phone: (213) 747-4211**
3655 South Grand Avenue
Los Angeles, CA 90007
Fax: (213) 747-4221

Clinica Monseñor Oscar Romero
Angel Fabian **Phone: (213) 201-1778**
Community Center Director
123 South Alvarado Street, Suite 132
Los Angeles, CA 90057
Fax: (213) 201-1797

Families In Good Health
Lillian Lew, Director **Phone: (562) 491-9100**
Veasna Ek, Project Assistant
411 East Tenth Street, Suite 207
Long Beach, CA 90813
Fax: (562) 491-9824

First African Methodist Episcopal Church
Peggy Hill, Director **Phone: (323) 730-7760**
Brenda Carter, Staff
2241 South Hobart Boulevard
Los Angeles, CA 90018
Fax: (323) 737-0292

L.A. Free Clinic
Kevin Swanson **Phone: (323) 337-1720**
Public Relations and Marketing Manager
6043 Hollywood Boulevard
Los Angeles, CA 90028
Fax: (323) 462-6731

Magic Johnson Foundation
Shane Taylor Jenkins **Phone: (310) 246-4400**
Program Director
9100 Wilshire Boulevard, Suite 700 East Tower
Beverly Hills, CA 90212
Fax: (310) 246-1106

Multicultural Area Health Education Center
Luis Mata **Phone: (323) 780-7640**
President/CEO
5051 East Third Street
Los Angeles, CA 90022
Fax: (323) 780-7646

Proyecto Pastoral/Dolores Mission Women's Cooperative
Gabriel Balna **Phone: (323) 881-0016**
Executive Director
135 North Mission Road
Los Angeles, CA 90033
Fax: (323) 268-7228

EVENT RESOURCES

STATE, COUNTY AND CITY POLLUTION PREVENTION EVENTS (PARTIAL LIST)

JUNE 2004

L.A. Works Day: June 5, 2004
570 West Avenue 26, Suite 400 **Phone: (323) 224-6510**
Los Angeles, CA 90065
Fax: (323) 224-6518
E-mail: info@laworks.com
Web site: http://www.laworks.com

SEPTEMBER 2004

Coastal Clean Up Day: September 18, 2004
Haan-Fawn Chau **Phone: (800) HEAL-BAY**
Heal the Bay **or (310) 453-0395**
3220 Nebraska Avenue
Santa Monica, CA 90404
Fax: (310) 453-7927
E-mail: info@healthebay.org or hfchau@healthebay.org
Web site: http://www.healthebay.org/volunteer/ccd

Pollution Prevention Week
Department of Toxic Substances Control
Office of Pollution Prevention & Technology Development
P.O. Box 806 **Phone: (916) 322-3670**
Sacramento, CA 95812-0806
Fax: (916) 327-4494
Web site:
http://www.dtsc.ca.gov/pollutionprevention/index.html

OCTOBER 2004

Annual Second Chance Week
Choose2Reuse
Web site: http://www.choose2reuse.org

NOVEMBER 2004

America Recycles Day: November 15, 2004
Steve Kullen **Phone: (202) 347-0450**
ARD National Program Manager **ext. 25**
1325 G Street, NW, Suite 1025
Washington, DC 20005
E-mail: stevek@nrc-recycle.org
Web site: http://www.americarecyclesday.org

MARCH 2005

Great American Clean Up: March 1- May 31, 2005
Keep America Beautiful **Phone: (203) 323-8987**
1010 Washington Boulevard
Stamford, CT 06901
Fax: (203) 325-9199
Web site: http://www.kab.org

APRIL 2005

Earth Day Los Angeles: April 16, 2005
1247 Lincoln Boulevard, #253 **Phone: (310) 390-4366**
Santa Monica, CA 90401 **or (888) 295-8372**
Fax: (310) 362-8400
E-mail: info@earthdayla.org
Web site: http://www.earthdayla.org/

MAY 2005

Annual River Clean Up: May 7, 2005
Friends of the Los Angeles River **Phone: (323) 223-0585**
570 West Avenue 26 #250
Los Angeles, CA 90065
E-mail: mail@folar.org
Web site: http://www.folar.org

Ocean Day: May 20, 2005
The Malibu Foundation for **Phone: (310) 652-4324**
Environmental Education
1471 South Bedford Street # 3
Los Angeles, CA 90035
Fax: (310) 652-5169
Web site: http://www.malibufoundation.org

The Great Earth Walk
The Earth Institute **Phone: (877) GEW-2004**
6033 West Century Boulevard, Suite 400
Los Angeles, CA 90045
Fax: (310) 861-5333
Web site: http://www.theearthinstitute.org/upcoming.htm

Note: Although these events have specific dates for this and the upcoming year, most take place annually on the same month as listed above.

HOUSEHOLD HAZARDOUS WASTE RESOURCES

The time for all events is 9:00 a.m. to 3:00 p.m., unless otherwise noted.

Some examples of what you CAN bring to a collection event:

- Motor oil, filters, brake fluid
- Paint, paint thinner, turpentine
- Cleaners with acid or lye
- Pesticides or herbicides
- Household batteries or car batteries
- Pool chemicals

What you CANNOT bring to a collection event:

- Explosives
- Ammunition
- Radio active materials
- Trash
- Tires
- Business waste

How should you prepare?

- Bring the items you wish to dispose of in a sturdy box preferably in their original, labeled containers
- Do not ever mix products together
- It is illegal to transport more than 15 gallons or 125 pounds of hazardous waste in your personal vehicle
- Be prepared to leave your containers. Because of permitting requirements, and the volume of people that utilize the program, items such as gasoline will not be returned

Note: For the most updated list of collection events, please visit http://www.888cleanla.com.

2004 L.A. COUNTY HOUSEHOLD HAZARDOUS WASTE COLLECTION EVENTS

Date	City	Location
06/06/04	Agoura	Calabasa Landfill 5300 Lost Hills Road
06/12/04	Torrance	American Honda 1919 Torrance Boulevard
06/19/04	Irwindale	Department of Public Works- Flood Control Maintenance Yard 160 East Longden Avenue
06/26/04	Culver City	West Los Angeles College 4800 Freshman Drive Parking lot 7
07/17/04	Rancho Palos Verdes	Rancho Palos Verdes City Hall 30940 Hawthorne Boulevard
07/17/04	Woodland Hills	Pierce College* 6201 Winnetka Avenue Parking lot 4
07/18/04	Woodland Hills	Pierce College* 6201 Winnetka Avenue Parking lot 4
08/07/04	Unincorporated Whittier	Rio Hondo College 3600 Workman Mill Road Parking lot A
08/14/04	Arcadia	Santa Anita Race Track Gate 6, Colorado Place
08/21/04	Glendora	Citrus College Stadium parking lot Barranca Avenue (North of Alosta Avenue)
08/28/04	Carson	Joint Water Pollution Control Plant West Maintenance Building parking lot 24501 South Figueroa Street

** Events conducted by the City of Los Angeles*

PERMANENT HOUSEHOLD HAZARDOUS WASTE CENTERS

The following S.A.F.E. (Solvents/Automotive/Flammables/Electronics) Recycling and Disposal Centers are open to the public. More information is available by calling 1(800) 98-TOXIC.

San Pedro
S.A.F.E. Center
1400 North Gaffey Street
San Pedro, CA 90021
Hours of Operation: Friday, Saturday and Sunday
9:00 a.m. – 3:00 p.m.

Playa Del Rey
Hyperion Treatment Plant S.A.F.E. Center
7660 West Imperial Highway, Gate B
Playa del Rey, CA 90293
Hours of Operation: Saturdays and Sundays
9:00 a.m. – 3:00 p.m.

Sun Valley
Randall Street S.A.F.E. Center
11025 Randall Street
Sun Valley, CA 91352
Hours of Operation: Saturday, Sunday and Monday
9:00 a.m. – 3:00 p.m.

Boyle Heights
S.A.F.E. Center
2649 East Washington Boulevard
Los Angeles, CA 90021
Hours of Operation: Friday, Saturday and Sunday
9:00 a.m. – 3:00 p.m.

West Los Angeles
U.C.L.A. S.A.F.E. Center
550 Charles E. Young Drive West
Los Angeles, CA 90095
Hours of Operation: Thursday, Friday and Saturday
8:00 a.m. – 2:00 p.m.

Appendix D

Soils Report (for fill placement only at this time)

DRAFT

Converse Consultants
Geotechnical Engineering, Environmental & Groundwater Science, Inspection & Testing Services

GEOTECHNICAL STUDY REPORT
Proposed Fill Placement at the West Parcel
Mount San Antonio College
Walnut, California

Converse Project No. 13-31-339-01

December 19, 2014

Prepared For:

Mount San Antonio College
Facilities Planning & Management
1100 North Grand Avenue, Building No. 23
Walnut, California 91789

Prepared By:

Converse Consultants
222 East Huntington Drive, Suite 211
Monrovia, California 91016

Converse Consultants
Geotechnical Engineering, Environmental & Groundwater Science, Inspection & Testing Services

December 19, 2014

Ms. Mikaela (Mika) Klein, AIA, LEED AP
Facilities Planner
Mt. San Antonio College
Facilities Planning & Management
1100 North Grand Avenue, Building 23
Walnut, California 91789

Subject: **GEOTECHNICAL STUDY REPORT**
Proposed Fill Placement for the West Parcel
Mount San Antonio College
Walnut, California
Converse Project No. 13-31-339-01

Dear Ms. Klein:

Converse Consultants (Converse) has prepared this geotechnical study report to present the findings, conclusions and recommendations of our geotechnical investigation for the proposed placement of fill to create a large pad area at elevation 761 feet within the west parcel on the campus of Mt. San Antonio College, in Walnut, California. The purpose of this study was to explore and evaluate the soil, bedrock and groundwater conditions beneath the project area of the proposed west parcel, with the ultimate objective of creating large buildable pads for possible solar arrays. It should be advised that this report is not intended for DSA and CGS review submittal and not for design of future structures. Our services were performed in accordance with our proposal dated December 6, 2013.

Based on our field exploration, laboratory testing, geologic evaluation, and geotechnical analysis, the site is suitable from a geotechnical standpoint for the site grading and earthwork proposed projects, provided our conclusions and recommendations are implemented during construction.

We appreciate the opportunity to be of continued service to Mt. San Antonio College. If you should have any questions, please do not hesitate to contact us at (626) 930-1200.

Sincerely,

CONVERSE CONSULTANTS

William H. Chu, P.E., G.E.
Senior Vice President/Principal Engineer

Dist: 5/Addressee
MM/MBS/SKS/WHC/jjl

222 East Huntington Drive, Suite 211, Monrovia, California 91016
Telephone: (626) 930-1200 ♦ Facsimile: (626) 930-1212 ♦ e-mail: converse@converseconsultants.com

PROFESSIONAL CERTIFICATION

This report has been prepared for Mount San Antonio College for the Proposed Fill Placement at the West Parcel by the staff of Converse under the professional supervision of the individuals whose seals and signatures appear hereon.

The findings, recommendations, specifications or professional opinions contained in this report were prepared in accordance with generally-accepted professional engineering and engineering geologic principles and practice in this area of Southern California. There is no warranty, either expressed or implied.

Mohammad-Saad Malim, E.I.T.
Staff Engineer

Mark B. Schluter, C.E.G.
Senior Engineering Geologist

William H. Chu, P.E., G.E.
Senior Vice President/Principal Engineer

Siva K. Sivathasan, PhD, PE, GE, DGE, QSD, F. ASCE
Vice President/Principal Engineer

EXECUTIVE SUMMARY

The following is a summary of our geotechnical investigation, conclusions and recommendations, as presented in the body of this report. Please refer to the appropriate sections of the report for complete conclusions and recommendations. In the event of a conflict between this summary and the report, or an omission in the summary, the report shall prevail.

- The proposed developments for the West Parcel consists of the removal of approximately the top 55 feet of the hillside, canyon cleanouts and placement of fill in the areas between the hillsides to create a large pad area at elevation 761 feet to be used for proposed solar arrays. Fill soils from proposed development areas on campus (hilltop removal on west side of track stadium, parking structure excavation, etc.) are planned be imported and used to raise the West Parcel to create a building pad for the future solar arrays.
- Our subsurface exploration consisted of drilling, logging and sampling twenty-one (21) hollow-stem auger borings from May 5 to May 9, 2014 extending between depths of approximately 10 to 51.5 feet below the existing ground surface (bgs), and one (1) bucket auger boring (BH-13) on May 19, 2014 to a depth of 31 feet (bgs).
- The earth materials encountered during our investigation consist of existing fill soils in the northernmost portion of the project site at the Christmas Tree Lot, natural alluvial and colluvial soils, and sedimentary bedrock of the Sycamore Formation.
- Undocumented fill was encountered during exploration of the West Parcel site, to a depth of five (5) feet in Boring BH-3 in the area of the Christmas Tree lot. Deeper fill may occur elsewhere on the site. The fill at the site consists of primarily silty sand with some gravels.
- The project site is not located within a currently designated State of California Earthquake Fault Zone (formerly Alquist-Priolo Special Studies Zones) for surface fault rupture.
- The sites are partially located within potential liquefaction zones per the State of California Seismic Hazard Zones Map for the San Dimas Quadrangle. Based on our liquefaction potential analyses, the project sites are not susceptible to liquefaction and seismically-induced settlement is considered to be negligible.
- Localized zones of groundwater were encountered during subsurface exploration, ranging in depths at approximately 16 feet bgs in boring BH-15 to 44 feet bgs in Boring BH-14. Localized perched groundwater seepage should be anticipated during excavation in these locations.

- Based on our field exploration, laboratory testing, and analyses of subsurface conditions at the site, remedial grading, including cut-and-fill operations, is required to prepare the planned fill pads for support of the future developments.
- The fill slope on the east side of the site along Grand Avenue will include a maximum proposed fill height of approximately 80 feet. Existing slopes within the project area will be completely removed or reduced to a 2:1 (H:V) gradient during the proposed grading operations placed over underlying hard sandstone pebble conglomerate bedrock. In the absence of significantly steep slopes, the potential for seismically-induced landslides to affect the proposed site is considered to be very low.
- The earth materials at the site consisting of soil should be excavatable with conventional heavy-duty earth moving and trenching equipment. Earth materials consisting of conglomerate bedrock will be considerably harder to excavate. The on-site materials contain about 5 to 30 percent gravel up to 3 inches in maximum dimension. Larger gravels, cobbles and possible boulders may exist at the site. Earthwork should be performed with suitable equipment for gravelly materials.

Results of our investigation indicate that the site is suitable from a geotechnical standpoint for the proposed development, provided that the recommendations contained in this report are incorporated into the design and construction of the project.

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1.0 INTRODUCTION

This report contains the findings and recommendations of our geotechnical study performed at the site of the proposed *Fill Placement at West Parcel Project*, located west of Grand Avenue on the campus of Mount San Antonio College, in the City of Walnut, California, as shown on Drawing No. 1, *Site Location Map*.

The purpose of this investigation was to explore and evaluate the soil, bedrock, and groundwater conditions of the existing West Parcel hillside site with soil borings to further determine the excavatability, rippability, and grading considerations for removal of approximately the top 55 feet of the hillside and placement of fill in the canyon areas between the hillsides to create a large pad area at elevation 761 feet to be used for future solar arrays. Conditions of particular concern include the depth of groundwater, the liquefaction potential of natural soils and the stability of the proposed fill slope on the east side along Grand Avenue with a maximum proposed fill height of approximately 80 feet.

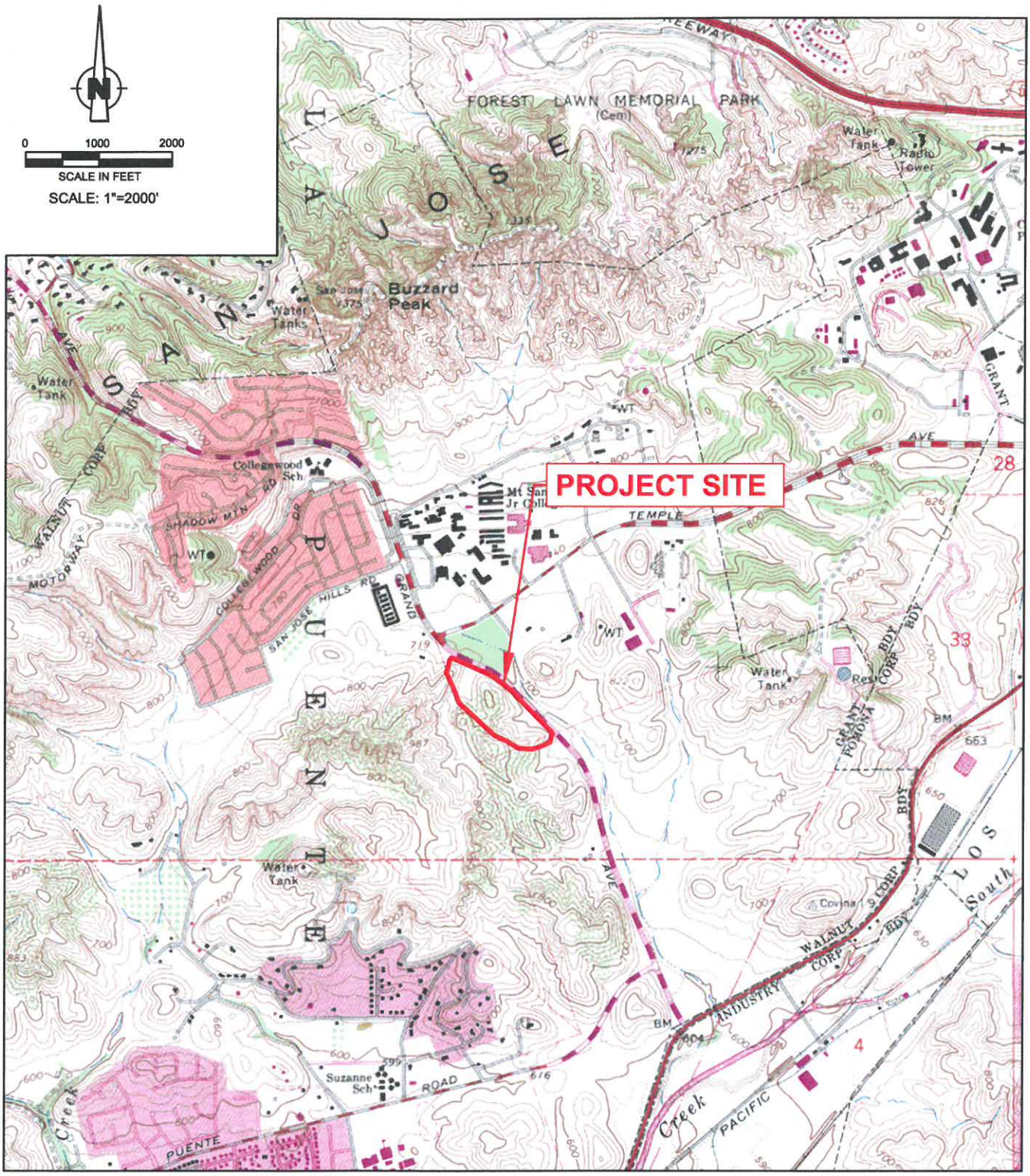
We have used proposed preliminary site plans provided to us by your office, titled "Grand Avenue Parcel Earthwork, Exhibit D-5" dated 11/04/13 and a revised drawing annotated by Necomb/Anderson/McCormick dated 01/07/14 as references for this project. The site plan is included in this report as Drawing No. 2, *Site Plan and Approximate Locations of Borings*. Plans for the proposed future buildings and structures were not available or reviewed in the preparation of this geotechnical study. When such plans are made available, additional geotechnical studies, reviews and recommendations may be warranted.

This report is written for the project described herein and is intended for use solely by Mount San Antonio College and its design team. This report is not intended for submittal to the Department of the State Architect (DSA) or the California Geological Survey (CGS). It should not be used as a bidding document but may be made available to the potential contractors for information on factual data only. For bidding purposes, the contractors should be responsible for making their own interpretation of the data contained in this report.

2.0 SITE AND PROJECT DESCRIPTION

2.1 Site Description

The project site for the proposed West Parcel is primarily located within a natural drainage area and includes four gentle bedrock hilltops located at the southwest portion of the campus as shown on Drawing No. 2, *Site Plan and Approximate Locations of Borings*. The West Parcel is located southwest of Amar Road/Temple Avenue and Grand Avenue. The site dimensions are approximately 1100 feet east-west by 1900 feet



REFERENCE: USGS MAP
SAN DIMAS QUADRANGLE 1966 PHOTO REVISED 1981

SITE LOCATION MAP

MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No.
13-31-339-01

Drawing No.
1

Converse Consultants

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north-south. The site is bordered by Amar Road to the north, Grand Avenue to the east, and single family residential housing tracts to the west and south. The top of the hilltop in the central portion of the site is at an elevation of approximately 815 feet relative to mean-sea-level (MSL) and rises about 105 feet above the road along Grand Avenue. The site coordinates are: North latitude: 34.0398 degrees, West longitude: 117.8452 degrees.

The geographic coordinates provided herein were centered on the subject sites and were used to calculate the earthquake ground motions. Review of the Engineering Geology and Seismology for Public Schools and Hospitals in California, dated August 9, 2005 (page 35) indicates that accuracy to within a few hundred meters of these coordinates is sufficient for the computation of the earthquake ground motion of the project site.

Historical and modern aerial imagery for the project site were reviewed from Google Earth (2013) and the website www.HistoricAerials.com (2009). The aerial imagery shows hillside ridges with interving canyons that drained eastward through the project site toward Grand Avenue, located along the southwestern property boundary. A roadway that eventually became Grand Avenue cut through the northern portion of the site (in what is known as the Christmas Tree Lot) as early as 1948. Besides this, the project site was generally undisturbed until 1980, when grading of the slope along the eastern portion of the site was conducted during the widening of Grand Avenue. Sometime after this time, the hilltops along the western portion of the site were flattened to an elevation of approximately 795 feet MSL and 815 feet MSL for the hilltop on the north and central portion of the site respectively, possibly as a result of grading operations for the housing tract west of the site. Currently, the site has been used for cattle grazing lands.

2.2 Project Description

The proposed developments for the West Parcel consists of the removal of approximately the top 55 feet of the hillside and placement of fill in the areas between the hillsides to create a large pad area at elevation 761 feet to be used for proposed solar arrays. Fill soils from proposed development areas on campus (proposed hilltop removal on west side of track stadium, parking structure excavation, etc.) are planned be imported and used to raise the West Parcel to create a building pad for future solar arrays. The structural information for the future development is unknown at this time.

The planned fill pad at the project site is expected to be up to approximately 60 feet in thickness above the existing grade. The slopes along the western portion of the proposed fill pad are planned to be placed in a 2:1 (H:V) step-like fashion as depicted in Drawing No. 2, *Site Plan and Approximate Locations of Borings*.

3.0 SCOPE OF WORK

Our scope of work consists of the tasks described in the following subsections.

3.1 Site Reconnaissance

A site reconnaissance was conducted on April 02, 2014, during which the surface conditions were noted and the locations of the borings were determined. The borings were located using existing boundary features as a guide and should be considered accurate only to the degree implied by the method used. Underground Service Alert (USA) of Southern California was notified of our proposed drilling locations at least 48 hours prior to initiation of the subsurface field work.

3.2 Subsurface Exploration and Access Road Grading

Our subsurface exploration consisted of drilling, logging and sampling twenty-one (21) hollow-stem auger borings from May 5 to May 9, 2014 extending between depths of approximately 10 to 51.5 feet below the existing ground surface (bgs), and one (1) bucket auger boring on May 19, 2014 with downhole observations to a depth of 31 feet (bgs). The borings were advanced using a truck-mounted drill rig with an 8-inch-diameter hollow-stem auger and 24-inch bucket auger drilled within or adjacent to the accessible areas of the planned pad locations.

The grading of a temporary dirt access road was required to provide drill rig access to the proposed boring locations on top of the bedrock hilltop just south of the Christmas Tree Lot and across the hillside to the southern portion of the site. The access road was cut into the sides of the hill, gradually working its way up the slope to the top of the hill. Converse had a representative onsite to observe the access road grading, which was done using a track-mounted dozer (John Deere 650J dozer with sideboard). The access road will be removed during hillside grading.

Subsurface conditions encountered in the borings were continuously logged and classified in the field by visual/manual examination by a Converse engineer and geologist in accordance with the Unified Soil Classification System (USCS). California Modified Sampler (“ring samples”), Standard Penetration Test (SPT) samples, and bulk soil samples were obtained from the borings and were delivered to the laboratory for testing. The bucket auger boring location (BH-13) was utilized for downhole logging. A geologist downhole logged the boring to identify bedrock materials and bedding structure. The bore holes were backfilled with soil cuttings following the completion of drilling.

The approximate locations of the exploratory borings are shown in Drawing No. 2, *Site Plan and Approximate Locations of Borings*. A description of the field exploration and sampling program are presented in Appendix A, *Field Exploration*.

3.3 Laboratory Testing

Representative samples of the site soils were tested in the laboratory to aid in the classification and to evaluate relevant engineering properties. The tests performed included:

- *In Situ* Moisture Contents and Dry Densities (ASTM Standard D2216)
- Grain Size Distribution (ASTM Standard C136)
- Maximum Dry Density and Optimum-Moisture Content Relationship (ASTM Standard D1557)
- Direct Shear (ASTM Standard D3080)
- Consolidation (ASTM Standard D2435)
- Expansion Index (ASTM Standard D4829)

A detailed description of the laboratory test methods and test results are presented in Appendix B, *Laboratory Testing Program*.

3.4 Analyses and Report

Data obtained from the exploratory fieldwork and laboratory-testing program were analyzed and evaluated. This report was prepared to provide the findings, conclusions and recommendations developed during our investigation and evaluation.

3.5 Locating High-Pressure Gas Line

As requested, Converse retained a subcontractor to detect the existing high pressure gas line along the eastern property boundary by using ground penetration radar devices. The location of the referenced high-pressure gas line has been delineated with approximate depths of the line as shown on Drawing No. 2, *Site Plan and Approximate Locations of Borings*.

4.0 GEOLOGIC CONDITIONS

4.1 Regional Geology

The proposed project sites are located in the San Jose Hills along the western edge of the Pomona Valley within the Transverse Ranges geomorphic province of California near the northern terminus of the Peninsular Ranges Province.

The Pomona Valley is situated at the junction of two major convergent fault systems: 1) the northwest-trending, high-angle strike-slip faults of the San Andreas Fault System projecting from the northern terminus of the Peninsular Ranges Province, and 2) east-trending, low-angle reverse or reverse-oblique faults bounding the southern margin of the Transverse Ranges. Faults in the first group include the Palos Verdes, Newport-Inglewood, Whittier-Elsinore, and San Jacinto fault zones. Faults in the second group include the Malibu-Santa Monica, Hollywood, Raymond, Sierra Madre, and Cucamonga fault zones.

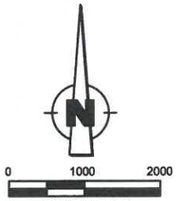
The *Geologic Map of the San Dimas and Ontario Quadrangles* prepared by Thomas W. Dibblee, Jr. (DF-91, dated July, 2002) was reviewed during this study. The map shows the location of Mount San Antonio College campus within an alluvial basin surrounded by hillsides consisting of sedimentary bedrock of the Monterey (Puente) and Sycamore Canyon Formations. No faults are shown running through or projecting toward the project sites. The location of the proposed West Parcel is mapped as underlain by the Sycamore Canyon Formation (Tscs). The Sycamore Canyon Formation consists of light gray sandstone and includes some conglomerate consisting of plutonic-derived cobbles and boulders in a light gray sandstone matrix. A portion of the map by Thomas W. Dibblee has been reproduced and is shown as Drawing No. 3, *Regional Geologic Map*.

Durham and Yerkes (1964) attribute the Sycamore Canyon Formation to the upper member of the Monterey (Puente) Formation. For the purposes of this report, the bedrock underlying both project sites will be considered as belonging to the Puente Formation.

4.2 Subsurface Profile of Subject Site

The earth materials encountered during our study consist of existing fill soils in the northernmost portion of the project site at the Christmas Tree Lot, natural alluvial and colluvial soils, and sedimentary bedrock of the Sycamore Formation. Existing soil and bedrock materials exhibited moisture contents ranging from as low as 3% up to 55% during the field exploration, while the optimum moisture contents for purposes of compaction range from 9.2% to 16.8%. Thorough moisture conditioning and mixing of soils should be performed to meet the requirements of acceptable fill materials prior to placing as engineered fill.

For the proposed West Parcel, much of the site exposes natural materials at the surface, generally consisting of colluvial soil over bedrock on the hilltop and alluvial soils over bedrock on the gentle swales below. The surficial geologic conditions and locations of borings performed for Site A are shown on Drawing No. 2, *Site Plan and Approximate Locations of Borings.*



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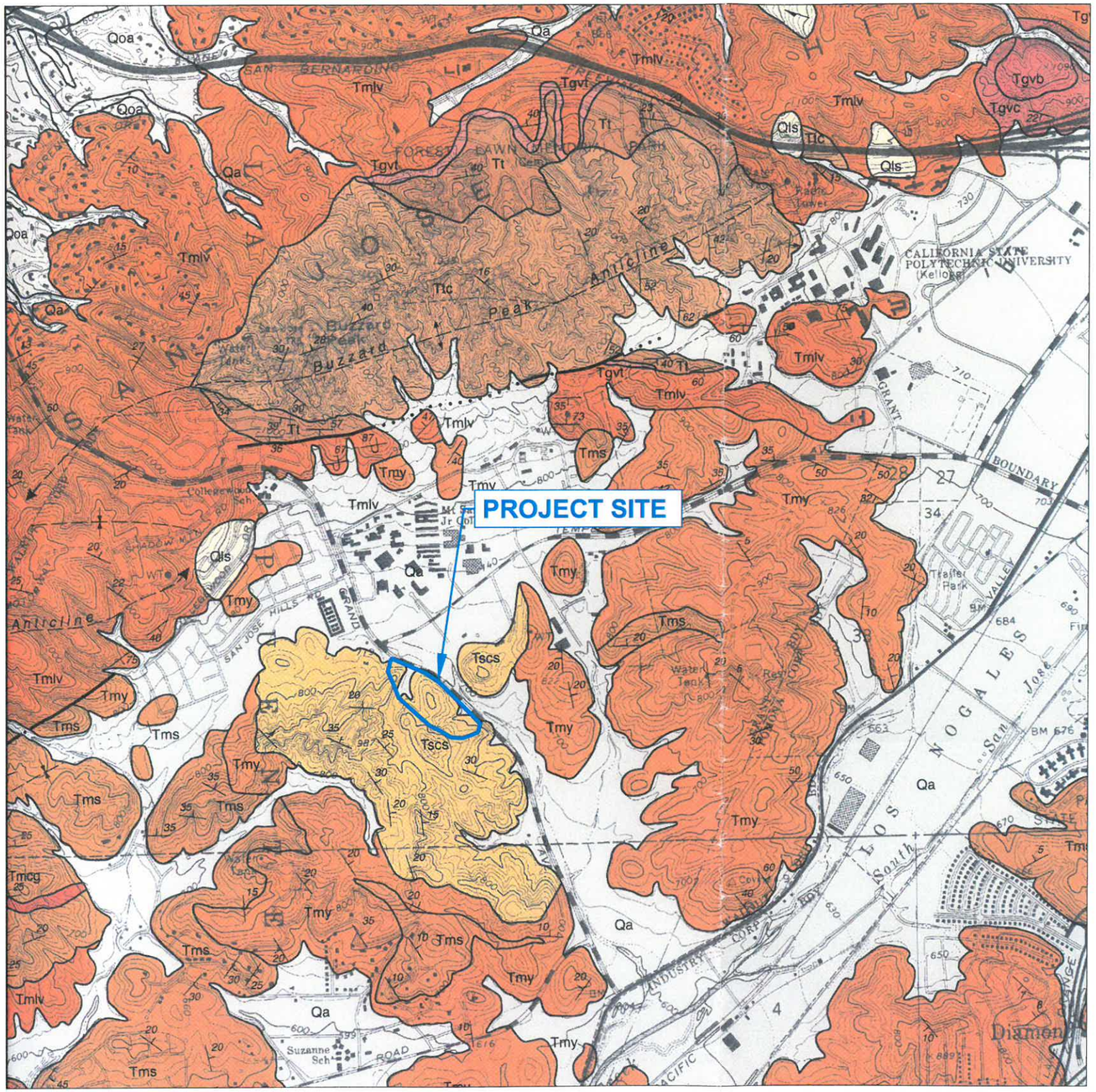


SAN DIMAS AND ONTARIO MAP (DF-91)

LEGEND

af / Qa / Qg — SURFICIAL SEDIMENTS

af artificial fill
Qg alluvial gravel and sand of stream channels, some artificially channelized
Qa alluvial gravel and sand of valley areas

Qls — LANDSLIDE AND TALUS RUBBLE

— UNCONFORMITY —

Qoa / Qog — OLDER, DISSECTED SURFICIAL SEDIMENTS

Qoa low remnants of elevated alluvial gravel
Qog high remnants of elevated older alluvial gravel, including coarse boulder gravel

— UNCONFORMITY —

SEDIMENTARY AND VOLCANIC ROCKS

Tscg | Tscs — SYCAMORE CANYON FORMATION

Sycamore Canyon Formation (uppermost member of Puente Formation of Durham & Yerkes 1964, Tan 1986) shallow marine clastic; latest Miocene age.
Tscg conglomerate, light gray, of cobbles and pebbles of plutonic rocks in sandstone matrix.
Tscs sandstone, light gray, similar to *Tms*. Includes some conglomerate similar to *Tscg*, and siltstone.

Tm | Tmy | Tmcg | Tms | Tmlv — MONTEREY (PUENTE) FORMATION

Monterey Formation (Puente form of Eldridge & Arnold, 1907, Durham & Yerkes 1964: Tan 1998, marine biogenic & clastic late Miocene age, (Mohnian Stage))
Tm unassigned shale; similar to *Tmlv & Tmly*.
Tmy Yorba shale Member – light gray, thin bedded, diatomaceous, semi-siliceous to clay shale, siltstone, minor sandstone; fish scales.
Tmcg conglomerate facies of cobbles & pebbles of plutonic rocks in sandstone matrix lenses in unit *Tms*, deposited as submarine deltas.
Tms Soquel sandstone facies, partly interlongued into *Tmy & Tmlv*, light gray to tan, moderately lithified, bedded, arkosic, contains concretions, some interbedded silty shale, derived from plutonic terrane & deposited as submarine fans, unfossiliferous
Tmlv La Vida Shale Member, white, weathered; thin bedded, platy, siliceous shale, clay shale, and siltstone, some strata of tan dolomite and sandstone; fish scales, foraminifera

Tt | Ttc — TOPANGA FORMATION

(of Shelton, 1955; Tan, 1998; marine clastic; middle Miocene age, unfossiliferous, locally interlongued into Glendora volcanics). age late ? Miocene
Tt sandstone, light gray to tan, moderately lithified, bedded, arkosic, locally pebbly; includes interbedded siltstone or clay shale.
Ttc conglomerate (Buzzard Peak Conglomerate member of Woodford et al 1946, light gray to tan, semi-lithified, vaguely bedded, composed of cobbles and pebbles of mostly plutonic rocks in sandstone matrix.

Tgv | Tgvc | Tgvb | Tgvp | Tgvt | Tgva | Tgvr | Tgvp — GLENDORA VOLCANIC ROCKS

Glendora Volcanics (of Shelton, 1955, Tan, 1999; extrusive volcanic rocks; middle Miocene age locally interlongued into Topanga Formation). radiometric age ±16 MA (Weigand, P.W., oral communication 2001)
Tgv undifferentiated volcanic rock, mostly brown andesitic flows and breccias
Tgvc volcanic conglomerate, gray to brown, of volcanic detritus.
Tgvb basalt flows, gray to black, massive to vesicular.
Tgvp basaltic pelagonitic tuff & pillow lavas.
Tgvt rhyolitic tuff breccia, tan to white
Tgva andesite flows and flow breccias, brown, porphyritic, massive.
Tgvr rhyolitic-dacitic flows, tan to light brown, aphanitic, massive to flow-banded, hard, fractured
Tgvp rhyolite-dacite breccia exposed only at Elephant Hill.

— UNCONFORMITY —

CRYSTALLINE BASEMENT ROCKS

GRANITIC ROCKS

Tmda — MOUNTAIN MEADOWS DACITE

Mountain Meadows dacite (of Shelton 1955, Tan, 1999 intrusive into qd; early Miocene? Age)
Mda dacite light gray, hard, massive, fine grained, contains small feldspar phenocrysts and biotite flakes.

qd | qdb — QUARTZ DIORITIC PLUTONIC ROCKS

quartz diorite; plutonic igneous rock, late Mesozoic - Cretaceous age
qd biotite quartz diorite, light gray, massive.
qdb Bonsall Tonalite of Larsen 1948 similar to *qd*, but slightly gneissoid & contains dark gray fine grained xenoliths elongated parallel to gneissoid structure up to 9 in. long.

Holocene / Pleistocene — QUATERNARY
Miocene — TERTIARY
CENOZOIC
CEOUS
ZOIC

REFERENCE: THOMAS W. DIBBLE, Jr. (DF-91)
SAN DIMAS QUADRANGLE
AND ONTARIO QUADRANGLE (2002)

REGIONAL GEOLOGIC MAP

Converse Consultants

MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No.	Drawing No.
13-31-339-01	3

Fill Soils

Undocumented fill was encountered during exploration of the West Parcel site, to a depth of five (5) feet in Boring BH-3 in the area of the Christmas Tree lot. Deeper fill may occur elsewhere on the site. The fill at the site consists of primarily silty sand with some gravels.

Alluvium

Alluvial soil was encountered overlying the bedrock at the project site varying in thickness from approximately five (5) feet in Boring BH-7, BH-16, and BH-17 to twenty (20) feet in Boring BH-3. The alluvial soil encountered in the borings consists primarily of mixtures of silty sand and gravelly sand with variable amounts of clay, gravel, and cobbles. The soils also include occasional fragments of weathered bedrock. We expect that cobbles are larger in size than the largest observed, approximately three (3) inches in the maximum dimension, in the hollow-stem-auger soil cuttings. Based on our previous experience and knowledge of the area, and materials encountered during subsurface exploration, cobbles greater than eight (8) inches and occasional boulders may also be buried below the site (Converse 2007). The full thickness of the alluvial soils in the northern portion of the site near the gate and well (Borings BH-1 and BH-2) was not determined, as the full thickness and bottom of the alluvium was not penetrated in the borings.

Colluvium

Residual colluvial soil overlies the bedrock knolls throughout the subject site and was encountered to depths of two (2) feet in Borings BH-5 and BH-6 to five (5) feet in Boring BH-4. The colluvium consists of silty sand with variable amounts of clay, gravel, and cobbles.

Sandstone and Pebble Conglomerate Bedrock of the Sycamore Canyon Formation (Tscg)

The majority of the proposed West Parcel site is underlain by hard, cemented sandstone pebble conglomerate bedrock. The harder conglomerate bedrock consists of gravel and cobble-sized rocks in a cemented sand matrix. The conglomerate is massive and may contain boulder-sized hard rock material. The conglomerate bedrock materials were observed to be very hard during the exploration and will be more difficult to excavate during construction.

For additional information on the subsurface conditions, see the Logs of Boring data in Appendix A, *Field Exploration*.

Subsurface geologic conditions beneath the subject site are depicted on *Geologic Cross-Sections A-A', B-B', C-C' and D-D'* for the site as shown on Drawing No. 4. The geologic

cross-sections show the proposed developments (building pads for solar arrays) and the interpreted extent and limits of the different earth materials encountered during our study.

Downhole geologic observations were performed by an engineering geologist in Boring BH-13. A limited access 24-inch diameter bucket auger was used to drill the boring to a depth of thirty-one (31) feet. Boring BH-13 encountered moderately hard to hard conglomerate bedrock that required coring bits to drill the boring to a depth of thirty-one (31) feet. Bedding attitudes ranged from north 10 to 30 degrees east with bedding dips of 8 to 25 degrees northwest. These bedding attitudes will produce neutral to favorable orientations with respect to proposed cut slopes.

4.3 Groundwater

The West Parcel site is situated within the Puente Basin portion of the larger San Gabriel Valley Groundwater Basin. Localized zones of groundwater were encountered during subsurface exploration, ranging in depths at approximately 16 feet bgs in boring BH-15 to 44 feet bgs in Boring BH-14.

Higher groundwater levels at the south eastern portion of the site are likely attributed to the existing drainage channel, which still transmits water along its historical drainage axis towards Grand Avenue to the existing Snow Creek stream channel located east of Grand Avenue. It appears the groundwater encountered during the current exploration is localized within the axes of historical drainages and is not likely to be encountered in areas away from the drainage channels. Canyon bottom subdrain devices should be installed along the bottom axes of the drainage channels during grading operations, as described herein, to transmit the subsurface water to approved outlet locations.

It should be noted that wet weather periods may produce groundwater seepage in the bedrock fractures and along less permeable layers from infiltration of rainfall. Surface flow and runoff and should be anticipated during grading and construction. In general, groundwater levels fluctuate with the seasons. Groundwater conditions below any given site vary depending on numerous factors including seasonal rainfall, local irrigation, and groundwater pumping.

4.4 Subsurface Variations

Based on results of the subsurface exploration and our experience with the subject area, some variations in the continuity and nature of subsurface conditions within the project site are anticipated. Because of the uncertainties involved in the nature and depositional characteristics of the earth material at the site, care should be exercised in interpolating or extrapolating subsurface conditions between or beyond the boring locations. If, during construction, subsurface conditions different from those presented in this report are encountered, this office should be notified immediately so that recommendations can be modified, if necessary.

5.0 FAULTING AND SEISMIC HAZARDS

The project site is not located within a currently designated State of California Earthquake Fault Zone (formerly Alquist-Priolo Special Studies Zones) for surface fault rupture. The Alquist-Priolo Earthquake Fault Zoning Act requires the California Geological Survey to zone "active faults" within the State of California. An "active fault" has exhibited surface displacement with Holocene time (within the last 11,000 years) hence constituting a potential hazard to structures that may be located across it. Public school structures are required to be set-back at least 50 feet from an active fault. The active fault set-back distance is measured perpendicular from the dip of the fault plane.

5.1 Seismic Characteristics of Nearby Faults

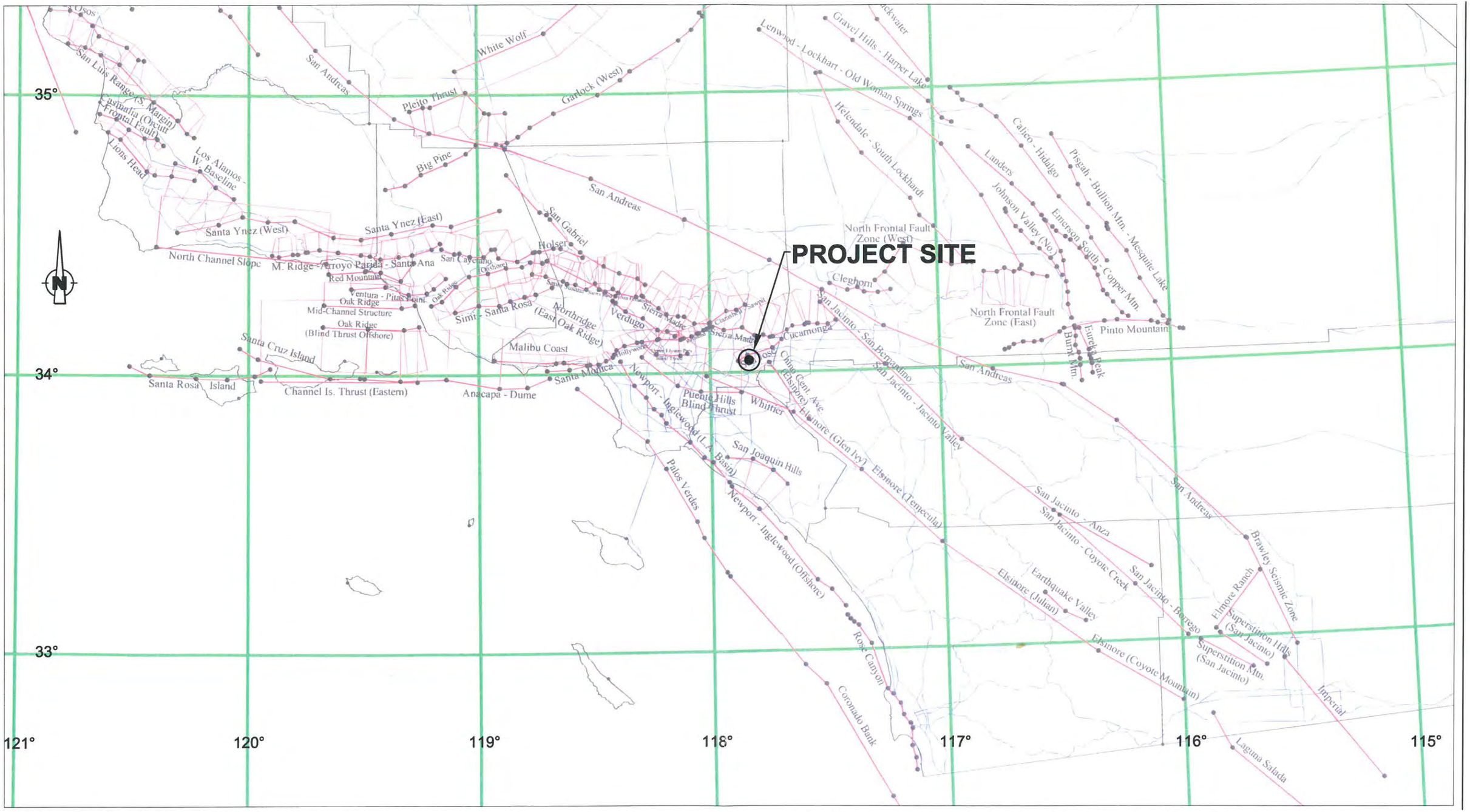
No surface faults are known to project through or towards the site. The closest known faults to the project site with mappable surface expressions are the San Jose Fault (3.9 kilometers to the north) and Chino-Central Avenue (Elsinore) Fault (8.2 kilometers to the east/ southeast). The concealed Puente Hills Blind Thrust Fault (Coyote Hills segment) along with other regional faults was included as active fault sources for the probabilistic seismic hazard analysis for the site. The approximate locations of these local active faults with respect to the project site are tabulated on Table No. 1, *Summary of Regional Faults,* and are shown on Drawing No. 5, *Southern California Regional Fault Map*.

The Pomona Valley Basin is bounded to the north by the San Jose Fault and to the southwest by the Chino-Central Avenue faults. These two fault systems do not exhibit evidence of surface movement within Holocene time and are not considered active based on current geologic information. The San Jose and Chino-Central Avenue faults are considered Late Quaternary, having exhibited displacement and movement within the past 130,000 years.

<u>San Jose Fault</u>

The San Jose Fault lies along the southern flank of the northeast trending San Jose Hills. The fault trends northeast and dips to the north. The mapped trace of the San Jose Fault is located approximately 3.9 kilometer north of the project.

Geotechnical investigations performed on the campus of California State Polytechnic University at Pomona (Geocon, 2001) indicated that the San Jose is an active reverse-separation fault. Because of the lack of success in previous fault trench excavations, Geocon based its conclusions on a series of closely spaced boreholes along several traverses across a subtle topographic bench on the campus. They discovered two shallowly to moderately north-dipping thrust faults with the most recent displacement



REFERENCE: PORTION OF CGS 2002 CALIFORNIA FAULT MODEL MODIFIED FOR USE WITH FRISKSP AND EQFAULT BY THOMAS F. BLAKE, AUGUST 2004

FAULT SOURCES

BLIND THRUST FAULT, POLYGONS INDICATE RUPTURE PLANES AND DIP DIRECTION

SOUTHERN CALIFORNIA REGIONAL FAULT MAP

Converse Consultants

MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No.
13-31339-01

Drawing No.
5

being about 1 meter and occurred since 3500 yrs. B.P. on the basis of radiocarbon dating of faulted alluvium. These findings would show this segment of the fault is active, but is a reverse separation fault south of the San Jose Hills (Yeats, 2004).

Chino-Central Avenue Faults

The Chino and Central Avenue faults trend northwest along the southwest portion of the Chino Basin. The fault ties along the northeast edge of the Puente Hills. The Chino and Central Avenue faults are considered part of the Elsinore fault which is one of the major right-lateral, strike-slip faults of the Peninsular Ranges geomorphic province. The Elsinore fault splits near Prado Dam into the Chino-Central Avenue and Whittier faults. The Chino-Central Avenue faults are two separate fault strands that strike northwest. The Chino fault dips southwest and is at least 18 km in length. The Central Avenue fault is about 8 km in length and concealed by younger alluvial deposits.

As is the case for most areas of Southern California, ground-shaking resulting from earthquakes associated with nearby and more distant faults may occur at the project site. During the life of the project, seismic activity associated with active faults can be expected to generate moderate to strong ground shaking at the site.

Table No. 1, *Summary of Regional Faults,* summarizes selected data of known faults capable of seismic activity within 50 kilometers of the site. The data presented below was calculated using EQFAULT Version 3.0 with updated fault data from "The Revised 2002 California Probabilistic Seismic Hazard Maps (Cao et al., 2003)", Appendix A, and other published geologic data.

Table No. 1, *Summary of Regional Faults*

Fault Name and Section	Approximate * Distance to Site (kilometers)	Max. Moment Magnitude (Mmax)	Slip Rate (mm/yr)
San Jose*	3.9	6.4	0.50
Chino-Central Ave. (Elsinore)	8.2	6.7	1.00
Whittier	12.6	6.8	2.50
Sierra Madre*	13.5	7.2	2.00
Puente Hills Blind Thrust**	14.1	7.3	0.70
Cucamonga*	15.1	6.9	5.00
Elysian Park Blind Thrust*	17.1	6.7	1.50
Raymond	21.6	6.5	1.50
Clamshell-Sawpit	23.6	6.5	0.50
Elsinore-Glen Ivy	28.2	6.8	5.00
Verdugo*	30.1	6.9	0.50
Compton Thrust	31.4	6.8	1.50
Hollywood	37.6	6.4	1.00

Fault Name and Section	Approximate * Distance to Site (kilometers)	Max. Moment Magnitude (Mmax)	Slip Rate (mm/yr)
San Jacinto – San Bernardino	38.0	6.7	12.00
San Andreas – 1857 Rupture*	39.5	7.4	30.00
San Andreas – Mojave*	39.5	7.4	30.00
Newport-Inglewood (L.A. Basin)*	39.7	7.1	1.00
San Andreas – San Bernardino*	41.1	7.5	24.00
San Andreas – Southern*	41.1	7.2	25.00
Cleghorn*	45.7	6.7	2.00

*****Review of published geologic data and mapping including Appendix A of the 2002 California Fault Parameters Report (Cao et al., 2003). Distance from the site to nearest subsurface projection, per Shaw et al., 2002.

5.2 Seismic History

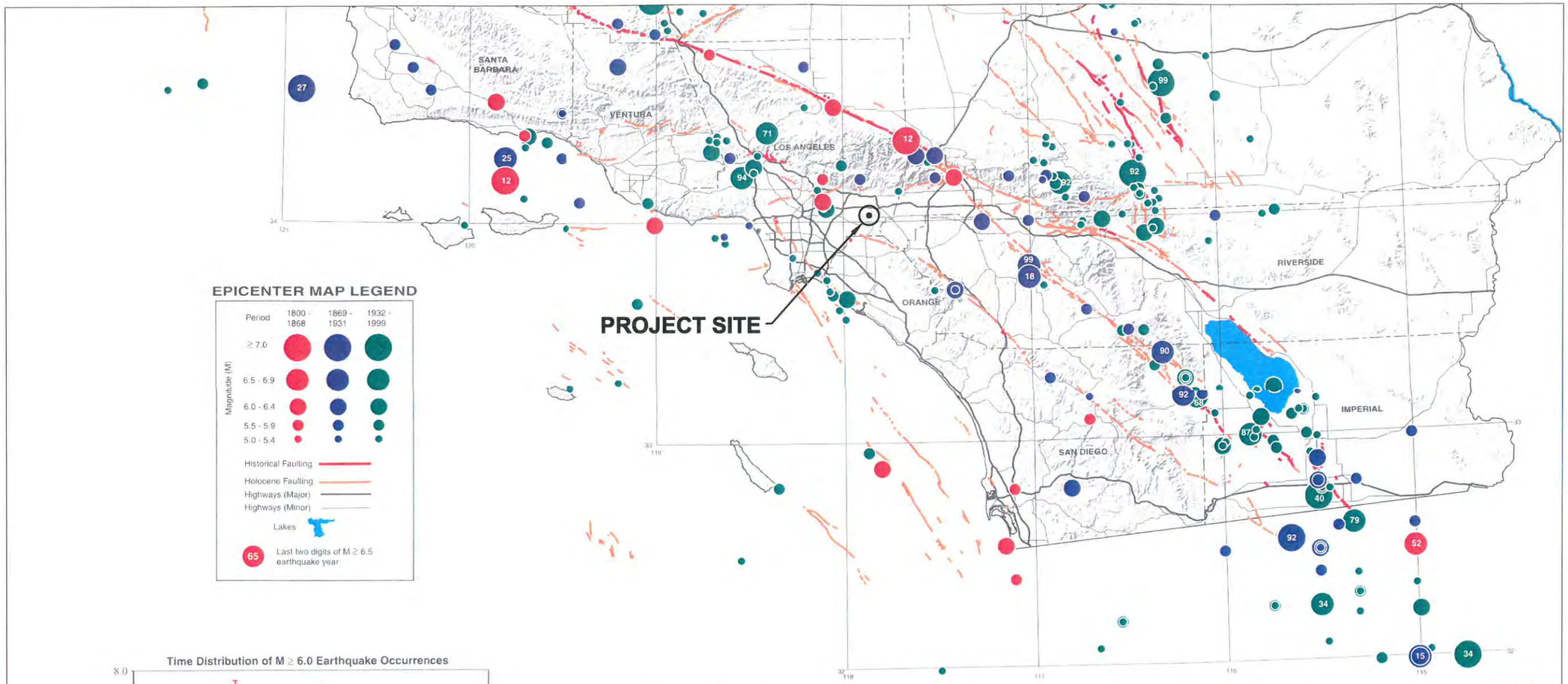
An analysis of the seismic history of the site was conducted using the computer program EQSEARCH, (Blake, 2000, updated 2010), and attenuation relationships proposed by Bozorgnia, et al. (1999) for soft rock conditions. The Southern California Earthquake Catalog with the Southern California Earthquake Center was also utilized (SCEC, 2013).

Based on the analysis of seismic history, the number of earthquakes with a moment magnitude of 5.0 or greater occurring within a distance of 100 kilometers was 81 since the year 1800. Based on the analysis, the largest earthquake-induced ground acceleration affecting the site since the year 1800 is a 7.0 magnitude earthquake in 1858 with a calculated ground acceleration of 0.18g at the site.

Review of recent seismological and geophysical publications indicates that the seismic hazard for the Pomona Basin is high. The Pomona Basin is bounded by active regional faults on all sides and underlain by alluvial sediments and buried thrust faults. The seismic hazard for the heavily populated Pomona Basin was illustrated by the 1971 San Fernando, 1987 Whittier Narrows, 1991 Sierra Madre and 1994 Northridge earthquakes. The epicenters for these earthquakes are shown on Drawing No. 6, *Epicenters Map of Southern California Earthquakes (1800-1999).*

5.3 Seismic Hazards

In addition to direct effects on structures, strong ground shaking from earthquakes can also produce other side effects that include surface fault rupture, soil liquefaction, lateral spreading, seismically-induced settlement, ground lurching, landsliding, earthquake-induced flooding, seiches, and tsunamis. Drawing No. 7, *Seismic Hazard Zones Map*, has been prepared to show the mapped location of potential liquefaction and earthquake-induced landslide areas near the project site. The State of California

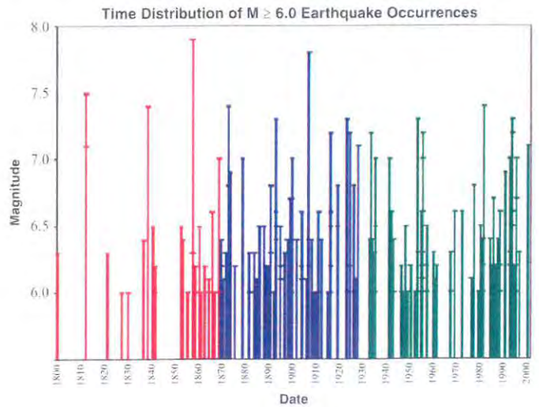


EPICENTER MAP LEGEND

Period	1800 - 1868	1869 - 1931	1932 - 1999
Magnitude (M) ≥ 7.0			
6.5 - 6.9			
6.0 - 6.4			
5.5 - 5.9			
5.0 - 5.4			

Historical Faulting
Holocene Faulting
Highways (Major)
Highways (Minor)
Lakes
65 Last two digits of M ≥ 6.5 earthquake year

Time Distribution of M ≥ 6.0 Earthquake Occurrences



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UC Berkeley/USGS earthquake catalog, http://quake.geo.berkeley.edu/needc/catalog-search.html. Northern California earthquake catalog and phase data, Northern California Seismic Network, U.S. Geological Survey, Menlo Park; Berkeley Seismological Laboratory, University of California, Berkeley, California.

0 10 20 30 40 50 60 70 80 Miles
0 10 20 30 40 50 60 70 80 90 100 Kilometers

DEM modified from U.S.G.S. digital file

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MINES AND GEOLOGY
CALIFORNIA CONSERVATION

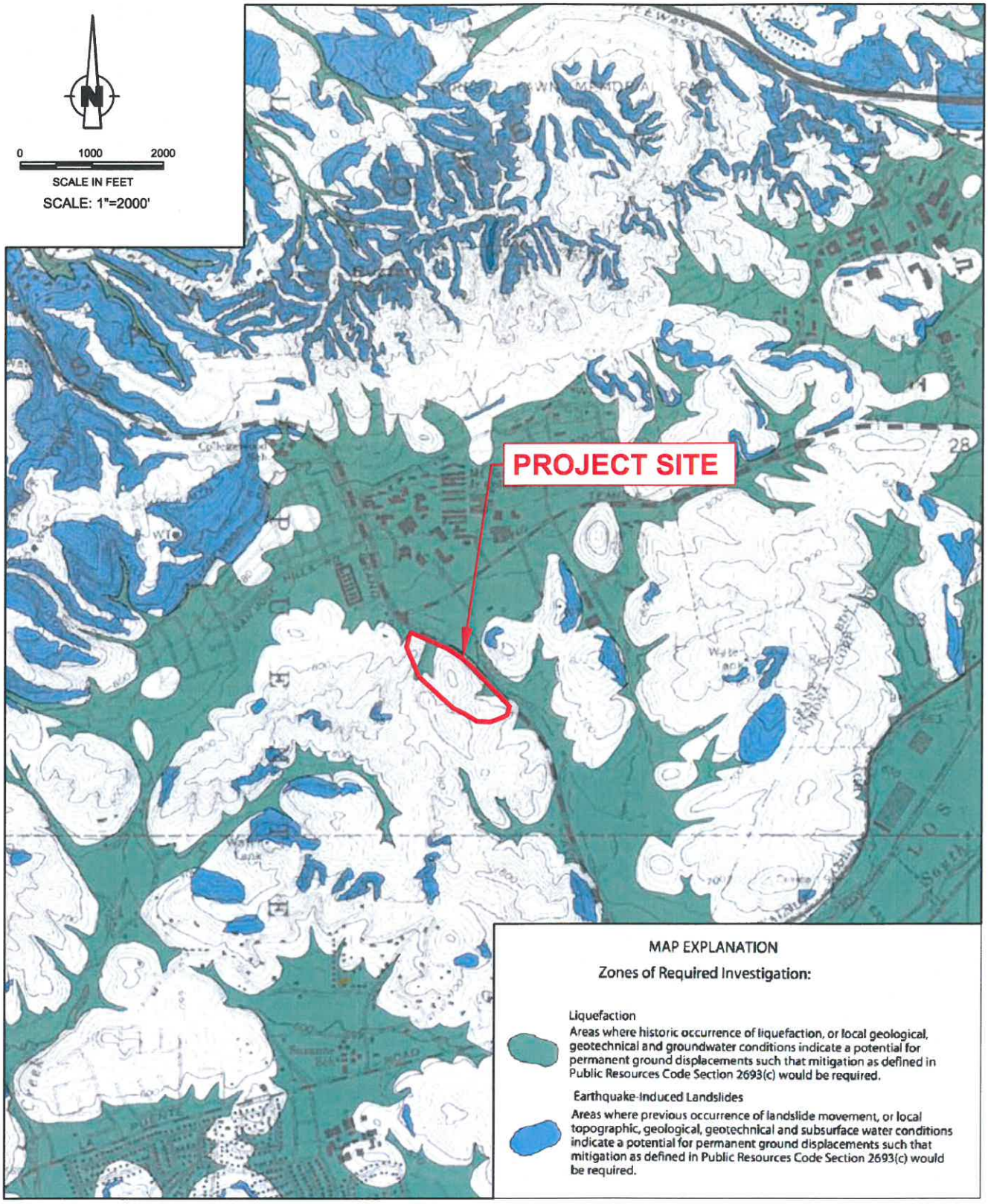
REFERENCE: PORTION OF EPICENTERS AND AREAS DAMAGED BY M≥5 CALIFORNIA EARTHQUAKES, 1800-1999 CALIFORNIA DEPARTMENT OF CONSERVATION, MAP SHEET 49 DATED 2000.

EPICENTER MAP OF SOUTHERN CALIFORNIA EARTHQUAKES (1800-1999)

Converse Consultants

MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No.	Drawing No.
13-31-339-01	6



REFERENCE: SAN DIMAS QUADRANGLE 1999
SEISMIC HAZARD ZONES STATE OF CALIFORNIA

SEISMIC HAZARD ZONES MAP

Converse Consultants

MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No.	Drawing No.
13-31-339-01	7

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Seismic Hazard Zone Map for the San Dimas Quadrangle (March 25, 1999) shows the project site is located within an area of potential liquefaction and portions of the site indicate areas of potential seismically-induced landsliding.

Results of a site-specific evaluation for each type of possible seismic hazard are explained below:

5.3.1 Surface Fault Rupture

The site is not located within a currently designated State of California Earthquake Fault Zone. Based on a review of existing geologic information, no known active fault zone crosses or projects toward the site. The potential for surface rupture resulting from the movement of the nearby major faults is considered remote.

5.3.2 Liquefaction and Seismically-Induced Settlement

Liquefaction is the sudden decrease in the strength of cohesionless soils due to dynamic or cyclic shaking. Saturated soils behave temporarily as a viscous fluid (liquefaction) and, consequently, lose their capacity to support the structures founded on them. The potential for liquefaction decreases with increasing clay and gravel content, but increases as the ground acceleration and duration of shaking increase. Liquefaction potential has been found to be the greatest where the groundwater level and loose sands occur within 50 feet of the ground surface.

The site is partially located within potential liquefaction zones per the State of California Seismic Hazard Zones Map for the San Dimas Quadrangle. Drawing No. 7, *Seismic Hazard Zones Map*, has been prepared to show the mapped locations of potential liquefaction in relation to the project sites. Groundwater was encountered at 19 feet in BH-1 and BH-2 in the northern portion of the site and at 44 feet and 16 feet respectively in BH-14, BH-15.

The liquefaction potential and seismic settlement analyses were performed utilizing SPT data obtained from boring BH-15 for the upper 50 feet of soil. The detailed results of the liquefaction analysis and a summary of the methods used are presented in Appendix C, *Liquefaction/Seismic Settlement Analysis*. Based on our liquefaction potential analyses, and the firm bedrock materials encountered during the exploration, the project site is not susceptible to liquefaction and seismically-induced settlement is anticipated to be negligible.

5.3.3 Lateral Spreading

Seismically induced lateral spreading involves primarily lateral movement of saturated earth materials due to ground shaking. It differs from the slope failure in that complete ground failure involving large movement does not occur due to the

relatively smaller gradient of the initial ground surface. Lateral spreading is demonstrated by near-vertical cracks with predominantly horizontal movement of the soil mass involved. The topography at the project sites consists of bedrock knolls overlain by relatively-dry and dense colluvial soils and gentle swales below. Under these circumstances, the potential for lateral spreading at the subject site is considered negligible.

5.3.4 Seismically-Induced Slope Instability

Seismically-induced landslides and other slope failures are common occurrences during or soon after earthquakes. Slopes within the project area will be completely removed or reduced to a 2:1 (H:V) gradient during the proposed grading operations. Slopes with a gradient steeper than 2:1 (H:V) would be over underlying hard, cemented sandstone pebble conglomerate bedrock. In the absence of significantly steep slopes, the potential for seismically-induced landslides to affect the proposed site is considered to be very low.

5.3.5 Earthquake-Induced Flooding

Review of the Flood Insurance Rate Map (FIRM), Panel 1725 of 2350, from the FEMA Map Service Center Viewer, indicates that the site is in an area designated as Zone D, “Areas in which flood hazards are undetermined, but possible.” Due to the absence of groundwater at shallow depths, distance of the subject site from large bodies of water and regional flood control structures, the potential for flooding at the subject site is considered remote.

5.3.6 Tsunami and Seiches

Tsunamis are seismic sea waves generated by fault displacement or major ground movement. Based on the location of the site from the ocean (over 20 kilometers), tsunamis do not pose a hazard. Seiches are large waves generated in enclosed bodies of water in response to ground shaking. Based on site location away from lakes and reservoirs, seiches do not pose a hazard.

5.3.7 Volcanic Eruption Hazard

There are no known volcanoes near the site. According to Jennings (1994), the nearest potential hazards from future volcanic eruptions is the Amboy Crater-Lavic Lake area located in the Mojave Desert more than 120 miles east/northeast of the site. Volcanic eruption hazards are not present.

6.0 SEISMIC ANALYSIS

6.1 CBC Seismic Design Parameters

Seismic parameters based on the 2013 California Building Code are calculated using the United States Geological Survey *U.S. Seismic Design Maps* website application and the site coordinates (34.0398 degrees North Latitude, 117.8452 degrees West Longitude). These coordinates are in reference to the central portion of the project area. Review of the California Geologic Survey (CGS) publication Engineering Geology and Seismology for Public Schools, Colleges and Hospitals in California, dated August 9, 2005 (page 32) indicates that accuracy to within a few hundred meters of these coordinates is sufficient for the computation of the earthquake ground motion of the project site. Therefore, these coordinates are considered representative of the entire site. The seismic parameters are presented below.

Table No. 2, CBC Seismic Design Parameters

Seismic Parameters	2013 CBC
Site Class	D
Mapped Short period (0.2-sec) Spectral Response Acceleration, S_S	2.177 g
Mapped 1-second Spectral Response Acceleration, S_1	0.776 g
Site Coefficient (from Table 1613.5.3(1)), F_a	1.0
Site Coefficient (from Table 1613.5.3(2)), F_v	1.5
MCE 0.2-sec period Spectral Response Acceleration, S_{MS}	2.177 g
MCE 1-second period Spectral Response Acceleration, S_{M1}	1.163 g
Design Spectral Response Acceleration for short period, S_{DS}	1.451 g
Design Spectral Response Acceleration for 1-second period, S_{D1}	0.776 g
Seismic Design Category	E

6.2 Site-Specific Ground Motion Response Spectrum

The subject site is partially located in a Seismic Hazard Zone. Based on 2013 CBC Section 1616A.1.3, a site-specific ground motion analysis is required. A site-specific response spectrum was developed for the project for a Maximum Considered Earthquake (MCE), defined as a horizontal peak ground acceleration that has a 2 percent probability of being exceeded in 50 years (return period of approximately 2,475 years).

In accordance with ASCE 7-10, Section 21.2 and Code Application Notice (CAN 2-1802A.6.2) the site-specific response spectra can be taken as the lesser of the probabilistic maximum rotated component of MCE ground motion and the 84th percentile of deterministic maximum rotated component of MCE ground motion response spectra. The design response spectra can be taken as 2/3 of site-specific MCE response

spectra, but should not be lower than 80 percent of CBC general response spectra. The risk coefficient C_R has been incorporated at each spectral response period for which the acceleration was computed in accordance with ASCE 7-10, Section 21.2.1.1.

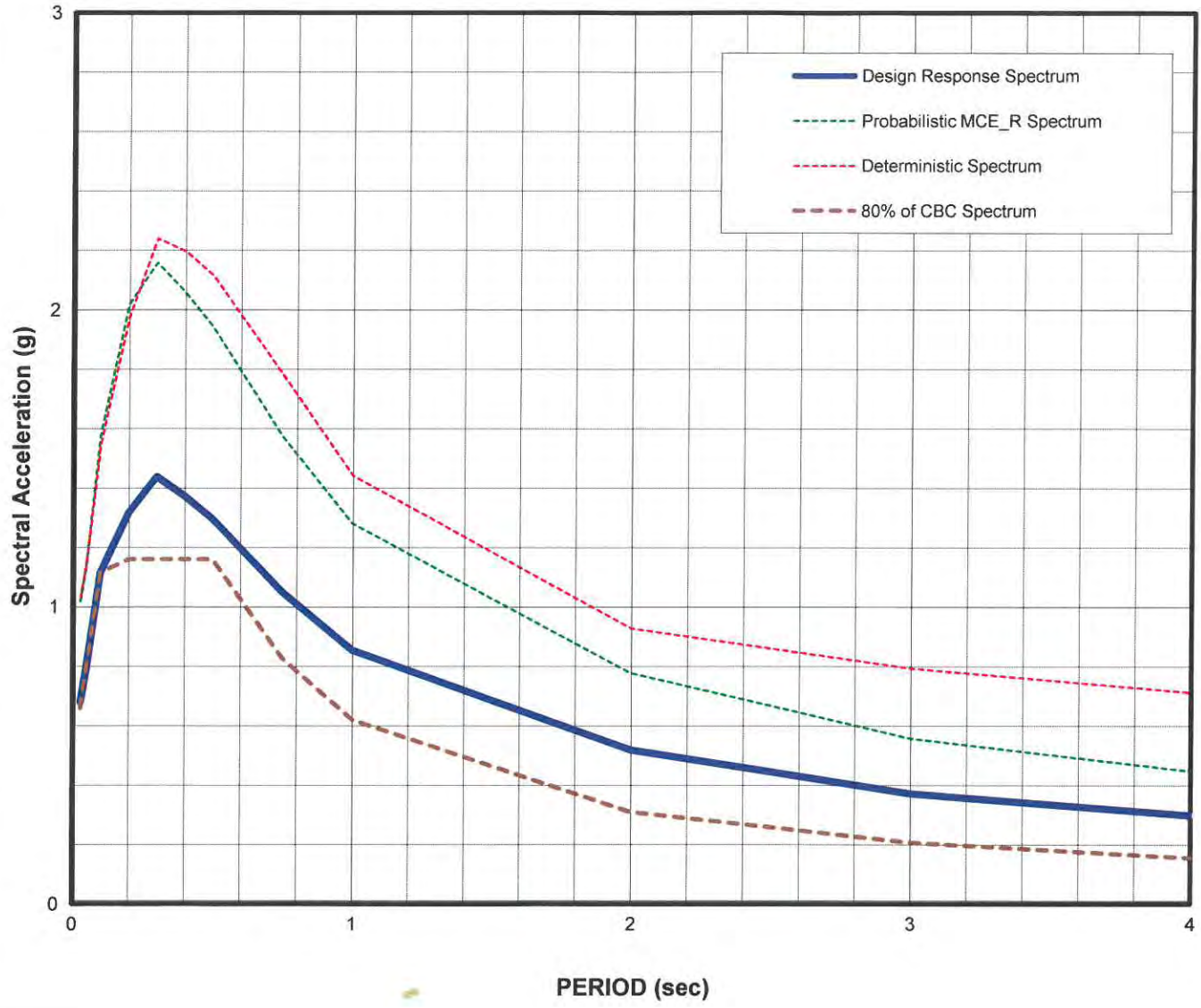
The 2013 CBC mapped acceleration parameters are provided in the following table. These parameters were determined using the United States Geological Survey *U.S. Seismic Design Maps* website application, and in accordance with ASCE 7-10 Sections 11.4, 11.6, 11.8 and 21.2.

Table No. 3, 2013 CBC Mapped Acceleration Parameters

Site Class	D	Seismic Design Category	E
S_s	2.177	C_{RS}	1.007
S_1	0.776	C_{R1}	1.019
F_a	1	**0.08 F_v/F_a**	0.120
F_v	1.5	**0.4 F_v/F_a**	0.600
S_{MS}	2.177	T_0	0.107
S_{M1}	1.164	T_S	0.535
S_{DS}	1.451	T_L	8
S_{D1}	0.776		

A Site-Specific response analysis, using faults within 100 kilometers of the site, was developed using the computer program EZ-FRISK by Risk Engineering (v. 7.51) and the 2008 USGS Fault Model database. Attenuation relationships proposed by Boore and Atkinson (2008), Campbell and Bozorgnia (2008), Chiou and Youngs (2008) were used in the analysis. These attenuation relationships are based on Next Generation Attenuation (NGA) project model. Maximum rotated components were determined using Huang (2008) method. An average shear wave velocity at upper 30 meters of soil profile (V_{s30}) of 270 meters per second, depth to bedrock of with a shear wave velocity 1,000 meters per second at 50 meters below grade, and depth of bedrock where the shear wave velocity is 2,500 meters per second at 3,000 meters below grade were selected for EZ-Frisk Analysis.

Applicable response spectra data are presented in the table below and on Drawing No. 8, *Site-Specific Design Response Spectrum.* These curves correspond to response values obtained from above attenuation relations for horizontal elastic single-degree-of-freedom systems with equivalent viscous damping of 5 percent of critical damping.



Note: Calculated using EZFRISK program Risk Engineering, version 7.51
and USGS 2008 fault model database.

SITE SPECIFIC DESIGN RESPONSE SPECTRUM

Mt. SAC West Parcel

Mt. San Antonio College, Walnut

For : Mt. San Antonio College

Project Number:

13-31-339-01

Converse Consultants

Drawing No.

8

Table No. 4, Site-Specific Response Spectrum Data

Period (sec)	2% in 50yr Probabilistic Spectral Acceleration (g)	Risk Coefficient C_R	Probabilistic MCE_R Spectral Acceleration (g)	84th Percentile Deterministic MCE Response Spectra, (g)	Deterministic CBC Lower Level, (g)	Site Specific MCE_R Spectral Acceleration (g)	80% CBC Design Response Spectrum	Site Specific Design Spectral Acceleration (g)
0.03	1.013	1.007	1.020	1.032	0.825	1.020	0.660	**0.680**
0.05	1.130	1.007	1.138	1.146	0.975	1.138	0.790	**0.790**
0.10	1.567	1.007	1.578	1.550	1.350	1.550	1.116	**1.116**
0.20	2.005	1.007	2.019	1.976	1.500	1.976	1.161	**1.317**
0.30	2.140	1.009	2.158	2.240	1.500	2.158	1.161	**1.439**
0.40	2.039	1.010	2.059	2.197	1.500	2.059	1.161	**1.373**
0.50	1.922	1.012	1.944	2.116	1.500	1.944	1.161	**1.296**
0.75	1.551	1.015	1.575	1.782	1.200	1.575	0.828	**1.050**
1.00	1.258	1.019	1.282	1.442	0.900	1.282	0.621	**0.855**
2.00	0.764	1.019	0.779	0.929	0.450	0.779	0.310	**0.519**
3.00	0.548	1.019	0.559	0.794	0.300	0.559	0.207	**0.372**
4.00	0.440	1.019	0.448	0.714	0.225	0.448	0.155	**0.299**

Vertical acceleration at the site may be calculated using the ASCE 7-10, Section 12.4.

The site-specific design response parameters are provided in the following table. These parameters were determined from Design Response Spectra presented in table above, and following guidelines of ASCE Section 21.4.

Table No. 5, Site-Specific Seismic Design Parameters

	Design Parameters (5% Damping)	Lower Limit, 80% of CBC Design Spectra
Site-Specific 0.2-second period Spectral Response Acceleration, S_{MS}	1.976	1.742
Site-Specific1-second period Spectral Response Acceleration, S_{M1}	1.558	0.931
Site-Specific Design Spectral Response Acceleration for short period S_{DS}	1.317	1.161
Site-Specific Design Spectral Response Acceleration for 1-second period, S_{D1}	1.039	0.621

7.0 GEOTECHNICAL EVALUATIONS AND CONCLUSIONS

Based on the results of our background review, subsurface exploration, laboratory testing, geotechnical analyses, and understanding of the planned grading development, it is our opinion that the proposed project is feasible from a geotechnical standpoint, provided the following conclusions and recommendations are incorporated into the project plans, specifications, and are followed during site construction.

The following is a summary of the major geologic and geotechnical factors to be considered for the planned project:

- The site is located partially within a mapped Seismic Hazard Zone for liquefaction. Based on our liquefaction potential analyses, and the firm bedrock materials encountered during the exploration, the project site is not susceptible to liquefaction and seismically-induced settlement is anticipated to be negligible.

- Localized zones of groundwater were encountered during subsurface exploration, ranging in depths at approximately 16 feet bgs in boring BH-15 to 44 feet bgs in Boring BH-14. Localized perched groundwater seepage should be anticipated during excavation in these locations.
- For the West Parcel site, the axes of historical drainage channels should be installed with canyon bottom subdrains to collect any direct subsurface drainage to an approved outlet location.
- Undocumented fill soils up to 5 feet were encountered in boring BH-3 at the northern portion of the site in the Christmas Tree Lot. The fill at the site consists of primarily silty sand with some gravels. Undocumented fill should be excavated and recompacted.

- Based on the proposed plan, cut-and-fill grading operations are required to achieve the planned finished grades.
- The surficial site soils and earth materials generated from excavations of bedrock at both sites exhibit a low expansive potential. These materials should be mitigated if they are to be used for any future structural support.
- On-site silty, clayey soils and siltstone with an expansion index exceeding 20 should not be re-used for compaction within 5 feet below the planned fill pad finish grade or for retaining wall backfill. Soils containing organic materials should not be used as structural fill. The extent of removal should be determined by the geotechnical representative based on soil observation during grading. Based on borings BH-1 and BH-20, the top 5 feet of existing grade exhibits an expansion index greater than 20.
- The planned fill pad at the site is expected to be up to approximately 60 feet in thickness above the existing grade. Long term consolidation ground settlement for

the planned compacted fill pads is expected to be less than 1.5 inches with differential settlement of 0.5 inch over a 30-foot span.

- The earth materials at the site consisting of soil should be excavatable with conventional heavy-duty earth moving and trenching equipment. Earth materials consisting of conglomerate bedrock will be considerably harder to excavate. The on-site materials contain about 5 to 30 percent gravel up to 3 inches in maximum dimension. Larger gravels, cobbles and possible boulders may exist at the site. Earthwork should be performed with suitable equipments for gravelly materials.
- Removals up to approximately 55 feet deep are anticipated.
- The fill slope on the east side of the site along Grand Avenue will include a maximum proposed fill height of approximately 80 feet. Existing slopes within the project area will be completely removed or reduced to a 2:1 (H:V) gradient during the proposed grading operations placed over underlying hard sandstone pebble conglomerate bedrock. In the absence of significantly steep slopes, the potential for seismically-induced landslides to affect the proposed site is considered to be very low.
- Slopes along the western portion of the proposed fill pad are planned to be placed in a 2:1 (H:V) step-like fashion as depicted in Drawing No. 2, *Site Plan and Approximate Locations of Borings*.

8.0 EARTHWORK AND SITE GRADING RECOMMENDATIONS

8.1 General Evaluation

Based on our field exploration, laboratory testing, and analyses of subsurface conditions at the site, remedial grading including cut-and-fill operations is required to prepare the planned fill pads for support of the future developments. To reduce differential settlement, variations in the soil type, degree of compaction, and thickness of the compacted fill, the thickness of compacted fill placed underneath the footings should be kept uniform.

Site grading recommendations provided below are based on our experience with similar projects in the area and our evaluation of this study. Site preparation might involve removal of any existing structures with their foundations and other existing underground manmade structures and utilities.

8.2 Over-Excavation/Removal

The existing undocumented fill materials in their present condition are not considered suitable for supporting the planned additional fill. All undocumented fill should be removed, moisture-conditioned if necessary, and replaced as compacted fill. The actual depth of over-excavation from the existing ground surface will depend on existing depth

of fill placed during site grading. During our explorations in the proposed area, undocumented fill soils up to five (5) feet in thickness below the existing ground surface were encountered in boring BH-3 at the northern portion of the site in the Christmas Tree Lot. The depth of existing fill could be deeper elsewhere onsite.

Unsuitable natural surface soils and alluvium shall be removed, moisture conditioned to near optimum moisture levels, mixed and recompacted as compacted fill to project specifications. Clay top soils that are disturbed and loosened by seasonal cycles of wetting and drying producing dessication cracks and voids shall be removed and recompacted. Estimated depth of clay top soil removal is approximately three (3) feet. Loose, disturbed or unsuitable alluvial soils encountered in the drainage canyons shall be removed to firm natural soils and/or bedrock and then replaced as compacted fill. Loose and unsuitable alluvial soils shall be cleaned out of the canyon bottoms prior to the placement of compacted fills and canyon bottom subdrains.

Due to the proposed approximately 55 foot removal of bedrock off of the top of hill, the rebound of the cut subgrade of bedrock is expected after the cut is first made. Elastic rebound due to removal of overburden typically occurs for cuts of greater than 50 feet in thickness. The amount of rebound will vary across the site and may result in an uneven ground surface. Therefore, we recommend the hilltop removal portions of the site (cut areas) be over-excavated at least two (2) feet and replaced with a properly compacted fill. This will aid in reducing unevenness in the subgrade below the planned pavement and/or future structures.

Keyways with a minimum width of 25 feet and a minimum embedment depth of 5 feet should be excavated and constructed along the toe of the compacted fill slope for the site. Backdrains should be installed at the bottom of slope with a minimum one percent gradient to outlet pipe. A backdrain consisting of 4-inch diameter perforated PVC pipe (Schedule 40 or equivalent) with perforations down and ends capped encased with 1-cubic-foot ¾-inch gravel per linear foot wrapped with filter fabrics should be installed along the bench. Backdrains should be installed every 15 feet vertically. A Minimum 1 percent gradient to solid outlet pipes is recommended. The outlet pipes should be a minimum of 4-inch diameter PVC pipe (Schedule 40 or equivalent) and be installed every 50 feet horizontal spacing, or minimum two outlets.

All excavations on slopes steeper than a gradient of 10:1 (horizontal: vertical) shall be benched into competent soils or bedrock. Typically the benching should be 2 to 3 feet in height and minimum 3 feet in width.

To minimize the potential of differential settlement, we recommend that over-excavation be kept uniform. The excavation to remove undocumented fill and unsuitable soils should be extended to a minimum of five (5) feet laterally beyond the fill pad limits, where space is available. The actual depth of removal should be determined based on observations and tests made during grading.

The exposed bottom of the over-excavation area should be scarified at least 6 inches; moisture conditioned as needed to near-optimum moisture content, and compacted to 90 percent relative compaction. Over-excavation should not undermine adjacent off-site improvements. Remedial grading should not extend within a projected 1:1 (horizontal to vertical) plane projected down from the outer edge of adjacent off-site improvements.

Existing soil and bedrock materials exhibited moisture contents ranging from as low as 3% up to 55% during the field exploration, while the optimum moisture contents for purposes of compaction range from 9.2% to 16.8%. The grading contractor will need to take efforts to process the soils with thorough moisture conditioning and mixing of soils to meet the requirements of acceptable fill materials prior to placing as engineered fill as stated in the earthwork specifications.

If soft, yielding soil conditions are encountered at the excavation bottom, the following options can be considered:

a. Over-excavate until reach firm bottom

b. Over-excavate additional 18 inches deep, and then place at least 18-inch-thick compacted base material (CAB or equivalent) to bridge the soft bottom. Base should be compacted to 95% relative compaction.

c. Over-excavate additional 18 inches deep, and then place a layer of geofabric (i.e. Marifi HP570, X600 or equivalent), place 18-inch-thick compacted base material (CAB or equivalent) to bridge the soft bottom. Base should be compacted to 95% relative compaction. An additional layer of geofabric may be needed on top of base depending on the actual site conditions.

Site grading may result in transition lines with cut and/or fill conditions. This transition line would require special grading considerations. Detailed site grading recommendations are provided in the following sections.

8.3 Canyon Bottom Subdrains

Canyon bottom subdrain systems should be constructed of a minimum 6-inch diameter, Schedule 80 PVC pipe with glued manufactured pipe fitting and caps. The subdrain pipes should be located in the bottoms of the canyons. The drain pipes should be sloped at a minimum 2% gradient to provide gravity flow to the approved outlet location. Perforated pipes shall be laid with perforations down. Schedule 80 PVC perforated pipe may have to be custom fabricated.

Surface drain systems should not be connected to the subdrain system. Introduction of surface water in the subdrain system could recharge water into the compacted fill soils. Surface and subsurface drainage systems should be kept separate.

A State of California Department of Transportation (Caltrans) Class 2 Permeable Material is recommended for the permeable drain material. The percentage composition by weight of permeable material in place shall conform to the following gradings:

Table No. 6, Caltrans Class 2 Permeable Material Grading

CALTRANS CLASS 2 PERMEABLE MATERIAL	
Sieve Size	Percentage Passing
1”	100
¾”	90 - 100
3/8”	40 - 100
No. 4	25 – 40
No.8	18 – 33
No. 30	5 – 15
No. 50	0 – 7
No. 200	0 - 3

Note: Class 2 permeable material shall have a Sand Equivalent value of not less than 75.

8.4 Structural Fill

All engineered fill should be placed on competent, scarified and compacted bottom as evaluated by the geotechnical engineer and in accordance with the specifications presented in this section. Generally, excavated site soils, free of deleterious materials and rock particles larger than three (3) inches in the largest dimension, should be suitable for placement as compacted fill. Any proposed import fill should be evaluated and approved by Converse prior to import to the site. Import fill material should have an expansion index less than 20.

Excavated conglomerate bedrock, which consists of sand, gravel, and cobbles may be considered as base material below proposed hardscape, such as the propose access road.

Prior to compaction, fill materials should be thoroughly mixed and moisture conditioned when necessary, within two (2) percent of the optimum moisture for granular soils and at approximately three (3) percent above the optimum moisture for fine-grained soils. Fill soils shall be evenly spread in maximum 8-inch lifts, watered or dried as necessary, mixed and compacted to at least the density specified below. The fill shall be placed and compacted on a horizontal plane, unless otherwise approved by the Geotechnical Engineer.

Fills exceeding five (5) feet in height shall not be placed on native slopes that are steeper than 5:1 horizontal:vertical (H:V). Where native slopes are steeper than 5:1 H:V, and the height of the fill is greater than five (5) feet, the fill shall be keyed and

benched into competent materials. A 2:1 (horizontal to vertical) or flatter slope gradient for the planned new fill pad is recommended. All new fill should be compacted to at least 90 percent of the maximum dry density for the upper 10 feet of fill and 95 percent of the maximum dry density for fill placed 10 feet below proposed finished grade in accordance with the ASTM Standard D1557 test method. Appropriate means and methods of placement will be required to achieve these compaction requirements.

Though we expect most of the bedrock materials to break down to less than 3-inch size materials by the standard grading process, following are recommendations with regards to hard cobble and boulder size clasts that may be encountered in the bedrock materials that do not break down without considerable effort.

Structural fills placed in the top ten (10) feet of the finished graded pads and 2:1 (H:V) fill slopes shall contain sedimentary bedrock particles no larger than three (3) inches in size throughout and be mixed evenly throughout the fill soil matrix.

Deeper structural fills placed below the top ten (10) feet of the graded pad and slope surfaces can contain rock particle sizes from three (3) to twelve (12) inch size provided the following conditions are adhered to during grading:

- The rock materials shall not be nested, stacked or piled on top of each other during placement.
- Rock materials shall be evenly placed and dispersed in controlled lifts and layers throughout the compacted fill soils.
- Granular fine grained soils shall be placed and compacted on all sides of the rock to eliminate void spaces.
- Buried rock materials shall be proof-rolled with loaded heavy rubber tire grading equipment (scrapers, loaders and compactors) to provide the required compaction.
- Compaction and moisture conditioning of the structural fill soils containing rocks shall meet all earthwork specifications for structural fill placement.
- Placement of rock within the structural fill soils shall be performed under the full-time observation and testing of the Geotechnical Soil Consultant.

Placement of natural rock materials larger than twelve (12) inches and less than twenty four (24) inches in deeper structural fills shall require special observation and testing during fill placement. Placement of this rock size in the structural fills shall require prior approval by the Geotechnical Soils Consultant on a case by case basis. The contractor shall demonstrate that rocks of this size cannot be broken down and downsized by conventional grading methods.

Natural oversize rock materials that are resistant and durable can be used as natural rock armor for surface drain outlets, drainage aprons and drainage channels. Rocks should be placed in a controlled, tightly spaced pattern with compacted fill or concrete placed between the rocks to eliminate void spaces. The remaining oversize rocks, if any, could then be placed in specific areas selected by the Geotechnical Soils Consultants and documented on the as-built grading plans. The oversize rock shall be placed in accordance with the same criteria as the three (3) to twelve (12) inch size rock materials in controlled layers and with soil placed and compacted on all sides of the rock to eliminate void spaces.

Rock sizes could be increased from 3-inch to 6-inch size maximum in the top 10 feet if significant quantities of hard rocks were to be encountered. However, we do not anticipate this. The rock materials would have to be spread out in the fills in single layers with no nesting, stacking, or voids and then completely buried by fill soils as stated earlier. Additional re-grading of future building pad or structure areas (i.e., footing, slab and utility trench areas) may be required if rocks larger than 3-inch size are used in the top 10-feet of compacted fills.

If the campus decides to allow up to 6-inch size rocks be used within top 10 feet of fills, it should be reminded that earthwork may need to be redone for future buildings or structures and removal of large size rocks may result in requiring imported soils at that time. Temporary shoring may also be required for excavation deeper than 5 feet or sloping excavation is not feasible in future construction activities.

8.5 Excavatability and Rippability

Based on our field exploration, most of the earth materials at the site should be excavatable and rippable with conventional heavy-duty earth moving equipment in good working condition. However areas of harder, cemented and resistant bedrock units and layers (pebble conglomerates, sandstone layers, siliceous layers, etc.) are anticipated to be encountered during excavation and grading. These areas may require the use of larger heavy-duty dozers, excavators, track-mounted hydraulic breakers and/or single shank rippers to loosen, rip, cross-rip, downsize, crush, breakdown, mix and process the excavated sedimentary bedrock materials into soil size materials suitable for use as structural fill. Every effort shall be made during excavation, transport and grading to reduce the size of the bedrock materials to particle sizes less than three (3) inches in size to be adequately placed as structural fill.

The earth materials generated from the removal of the existing bedrock knoll will contain larger gravels, cobbles and possible boulders. Those materials require screening and/or processing into smaller particles prior to be used for compaction as specified in the section under structural fill.

8.6 Expansive Soil

Based on our laboratory testing results, the on-site silty, clayey earth materials are considered to be expansive. On-site silty, clayey soils and siltstone with an expansion index exceeding 20 should not be re-used for compaction within 5 feet below the planned fill pad finish grade or for retaining wall backfill. Soils containing organic materials should not be used as structural fill. The extent of removal should be determined by the geotechnical representative based on soil observation during grading. Based on borings BH-1 and BH-20, the top 5 feet of existing grade exhibits an expansion index greater than 20.

There are several alternative mitigation measures that can be utilized to improve expansive soils at the site. Some mitigation measures include:

- Placement of 2 feet thick of non-expansive soil below finished subgrade.
- Pre-saturation of on-site compacted subgrade soils to at approximate three (3) percent above optimum moisture content.
- Lime treat the upper two (2) feet of the subgrade soils.

The on-site soil materials will be mixed during the grading and the expansion potential might change. Therefore, the expansion potential of site soils should be verified after the grading.

8.7 Shrinkage and Bulking

The shrinkage and/or bulkage would depend on, among other factors, the depth of cut and/or fill, and the grading method and equipment utilized. For preliminary estimation, bulking and shrinkage factors for various units of earth material at the site may be taken as presented below:

- The approximate shrinkage factor for the upper ten (10) feet of alluvial soils is estimated to range from ten (10) to twenty (20) percent.

- The approximate bulking factor for the fill materials generated from the removal of bedrock hilltop is estimated to range from two (2) to five (5) percent, depending on final compaction achieved for the fill materials.

Although these values are only approximate, they represent our best estimates of the factors to be used to calculate lost volume that may occur during grading. If more accurate shrinkage and bulking factors are needed, it is recommended that field-testing using the actual equipment and grading techniques be conducted.

8.8 Subgrade Preparation

Final subgrade soils for structures and roads should be uniform and non-yielding. To obtain a uniform subgrade, soils should be well mixed and uniformly compacted. The subgrade soils should be non-expansive and well-drained. The near-surface site soils should be free draining. We recommend that at least the upper two (2) inches of subgrade soils underneath the slab-on-grade should be comprised of well-drained granular soils such as sands, gravel or crushed aggregate satisfying the following criteria:

- Maximum size $\leq$ 1.5 inches
- Percent passing U.S. #200 sieve $\leq$ 12 percent
- Sand equivalent $\geq$ 30

The subgrade soils should be moisture conditioned before placing concrete.

9.0 PRELIMINARY DESIGN RECOMMENDATIONS

The future development plans on the graded pads presented in this report were not available at this time. However, for planning purposes, we assume the future development will consist of multiple arrays of solar panels without subterranean basement to provide the preliminary design recommendations. Our recommendations provided in this section are based on the assumptions that in preparing the site, the earthwork and site grading recommendations provided in this report will be followed. It should be advised that the design recommendations presented herein are considered preliminary for planning purpose only. Any future development at these project sites shall be further reviewed and provided with project-specific geotechnical recommendations.

9.1 Shallow Foundations

9.1.1 Vertical Capacity

We recommend continuous and square footings be founded at least 18 inches below lowest adjacent final grade on compacted fill on bedrock. A minimum footing width of 24 inches is recommended for square footings and 12 inches for continuous footings. The allowable bearing value for footings with above minimum sizes is 2,000 psf for compacted fill and 2,500 psf for bedrock. The net allowable bearing pressure can be increase by 350 psf for each additional foot of excavation depth and by 250 psf for each additional foot of excavation width up to a maximum value of 4,500 psf.

The net allowable bearing values indicated above are for the dead loads and frequently applied live loads and are obtained by applying a factor of safety of 3.0 to the net ultimate bearing capacity.

9.1.2 Lateral Capacity

Resistance to lateral loads can be provided by friction acting at the base of the foundation and by passive earth pressure. A coefficient of friction of 0.35 may be assumed with normal dead load forces. An allowable passive earth pressure of 300 psf per foot of depth up to a maximum of 3,000 psf may be used for footings poured against properly compacted fill or undisturbed stiff natural soils. The values of coefficient of friction and allowable passive earth pressure include a factor of safety of 1.5.

9.1.3 Settlement

The static settlement of structures supported on continuous and/or spread footings founded on compacted fill will depend on the actual footing dimensions and the imposed vertical loads. Most of the footing settlement at the project site is expected to occur immediately after the application of the load. Based on the maximum allowable net bearing pressures presented above, static settlement is anticipated to be less than 1.0 inch. Differential settlement is expected to be up to one-half of the total settlement over a 30 foot span.

9.1.4 Dynamic Increases

Bearing values indicated above are for total dead load and frequently applied live loads. The above vertical bearing may be increased by 33% for short durations of loading which will include the effect of wind or seismic forces. The allowable passive pressure may be increased by 33% for lateral loading due to wind or seismic forces.

9.2 Pier Foundations

As an alternative to conventional shallow foundations, the planned solar arrays can be supported on piers (caissons) provided the following recommendations incorporated into design and construction. The piers can be connected to a grade beam system determined by the project structural engineer to control the deflections of structure under the design tolerance.

9.2.1 Vertical Capacity

Piers should be at least 24-inch in diameter extending at least 8 feet below adjacent final grade on compacted fill or bedrock. Piers can be designed for an allowable skin friction of 250 psf against the perimeter of pier for a minimum embedment of 8 feet below the adjacent grade. The upper two (2) feet of soil skin friction should be neglected in pier capacity calculations.

If end bearing capacity is to be considered for design, the bottom of pier should be cleaned out with appropriate equipment. The allowable end bearing capacity can be

designed for 3,500 psf. However, the diameter of pier may be increased and temporary casing may be required to facilitate cleanout.

9.2.2 Lateral Capacity

Resistance to lateral loads can be provided by friction acting at the base of the foundation and by passive earth pressure. A coefficient of friction of 0.35 may be assumed with normal dead load forces. An allowable passive earth pressure of 300 psf per foot of depth up to a maximum of 3,000 psf may be used for foundations poured against compacted fill or bedrock. The values of coefficient of friction and allowable passive earth pressure include a factor of safety of 1.5. For ground surface restrained by concrete slab, the passive resistance may be calculated from the ground surface. For unrestrained ground condition, the passive resistance of the upper one (1) feet earth material should be neglected in design.

9.2.3 Settlement

The static settlement of structures supported on piers founded on native alluvium will depend on the actual footing dimensions and the imposed vertical loads. Most of the footing settlement at the project site is expected to occur immediately after the application of the load. Based on the maximum allowable net bearing pressures presented above, static settlement is anticipated to be less than 0.5 inch.

9.2.4 Dynamic Increases

Bearing values indicated above are for total dead load and frequently applied live loads. The above vertical bearing may be increased by 33% for short durations of loading which will include the effect of wind or seismic forces. The allowable passive pressure may be increased by 33% for lateral loading due to wind or seismic forces.

9.3 Modulus of Subgrade Reaction

For the subject project, design of the structures supported on compacted fill subgrade prepared in accordance with the recommendations provided in this report may be based on a soil modulus of subgrade reaction of (k_s) of 150 pounds per square inch per inch.

9.4 Lateral Earth Pressure

Though not anticipated, following are recommendations for retaining walls up to 6 feet in height. The earth pressure behind any buried wall depends primarily on the allowable wall movement, type of backfill materials, backfill slopes, wall inclination, surcharges, and any hydrostatic pressure. The following fluid pressures are recommended for vertical walls with no hydrostatic pressure, no surcharge, and level backfill.

Table No. 7, Lateral Earth Pressures for Retaining Wall Design

Wall Type	Equivalent Fluid Pressure (pcf)
	Level Backfill
Cantilever Wall (Active pressure)	30 (Triangular Distribution)
Restrained Wall (At-rest pressure)	50 (Triangular Distribution)

The recommended lateral pressures assume that the walls are fully back-drained to prevent build-up of hydrostatic pressure. Adequate drainage could be provided by means of permeable drainage materials wrapped in filter fabric installed behind the walls. The drainage system should consist of perforated pipe surrounded by free draining, uniformly graded, ¾ -inch washed, crushed aggregate, and wrapped in filter fabric such as Mirafi 140N or equivalent, and should extend to about 2 feet below the finished grade. The filter fabric should overlap approximately 12 inches or more at the joints. The subdrain pipe should consist of perforated, four-inch diameter, rigid ABS (SDR-35) or PVC A-2000, or equivalent, with perforations placed down. Alternatively, a prefabricated drainage composite system such as the Miradrain G100N or equivalent can be used. The subdrain should be connected to surface drain or sump pump.

In addition, walls with inclined backfill should be designed for an additional equivalent fluid pressure of one (1) pound per cubic foot for every two (2) degrees of slope inclination. Walls subjected to surcharge loads located within a distance equal to the height of the wall should be designed for an additional uniform lateral pressure equal to one-third or one-half the anticipated surcharge load for unrestrained or restrained walls, respectively. These values are applicable for backfill placed between the wall stem and an imaginary plane rising 45 degrees from below the edge (heel) of the wall footings.

9.5 Flexible Pavement

The flexible pavement structural section design recommendations were performed in accordance with the method contained in the *CALTRANS Highway Design Manual*, Chapter 630 without the factor of safety. No specific traffic study was performed to determine the Traffic Index (TI) for the proposed project, therefore a wide range of TI values were evaluated.

Due to various earth materials encountered at the site, flexible pavement structural section recommendations are prepared for both subgrade soils. We recommend that the project structural engineer consider the traffic loading conditions at various locations and select the appropriate pavement sections from the following table:

Table No. 8, Flexible Pavement Structural Sections

Design R-value	Design TI	Asphalt Concrete (AC) Over Aggregate Base (AB) Structural Sections		Full AC Structural Section
		AC (inches)	AB (inches)	AC (inches)
44	4	2	2.5	3
	5	3	3	4.5
	6	4	3.5	5.5
	7	4	6	7
	8	5	6.5	8
	9	6	7	9

Base material shall conform to requirements for Crushed Miscellaneous Base (CMB) or equivalent and should be placed in accordance with the requirements of the Standard Specifications for Public Works Construction (SSPWC, latest Edition).

Asphaltic materials should conform to Section 203-1, "Paving Asphalt," of the Standard Specifications for Public Works Construction (SSPWC, latest Edition) and should be placed in accordance with Section 302-5, "Asphalt Concrete Pavement," of the SSPWC, 2012 edition.

Positive drainage should be provided away from all pavement areas to prevent seepage of surface and/or subsurface water into the pavement base and/or subgrade.

9.6 Rigid Pavement

Rigid pavement design recommendations were provided in accordance with the Portland Cement Association's (PCA) Southwest Region Publication P-14, *Portland Cement Concrete Pavement (PCCP) for Light, Medium, and Heavy Traffic*. We recommend that the project structural engineer consider the loading conditions at various locations and select the appropriate pavement sections from the following table:

Table No. 9, Rigid Pavement Structural Sections

Design R-Value	Design Traffic Index (TI)	PCCP Pavement Section (inches)
44	4.5	5.75
	5.0	6.00
	6.0	6.25
	7.0	6.75
	8.0	7.00
	9.0	7.25

The pavement sections presented in the table are based on a minimum 28-day Modulus of Rupture (M-R) of 550 psi and a compressive strength of 3,000 psi. The third point method of testing beams should be used to evaluate modulus of rupture. The concrete mix design should contain a minimum cement content of 5.5 sacks per cubic yard

9.7 Site Drainage

Adequate positive drainage should be provided away from the structures to prevent ponding and to reduce percolation of water into structural backfill. We recommend that the any landscape area immediately adjacent to the foundation shall be designed sloped away from the structures with a minimum 5% slope gradient for at least 10 feet measured perpendicular to the face structure. Impervious surfaces within 10 feet of the foundation shall be sloped a minimum of 2 percent away from the structure per 2013 CBC.

Planters and landscaped areas adjacent to the any building perimeter should be designed to minimize water infiltration into the subgrade soils. Lower level walkways and open patio areas may require special drainage provisions and sump pumps to provide suitable drainage.

10.0 CONSTRUCTION RECOMMENDATIONS

10.1 Temporary Excavations

Based on the materials encountered in the exploratory borings, sloped temporary excavations may be constructed according to the slope ratios presented in the following table:

Table No. 10, Slope Ratios for Temporary Excavation

Maximum Depth of Cut (feet)	Maximum Slope Ratio* (horizontal: vertical)
0 - 5	vertical
5 - 15	1:1
15+	1.5:1

*Slope ratio assumed to be uniform from top to toe of slope.

Any loose utility trench backfill or other fill encountered in excavations will be less stable than the native soils. Temporary cuts encountering loose fill or loose dry sand should be constructed at a flatter gradient than presented in the table above. Surfaces exposed in slope excavations should be kept moist but not saturated to minimize raveling and sloughing during construction. Adequate provisions should be made to protect the slopes

from erosion during periods of rainfall. Surcharge loads, including construction, should not be placed within five (5) feet of the unsupported excavation edge.

All applicable requirements of the California Construction and General Industry Safety Orders, the Occupational Safety and Health Act of 1987 and current amendments, and the Construction Safety Act should be met. The soils exposed in cuts should be observed during excavation by the project's geotechnical consultant. If potentially unstable soil conditions are encountered, modifications of slope ratios for temporary cuts may be required.

10.2 Geotechnical Services during Construction

This report has been prepared to aid in the foundation plans and specifications, and to assist the architect, civil and structural engineers in the design of the proposed structures. It is recommended that this office be provided an opportunity to review final design drawings and specifications to verify that the recommendations of this report have been properly implemented.

Recommendations presented herein are based upon the assumption that adequate earthwork monitoring will be provided by Converse. Footing excavations should be observed by Converse prior to placement of steel and concrete so that footings are founded on satisfactory materials and excavations are free of loose and disturbed materials. Trench backfill should be placed and compacted with observation and field density testing provided by this office.

During construction, the geotechnical engineer and/or their authorized representatives should be present at the site to provide a source of advice to the client regarding the geotechnical aspects of the project and to observe and test the earthwork performed. Their presence should not be construed as an acceptance of responsibility for the performance of the completed work, since it is the sole responsibility of the contractor performing the work to ensure that it complies with all applicable plans, specifications, ordinances, etc.

This firm does not practice or consult in the field of safety engineering. We do not direct the contractor’s operations, and cannot be responsible for other than our own personnel on the site; therefore, the safety of others is the responsibility of the contractor. The contractor should notify the owner if he considers any recommended actions presented herein to be unsafe.

11.0 CLOSURE

The findings and recommendations of this report were prepared in accordance with generally accepted professional engineering and engineering geologic principles and practice. We make no other warranty, either expressed or implied. Our conclusions and recommendations are based on the results of the field and laboratory investigations, combined with an interpolation and extrapolation of soil conditions between and beyond boring locations. If conditions encountered during construction appear to be different from those shown by the borings, this office should be notified.

The preliminary design recommendations given in this report are based on the assumption that the earthwork and site grading recommendations contained in this report are implemented. It should be advised that the design recommendations presented herein are considered preliminary for planning purpose only. Additional consultation may be prudent to interpret Converse's findings for contractors, or to possibly refine these recommendations based upon the review of the final site grading and actual site conditions encountered during construction. If the scope of the project changes, if project completion is to be delayed, or if the report is to be used for another purpose, this office should be consulted.

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APPENDIX A

FIELD EXPLORATION FOR PROPOSED FILL PLACEMENT AT WEST PARCEL

APPENDIX A

FIELD EXPLORATION FOR PROPOSED FILL PLACEMENT AT WEST PARCEL

Our field investigation included a site reconnaissance of the site and a subsurface exploration program consisting of drilling soil borings. During the site reconnaissance on April 2, 2014, the surface conditions were noted and the locations of the borings were determined. The borings were located using existing boundary features as a guide and should be considered accurate only to the degree implied by the method used.

Exploratory Borings

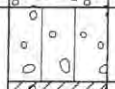
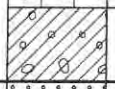
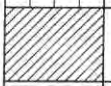
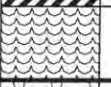
Twenty-one (21) hollow-stem auger borings were drilled from May 5 to May 9, 2014 extending between depths of approximately 10 to 51.5 feet below the existing ground surface (bgs), and one (1) bucket auger boring (BH-13) on May 19, 2014 to a depth of 31 feet (bgs). The borings were drilled using a truck-mounted drill rig equipped with an 8-inch diameter hollow-stem auger for soil sampling. The bucket auger boring location was utilized for downhole logging for detailed classification of bedrock properties. Soils were logged by our engineer/geologist and classified in the field by visual examination in accordance with the Unified Soil Classification System. The field descriptions have been modified where appropriate to reflect the laboratory test results.

Ring samples of the subsurface materials were obtained at frequent intervals in the exploratory borings using a drive sampler (2.4-inches inside diameter and 3.0-inches outside diameter) lined with sample rings. The steel ring sampler was driven into the bottom of the borehole with successive drops of a 140-pound driving weight falling 30 inches, using an automatic hammer. Samples were retained in brass rings (2.4-inches inside diameter and 1.0-inch in height). The central portion of the sample was retained and carefully sealed in waterproof plastic containers for shipment to the Converse laboratory. Blow counts for each sample interval are presented on the logs of borings. Bulk samples of typical soil types were also obtained.

Standard Penetration Tests (SPT) were also performed using a standard (1.4-inches inside diameter and 2.0-inches outside diameter) split-barrel sampler. The mechanically driven hammer for the SPT sampler was 140 pounds, failing 30 inches for each blow. The recorded blow counts for every six inches for a total of 1.5 feet of sampler penetration are shown on the Logs of Borings in the “BLOWS" column. The standard penetration test was performed in accordance with the ASTM Standard D1586 test method. The soil retrieved from the spoon sampler was carefully sealed in waterproof plastic containers for shipment to the laboratory.
It should be noted that the exact depths at which material changes occur cannot always be established accurately. Changes in material conditions that occur between driven samples are indicated in the logs at the top of the next drive sample. A key to soil

symbols and terms is presented as Drawing No. A1, *Soil Classification Chart*. The logs of the exploratory boring are presented in Drawing Nos. *A2 through A23*, *Log of Borings.*

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS (MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE)	GRAVEL AND GRAVELLY SOILS (MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE)	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS (MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE)	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS (MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE)	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

BORING LOG SYMBOLS

SAMPLE TYPE

- STANDARD PENETRATION TEST — Split barrel sampler in accordance with ASTM D-1586-84 Standard Test Method
- DRIVE SAMPLE 2.42" I.D. sampler.
- DRIVE SAMPLE No recovery
- BULK SAMPLE
- GROUNDWATER WHILE DRILLING
- GROUNDWATER AFTER DRILLING

LABORATORY TESTING ABBREVIATIONS

TEST TYPE
(Results shown in Appendix B)

CLASSIFICATION

Plasticity	pi
Grain Size Analysis	ma
Passing No. 200 Sieve	wa
Sand Equivalent	se
Expansion Index	ei
Compaction Curve	max
Hydrometer	h

STRENGTH

Pocket Penetrometer	p
Direct Shear	ds
Direct Shear (single point)	ds*
Unconfined Compression	uc
Triaxial Compression	tx
Vane Shear	vs
Consolidation	c
Collapse Test	col
Resistance (R) Value	r
Chemical Analysis	ca
Electrical Resistivity	er

UNIFIED SOIL CLASSIFICATION AND KEY TO BORING LOG SYMBOLS

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. **13-31-339-01**

Drawing No. **A-1**

Log of Boring No. BH- 1

Dates Drilled: 5/6/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 734 Depth to Water (ft): 19.25

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		ALLUVIUM (Qa): **SILTY SAND (SM):** fine to medium-grained, some clay, with gravels up to 1.5" in maximum dimension, brown.						ei
5		-with cobbles			16/19/14	8	99	c
10		-with clay			5/5/6			
15		**GRAVELLY SAND (SP):** medium to coarse-grained, some silt, brown.			14/12/15	26	103	
20					12/9/12			
		End of boring at 21.5 feet. Groundwater encountered at 19.25 feet. Borehole backfilled with soil cuttings on 5-6-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-2

Log of Boring No. BH- 2

Dates Drilled: 5/6/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 734 Depth to Water (ft): 15.5

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		ALLUVIUM (Qa): **SILTY SAND (SM):** fine to medium-grained, some clay, with gravels up to 1.5" in maximum dimension, dark brown.						
5		-brown	■		15/14/13	9	98	
10		**GRAVELLY SAND (SP):** medium to coarse-grained, gravels up to 2" in maximum dimension, trace silts, few cobbles, brown.	■		11/13/15	13	105	
15			☒		17/15/12			
20		-with cobbles	■		50(3")	16	107	
		End of boring at 21.5 feet. Groundwater encountered at 15.5 feet. Borehole backfilled with soil cuttings on 5-6-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-3

Log of Boring No. BH- 3

Dates Drilled: 5/5/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 729 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		ALLUVIUM (Qa): **SILTY SAND (SM):** fine to medium-grained, some clay, few gravels up to 1.5" in maximum dimension, brown.		■				max
5			■		15/39/49	8	126	
10			■		25/33/37	10	126	
15			☒		7/10/13			
20		**BEDROCK - SYCAMORE CANYON FORMATION (Tscs):** **SILTSTONE AND SANDSTONE:** weathered, thinly bedded, near vertical bedding, grayish brown.	■		11/13/18	14	117	
25			☒		6/10/12			
30			☒		9/11/12			
		End of boring at 31.5 feet. No groundwater encountered during drilling. Borehole backfilled with soil cuttings on 5-5-14						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-4

Log of Boring No. BH- 4

Dates Drilled: 5/5/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 737 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		COLLUVIUM (Qc): **SILTY SAND (SM):** fine to medium-grained, some clay, few gravels up to 1.5" in maximum dimension, brown.						
5		**BEDROCK - SYCAMORE CANYON FORMATION (Tscs):** **SILTSTONE, SANDSTONE:** weathered, no apparent bedding, orangish brown.			17/50(6")	7	125	
10					12/17/32			
15					31/45/50(5")	9	127	
20					10/16/29			
		End of boring at 21.5 feet. No groundwater encountered. Borehole backfilled with soil cuttings on 5-5-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-5

Log of Boring No. BH- 5

Dates Drilled: 5/8/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 792 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		COLLUVIUM (Qc): **SILTY SAND (SM):** fine to medium-grained, some clay, with gravels up to 3" in maximum dimension and cobbles up to 12" in maximum dimension, yellowish brown.						ma (fc=19.9%)
		BEDROCK - SYCAMORE CANYON FORMATION (Tscg): **CONGLOMERATE WITH SANDSTONE:** gravels and cobbles up to 3" in maximum dimension, weathered massive, orangish brown.						
5					50(4")	4	108	
10					50(5")			
15					50(5")	3	117	
20					50(4")			
25		**BEDROCK - SYCAMORE CANYON FORMATION (Tscs):** **SANDSTONE, SILTSTONE:** severely weathered, no apparent bedding, with gravels up to 3" in maximum dimension, orangish brown.			50(4")	5	131	
30					50(2")			

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-6a

Log of Boring No. BH- 5

Dates Drilled: 5/8/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 792 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		BEDROCK - SYCAMORE CANYON FORMATION (Tscs): **SANDSTONE, SILTSTONE:** severely weathered, no apparent bedding, with gravels up to 3" in maximum dimension, orangish brown.	■		50(3")	5	129	
		End of boring at 37 feet due to refusal from hard bedrock including cobbles and possible boulders. No groundwater encountered during drilling. Borehole backfilled with soil cuttings on 5-8-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

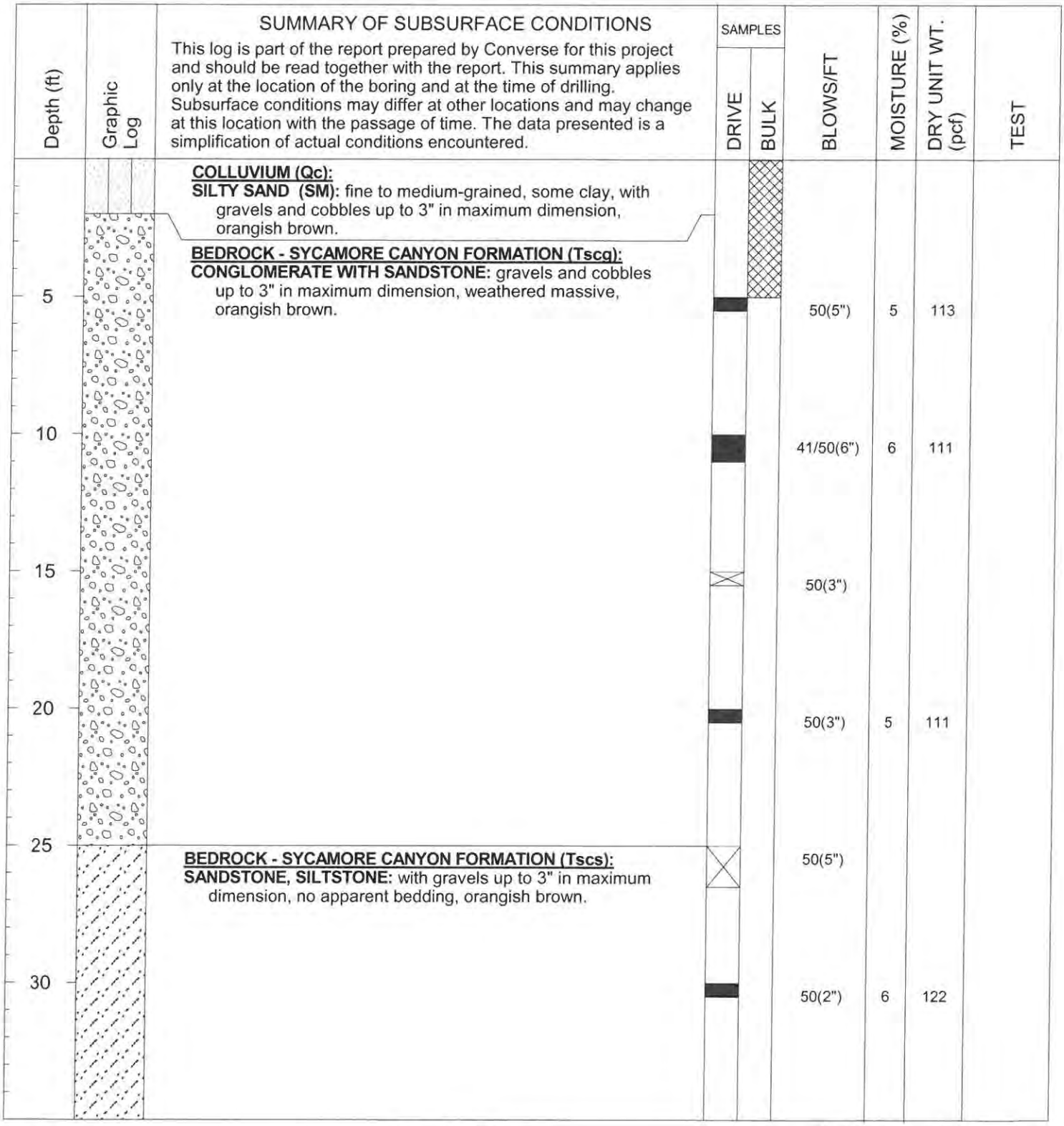
Drawing No. A-6b

Log of Boring No. BH- 6

Dates Drilled: 5/5/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 793 Depth to Water (ft): NOT ENCOUNTERED



Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-7a

Log of Boring No. BH- 6

Dates Drilled: 5/5/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 793 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		BEDROCK - SYCAMORE CANYON FORMATION (Tscs): **SANDSTONE, SILTSTONE:** with gravels up to 3" in maximum dimension, no apparent bedding, orangish brown.	X		50(6")			
40			■		50(2")	4	116	
45			X		33/50(2")			
50			X		50(2")			
		End of boring at 51.5 feet. No groundwater encountered. Borehole backfilled with soil cuttings on 5-5-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-7b

Log of Boring No. BH- 7

Dates Drilled: 5/6/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 744.5 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		ALLUVIUM (Qa): **SILTY SAND (SM):** fine to medium-grained, some clay, few gravels up to 1.5" in maximum dimension, brown.						r
5			■		10/11/14	8	103	
10		**BEDROCK - PUENTE FORMATION (Tscs):** **SANDSTONE, SILTSTONE:** weathered, no apparent bedding, with gravels up to 2.5" in maximum dimension, few cobbles, orangish brown.	■		13/33/50(4")	6	115	
15			⊠		27/48/50(5")			
20			■		50(5")	8	112	
		End of boring at 21.5 feet. No groundwater encountered. Borehole backfilled with soil cuttings on 5-5-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-8

Log of Boring No. BH- 8

Dates Drilled: 5/6/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 745.5 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		COLLUVIUM (Qc): **SILTY SAND (SM):** fine to medium-grained, some clay, few gravels up to 2.5" in maximum dimension, brown.						
5		**BEDROCK - PUENTE FORMATION (Tscs):** **SANDSTONE, SILTSTONE:** weathered, no apparent bedding, with gravels up to 2.5" in maximum dimension and few cobbles, orangish brown and brown.			36/41/50(4")	9	114	c
10					50(6")	6	114	
15					50(6")			
20					50(4")			
		End of boring at 21.5 feet. No groundwater encountered. Borehole backfilled with soil cuttings on 5-5-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-9

Log of Boring No. BH- 9

Dates Drilled: 5/6/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 739 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		COLLUVIUM (Qc): **SILTY SAND (SM):** fine to medium-grained, some clay, few gravels up to 2.5" in maximum dimension, brown.						max,ds
5		**BEDROCK - PUENTE FORMATION (Tscs):** **SILTSTONE, SANDSTONE:** weathered, no apparent bedding, few gravels up to 1" in maximum dimension, orange.	■		29/50(4")	16	99	
10		-olive brown	■		33/50(5")	5	107	
15		**BEDROCK - PUENTE FORMATION (Tscg):** **CONGLORMERATE WITH SANDSTONE:** severly weathered, no apparent bedding, gravels and cobbles up to 3" in maximum dimension, massive, olive brown, orangish brown.	⊠		13/10/18			
20			■		50(4")	16	103	
25			⊠		50(4")			
		End of boring at 26 feet due to refusal from hard bedrock including cobbles and possible boulders. No groundwater encountered. Borehole backfilled with soil cuttings on 5-6-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-10

Log of Boring No. BH-10

Dates Drilled: 5/6/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 757.5 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		ALLUVIUM (Qa): **SILTY SAND (SM):** fine to medium-grained, some clay, few gravels up to 1.5" in maximum dimension, brown.						ma (fc=44%)
5		**BEDROCK - PUENTE FORMATION (Tscs):** **SANDSTONE, SILTSTONE:** with gravels up to 2.5" in maximum dimension, weathered, no apparent bedding, orangish brown, grayish brown.			50(6")	6	112	
10					50(6")	6	122	
15		-with cobbles			50(6")			
20					50(2")	12	120	
		End of boring at 21.5 feet. No groundwater encountered. Borehole backfilled with soil cuttings on 5-5-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-11

Log of Boring No. BH-11

Dates Drilled: 5/8/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 785 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		COLLUVIUM (Qc): **SILTY SAND (SM):** fine to medium-grained, some clay, few gravels up to 2" in maximum dimension, light brown.						
5		**BEDROCK - PUENTE FORMATION (Tscs):** **SANDSTONE, SILTSTONE:** severely weathered, no apparent bedding, orangish brown, grayish brown.			50(4")	13	95	
10		-with cobbles			35/45/50			
15					50(5")	4	107	
20					13/19/38			
25					50(4")	5	114	
		End of boring at 27 feet due to refusal from hard bedrock including cobbles and possible boulders. No groundwater encountered. Borehole backfilled with soil cuttings on 5-5-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-12

Log of Boring No. BH-12

Dates Drilled: 5/8/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 776.5 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		ALLUVIUM (Qa): **SILTY SAND (SM) WITH CLAY AND GRAVELS:** fine to medium-grained, some clay, few gravels up to 1.5" in maximum dimension, brown						
5			■		35/42/50	6	125	
10			■		14/30/47	9	109	
15		**BEDROCK - PUENTE FORMATION (Tscs):** **SANDSTONE, SILTSTONE:** with gravels up to 2" in maximum dimension, severly weathered, no apparent bedding, orangish brown, brown.	⊠		18/20/27			
20			■		10/12/19	23	93	
		End of boring at 21.5 feet. No groundwater encountered. Borehole backfilled with soil cuttings on 5-5-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-13

Log of Boring No. BH-13

Dates Drilled: 5/19/2014 Logged by: MBS/MM Checked By: WHC

Equipment: 24" BUCKET AUGER Driving Weight and Drop: 800 lbs / 30 in

Ground Surface Elevation (ft): 786 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		SILTY SAND (SM) WITH CLAY AND GRAVELS topsoil with round grravels 30%-40%, organics, roots, gray to blackish gray						
		BEDROCK - PUENTE FORMATION (Tscg): **CONGLOMERATE** clayey sand with gravels, cobbles and boulders, clay binder, mottled, oxidized rust, weathered, yellowish brown						
5		-bedding 5.5, N24E, 22NW,	■		20(6") 24(6")	30	99	
		-increased rock, gravels and cobbles-subrounded to rounded (30-40% rock), olive gray to yellowish brown color						
10			■		15(6") 36(6")	28	94	
15		-clayey sandstone, matrix with gravels and cobbles, rocks subrounded to rounded, hard stream rocks, some boulder size rocks -bedding 16.5, N30E, 25W,	■		17(6") 40(6")	36	91	
			■		50(6")			
20		-increased drilling resistance, gravels and cobbles, cemented conglomerate, weathered, gray to yellowish brown				32	101	
		bedding 23.5, N10E, 8NW,						
25		-cemented hard, sandstone matrix with gravels and cobbles, olive gray	■	▨	47(6") 50(5")	6	125	max,ds
30			■	▨	60(6") 20(2")	6	100	
		End of boring at 31 feet due to refusal from hard bedrock. No groundwater encountered. Borehole backfilled with soil cuttings on 5-19-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-14

Log of Boring No. BH-14

Dates Drilled: 5/8/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 719.5 Depth to Water (ft): 44

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		COLLUVIUM (Qc): **SILTY SAND (SM):** fine to medium-grained, some clay, few gravels up to 2" in maximum dimension, light brown.						
5		**BEDROCK - PUENTE FORMATION (Tscs):** **SANDSTONE, SILTSTONE:** weathered bedding, nearly horizontal bedding, orangish brown, brown			26/50(6")	5	112	
10					18/18/19			
15					50(5")	8	102	
20					15/17/30			
25					50(6")	33	90	
30					16/17/23			

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Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-15a

Log of Boring No. BH-14

Dates Drilled: 5/8/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 719.5 Depth to Water (ft): 44

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		BEDROCK - PUENTE FORMATION (Tscs): **SANDSTONE, SILTSTONE:** weathered bedding, nearly horizontal bedding, orangish brown, brown	■		14/26/31	11	116	
40		**CLAYSTONE, SILTSTONE:** severly weathered, laminated bedding, near horizontal bedding, grayish brown, olive brown	☒		5/9/14			
45			■		50(6")	37	85	
		End of boring at 46.5 feet. Groundwater encountered at 44 feet. Borehole backfilled with soil cuttings on 5-8-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-15b

Log of Boring No. BH-15

Dates Drilled: 5/7/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 706 Depth to Water (ft): 16

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		ALLUVIUM (Qa): **SILTY SAND (SM):** fine to medium-grained, some clay, few gravels up to 1.5" in maximum dimension, brown.						
5		-few clays, dark brown	■		10/18/24	20	105	c
10			■		19/36/30	16	117	
		BEDROCK - PUENTE FORMATION (Tscs): **SILTSTONE, SANDSTONE:** near vertical bedding, few caliche, orange brown, olive brown						
15			☒		3/4/7			
20		-thinly bedded at 45°	■		10/15/19	31	89	c
25			☒		5/7/9			
30		**SANDSTONE:** with gravels up to 2.5" in maximum dimension, light brown	☒		22/41/32			

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-16a

Log of Boring No. BH-15

Dates Drilled: 5/7/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 706 Depth to Water (ft): 16

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		SANDSTONE: with gravels up to 2.5" in maximum dimension, light brown	■		50(6")	16	121	
40		**SANDSTONE, SILTSTONE:** moderately weathered, nearly 40° bedding, gray, orangish brown	☒		16/25/23			
45			☒		15/28/31			
		End of boring at 46.5 feet. Groundwater encountered at 16 feet. Borehole backfilled with soil cuttings on 5-8-14.						

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Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-16b

Log of Boring No. BH-16

Dates Drilled: 5/7/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 706 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		ALLUVIUM (Qa): **SILTY SAND (SM):** fine to medium-grained, some clay, few gravels up to 1.5" in maximum dimension, light brown.						
5		**BEDROCK - PUENTE FORMATION (Tscs):** **SANDSTONE, SILTSTONE:** severely weathered, no apparent bedding, with gravels up to 1.5" in maximum dimension, dark orangish brown.			26/40/50(4")	10	124	
10					50(6")			
		End of boring at 11.5 feet. Groundwater not encountered. Borehole backfilled with soil cuttings on 5-7-14						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-17

Log of Boring No. BH-17

Dates Drilled: 5/7/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 695.5 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		ALLUVIUM (Qa): **SILTY SAND (SM):** fine to medium-grained, some clay, few gravels up to 1.5" in maximum dimension, light brown.						
5		**BEDROCK - PUENTE FORMATION (Tscs):** **SILTSTONE, SANDSTONE:** with gravels up to 1.5" in maximum dimension, slightly weathered, no bedding, yellowish brown			50(5")	10	100	
10					50(3")	30	99	
		End of boring at 11.5 feet. Groundwater not encountered. Borehole backfilled with soil cuttings on 5-7-14						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-18

Log of Boring No. BH-18

Dates Drilled: 5/7/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 691 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		ALLUVIUM (Qa): **SANDY SILT (ML):** fine to medium-grained, some clay, few gravels up to 1" in maximum dimension, brown.						ma
5		-with cobbles			21/50(5")	55	67	
10		**BEDROCK - PUENTE FORMATION (Tscs):** **SANDSTONE, SILTSTONE:** weathered, laminated, near horizontal bedding, olive brown, orangish brown.			22/29/50(3")	30	99	
		End of boring at 11.5 feet. Groundwater not encountered. Borehole backfilled with soil cuttings on 5-7-14						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-19

Log of Boring No. BH-19

Dates Drilled: 5/7/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 694 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		ALLUVIUM (Qa): **SILTY SAND (SM):** fine to medium-grained, some clay, few gravels up to 1" in maximum dimension, brown.						
5			■		19/29/33	12	122	c
10		**BEDROCK - PUENTE FORMATION (Tscs):** **SANDSTONE, SILTSTONE:** weathered, laminated, near horizontal bedding, orangish brown, olive brown.	■		19/31/50(5")	42	78	
		End of boring at 11.5 feet. Groundwater not encountered. Borehole backfilled with soil cuttings on 5-7-14						

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Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-20

Log of Boring No. BH-20

Dates Drilled: 5/7/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 689 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		ALLUVIUM (Qa): **SILTY SAND (SM):** fine to medium-grained, some clay, few gravels up to 1.25" in maximum dimension, brown.						ei
5		-with cobbles			18/37/32	15	104	
10		**BEDROCK - PUENTE FORMATION (Tscs):** **SANDSTONE, SILTSTONE:** weathered, laminated, near horizontal bedding, orangish brown, olive brown			15/21/28	13	117	
		End of boring at 11.5 feet. Groundwater not encountered. Borehole backfilled with soil cuttings on 5-7-14						

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Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-21

Log of Boring No. BH-21

Dates Drilled: 5/7/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 686 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		ALLUVIUM (Qa): **SILTY SAND (SM):** fine to medium-grained, some clay, few gravels up to 1.5" in maximum dimension, brown.						max
5		-with cobbles			50(2")	17	97	
10		**BEDROCK - PUENTE FORMATION (Tscs):** **SANDSTONE, SILTSTONE:** weathered, laminated, nearly horizontal bedding, orangish brown, olive brown			31/50(3")	24	95	
		End of boring at 11.5 feet. Groundwater not encountered. Borehole backfilled with soil cuttings on 5-7-14						

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Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-22

Log of Boring No. BH-22

Dates Drilled: 5/7/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 693 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		ALLUVIUM (Qa): **SILTY SAND (SM):** fine to medium-grained, some clay, few gravels up to 1" in maximum dimension, brown.						
5			■		13/17/22	14	114	
		BEDROCK - PUENTE FORMATION (Tscs): **SANDSTONE, SILTSTONE:** weathered, laminated, near vertical horizontal bedding, orangish brown, olive brown.						
10			■		14/20/26	31	87	
15			■		15/21/28	34	84	
		End of boring at 16.5 feet. Groundwater not encountered. Borehole backfilled with soil cuttings on 5-7-14						

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Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-23

APPENDIX B

LABORATORY TESTING PROGRAM
FOR PROPOSED FILL PLACEMENT AT WEST PARCEL

APPENDIX B

LABORATORY TESTING PROGRAM

Tests were conducted in our laboratory on representative soil samples for the purpose of classification and evaluation of their relevant physical characteristics and engineering properties. The amount and selection of tests were based on the geotechnical requirements of the project. Test results are presented herein and on the Logs of Borings in Appendix A, *Field Exploration for Proposed Fill Placement at West Parcel.* The following is a summary of the laboratory tests conducted for this project.

Moisture Content and Dry Density

Results of moisture content and dry density tests, performed on relatively undisturbed ring samples were used to aid in the classification of the soils and to provide quantitative measure of the *in situ* dry density. Data obtained from this test provides qualitative information on strength and compressibility characteristics of site soils. For test results, see the Logs of Borings in Appendix A, *Field Exploration for Proposed Fill Placement at West Parcel.*

Grain-Size Analysis

To assist in classification of soils, mechanical grain-size analyses were performed on Three (3) selected samples. Tests were performed in general accordance with the ASTM Standard C136 test method. Grain-size curves are shown in Drawing No. B1, *Grain Size Distribution Results*.

Maximum Dry Density Test

Four (4) laboratory maximum dry density-moisture content relationship tests were performed on one representative bulk sample. The tests were conducted in accordance with ASTM Standard D1557 laboratory procedure. The test results are presented on Drawing No. B2, *Moisture-Density Relationship Results*.

Direct Shear

Direct shear tests were performed on two (2) relatively undisturbed samples at soaked moisture conditions. For each test, three samples contained in brass sampler rings were placed, one at a time, directly into the test apparatus and subjected to a range of normal loads appropriate for the anticipated conditions. The samples were then sheared at a constant strain rate of 0.01 inch/minute. Shear deformation was recorded until a maximum of about 0.50-inch shear displacement was achieved. Ultimate strength was selected from the shear-stress deformation data and plotted to determine the shear

strength parameters. For test data, including sample density and moisture content, see Drawing Nos. B3a through B3b, Direct *Shear Test Results,* and in the following table:

Table No. B-1, Direct Shear Test Results

Boring No.	Depth (feet)	Soil Classification	Peak Strength Parameters	
			Friction Angle (degrees)	Cohesion (psf)
BH-9	0-5	Silty Sand (SM)	32	150
BH-13	25-30	Sedimentary Bedrock-Conglomerate	29	300

Consolidation Test

Consolidation tests were performed on four (4) selected samples. Data obtained from this test performed on a relatively undisturbed soil sample was used to evaluate the settlement characteristics of the foundation soils under load. Preparation for this test involved trimming the sample and placing the one-inch high brass ring into the test apparatus, which contained porous stones, both top and bottom, to accommodate drainage during testing. Normal axial loads were applied to one end of the sample through the porous stones, and the resulting deflections were recorded at various time periods. The load was increased after the sample reached a reasonable state of equilibrium. Normal loads were applied at a constant load-increment ratio, successive loads being generally twice the preceding load. The sample was tested at field and submerged conditions. The test results, including sample density and moisture content, are presented in Drawings Nos. B4a through B4d, *Consolidation Test Results*.

Expansion Index Test

Two (2) representative bulk samples were tested to evaluate the expansion potential of material encountered at the site. The test was conducted in accordance with ASTM D4829 Standard. Test results are presented in the following table:

Table No. B-3, Expansion Index Test Result

Boring No.	Depth (feet)	Soil Description	Expansion Index	Expansion Potential
BH-1	0-5	Silty Sand (SM)	21	Low
BH-20	0-5	Silty Sand (SM)	23	Low

R-value Test

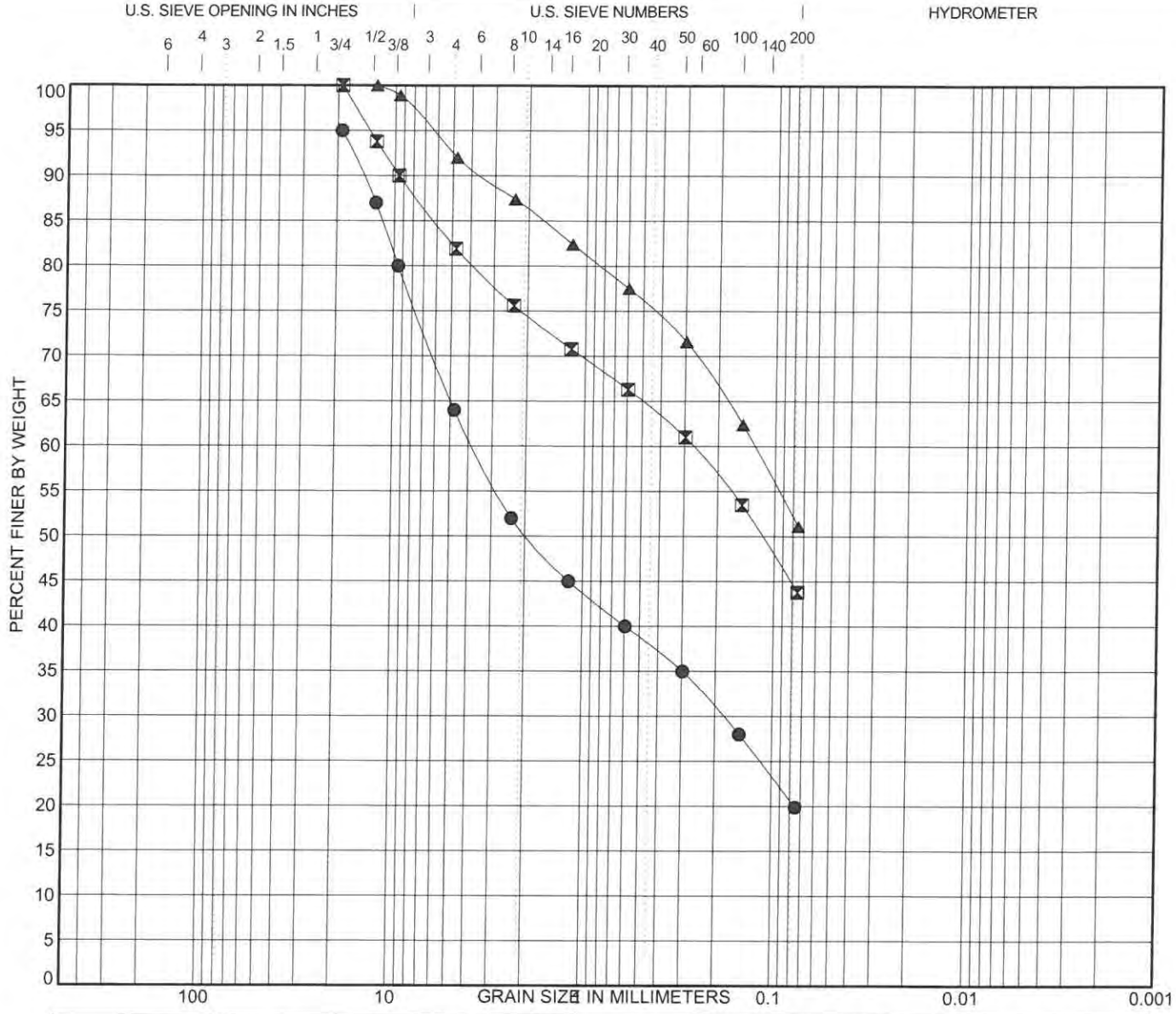
One (1) representative bulk soil sample was tested for resistance value (R-value) in accordance with State of California Standard Method 301-G. This test is designed to provide a relative measure of soil strength for use in pavement design. The test results are shown in the following table:

Table No. B-4, R-value Test Result

Boring No.	Depth (feet)	Soil Classification	Measured R-value
BH-7	0-5	Silty Sand (SM)	44

Sample Storage

Soil samples presently stored in our laboratory will be discarded 30 days after the date of this report, unless this office receives a specific request to retain the samples for a longer period of time.



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring No.	Depth (ft)	Description	LL	PL	PI	Cc	Cu
●	BH- 5	0-5	SILTY SAND (SM)					
⊠	BH-10	0-5	SILTY SAND (SM)					
▲	BH-18	0-5	SANDY SILT (ML)					

	Boring No.	Depth (ft)	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	BH- 5	0-5	19	3.762	0.181		31.0	44.1	19.9	
⊠	BH-10	0-5	19	0.271			18.1	38.1	43.8	
▲	BH-18	0-5	12.5	0.129			8.0	40.9	51.1	

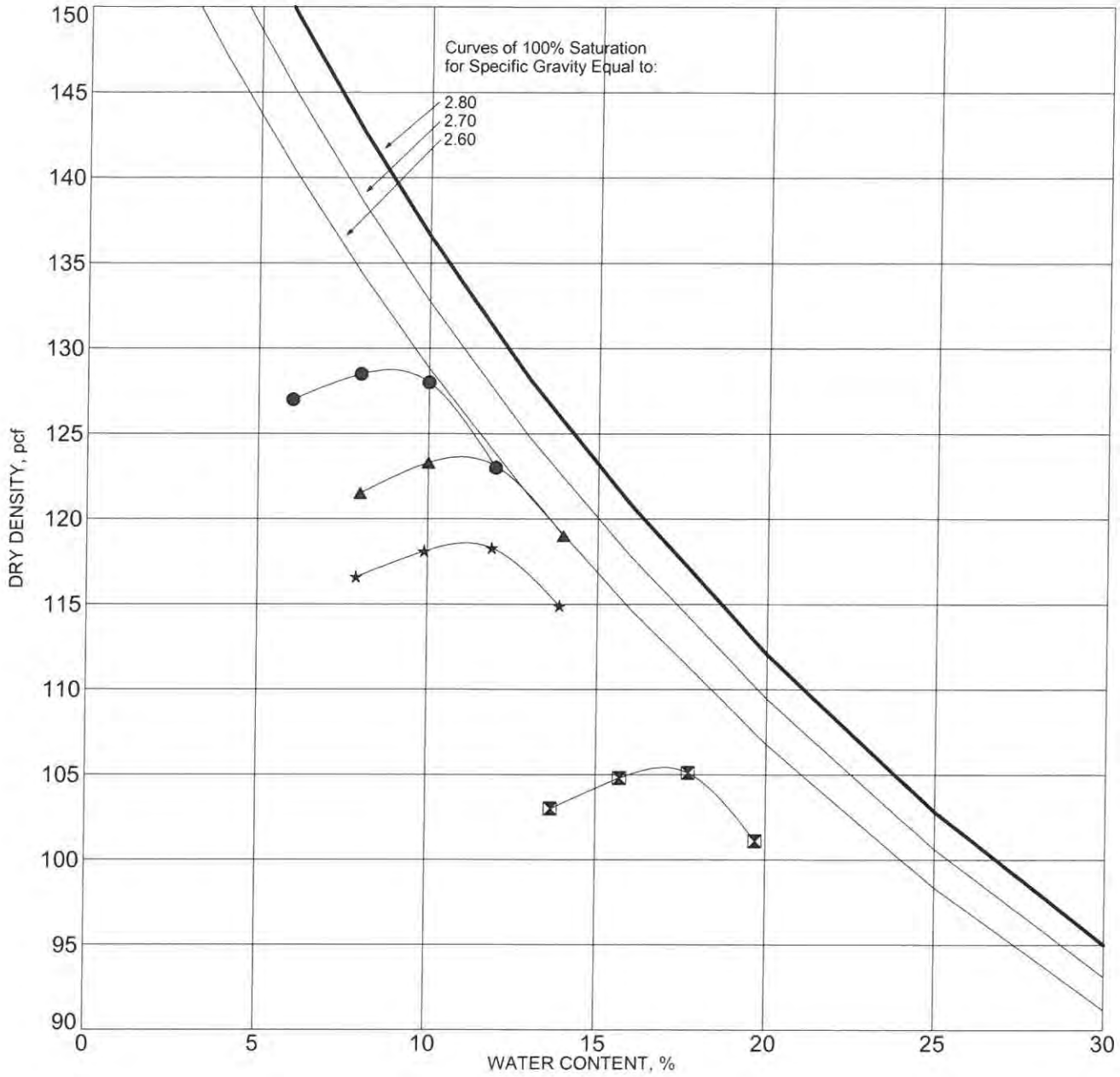
GRAIN SIZE DISTRIBUTION RESULTS

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No.
13-31-339-01

Drawing No.
B-1



SYMBOL	BORING NO.	DEPTH (ft)	DESCRIPTION	ASTM TEST METHOD	OPTIMUM WATER, %	MAXIMUM DRY DENSITY, pcf
●	BH- 3	0-5	SILTY SAND (SM)	D1557 Method B	9.2	128.5
⊠	BH- 9	0-5	SILTY SAND (SM)	D1557 Method A	16.8	106
▲	BH-13	0	SILTY SAND (SM) WITH CLAY AND GRAVELS	D1557 Method C	11.2	124
★	BH-21	0-5	SILTY SAND (SM)	D1557 Method A	11	119

NOTE:

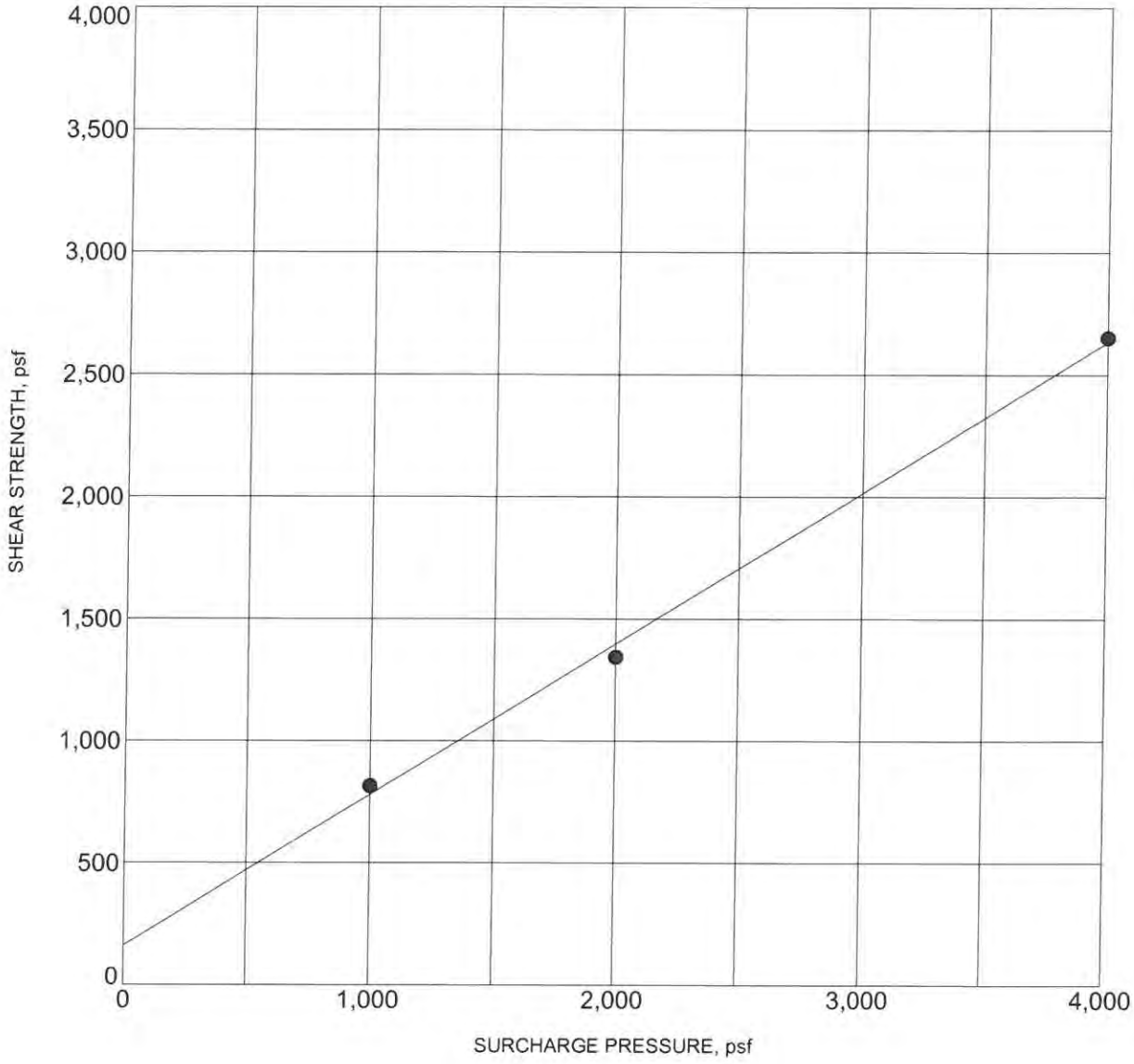
MOISTURE-DENSITY RELATIONSHIP RESULTS

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No.
13-31-339-01

Drawing No.
B-2



BORING NO. :	**BH- 9**	DEPTH (ft) :	**0-5**
DESCRIPTION :	**SILTY SAND (SM)**		
COHESION (psf) :	**150**	FRICTION ANGLE (degrees):	**32**
MOISTURE CONTENT (%) :	**18.0**	DRY DENSITY (pcf) :	**94.5**

NOTE: Ultimate Strength.

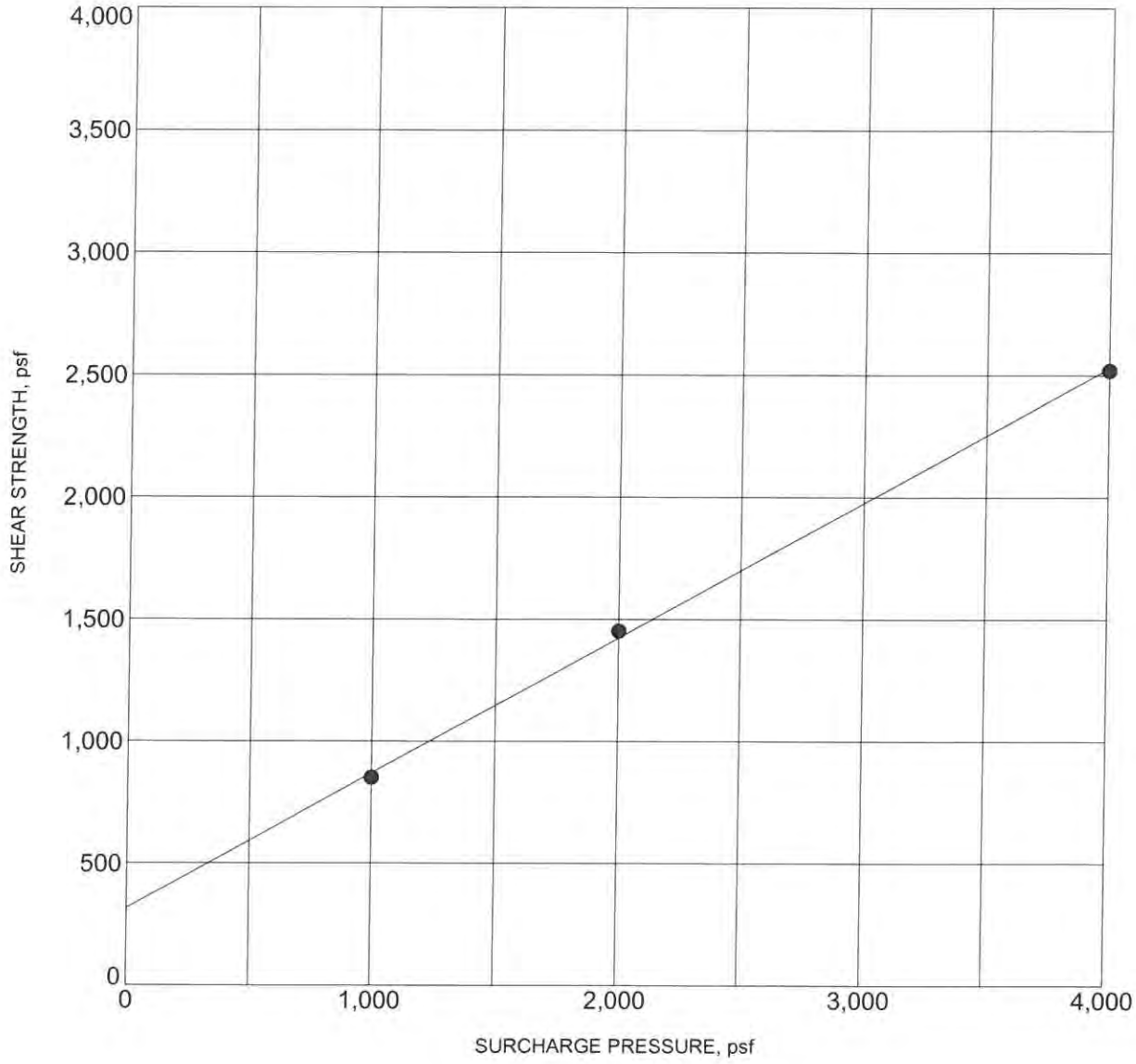
DIRECT SHEAR TEST RESULTS

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. **13-31-339-01**

Drawing No. **B-3a**



BORING NO. :	**BH-13**	DEPTH (ft) :	**25-30**
DESCRIPTION :	**SEDIMENTARY BEDROCK - CONGLOMERATE**		
COHESION (psf) :	**300**	FRICTION ANGLE (degrees):	**29**
MOISTURE CONTENT (%) :	**13.3**	DRY DENSITY (pcf) :	**109.6**

NOTE: Ultimate Strength.

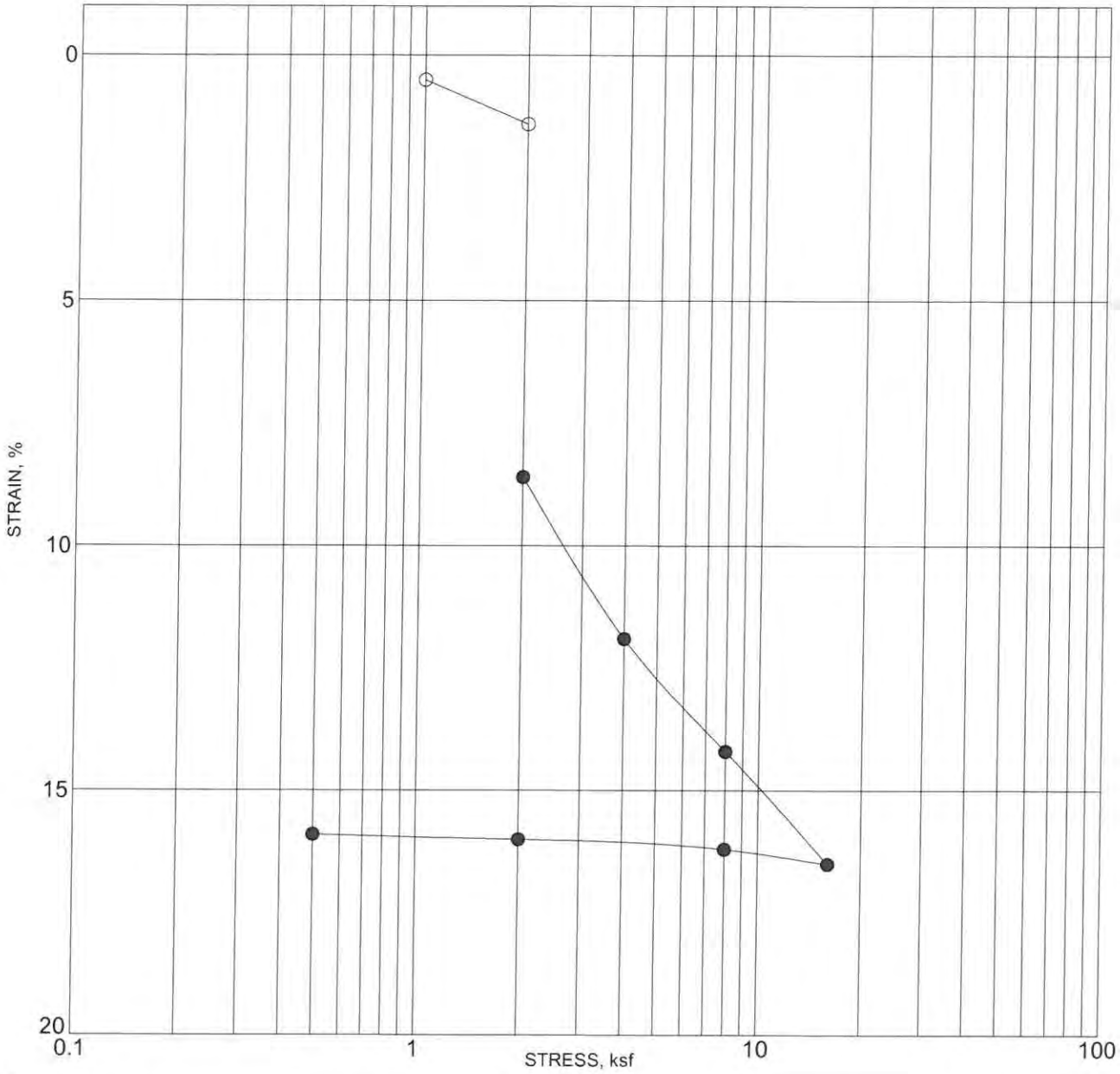
DIRECT SHEAR TEST RESULTS

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. **13-31-339-01**

Drawing No. **B-3b**



BORING NO. :	BH- 1	DEPTH (ft) :	5
DESCRIPTION :	SILTY SAND (SM)		

	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	PERCENT SATURATION	VOID RATIO
INITIAL	8.1	99.1		
FINAL	13.6	114.9		

NOTE: SOLID CIRCLES INDICATE READINGS AFTER ADDITION OF WATER

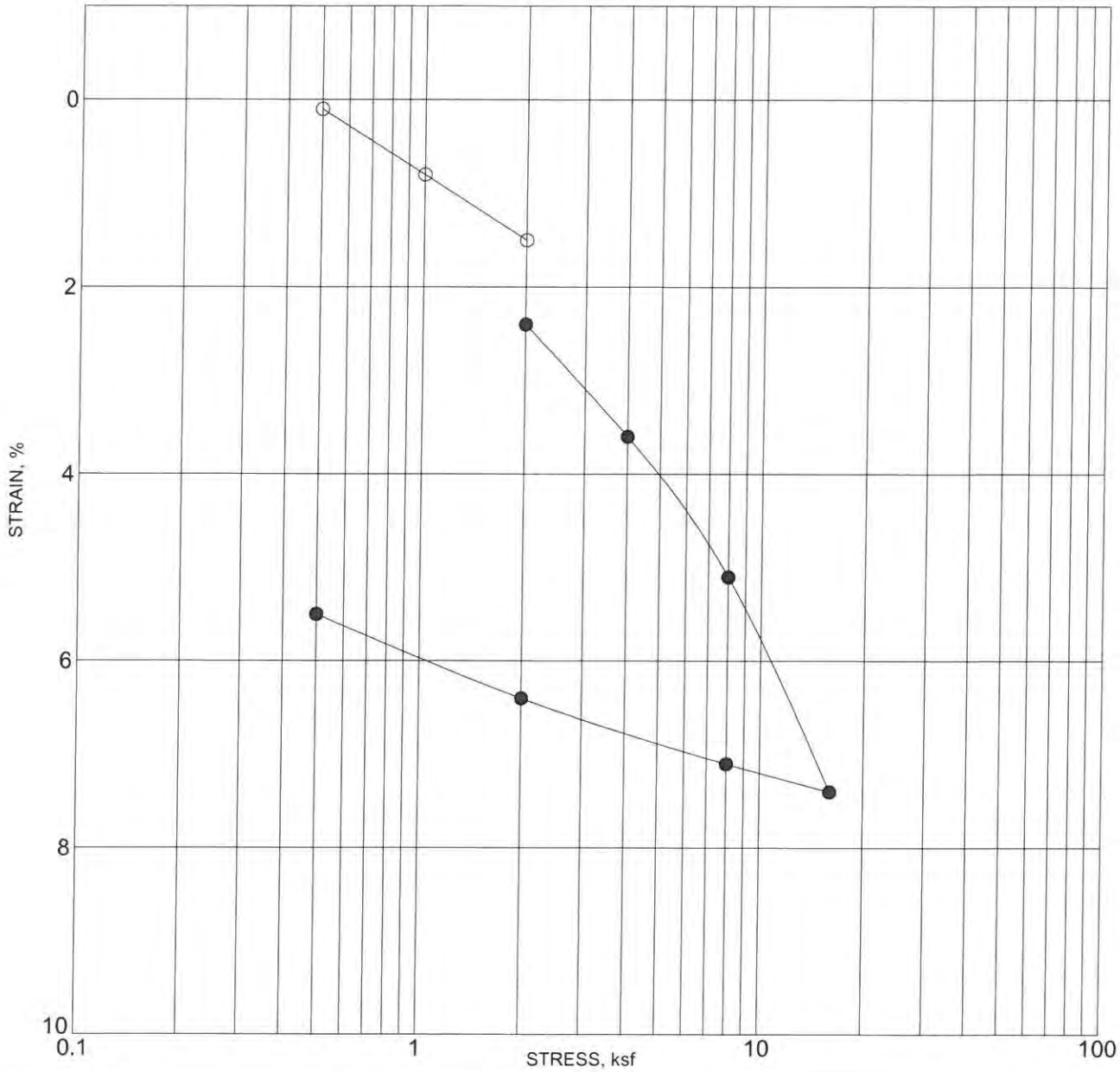
CONSOLIDATION TEST RESULTS

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. B-4a



BORING NO. :	BH- 8	DEPTH (ft) :	5
DESCRIPTION :	SANDSTONE - SILTSTONE		

	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	PERCENT SATURATION	VOID RATIO
INITIAL	8.9	113.9		
FINAL	15.8	120.2		

NOTE: SOLID CIRCLES INDICATE READINGS AFTER ADDITION OF WATER

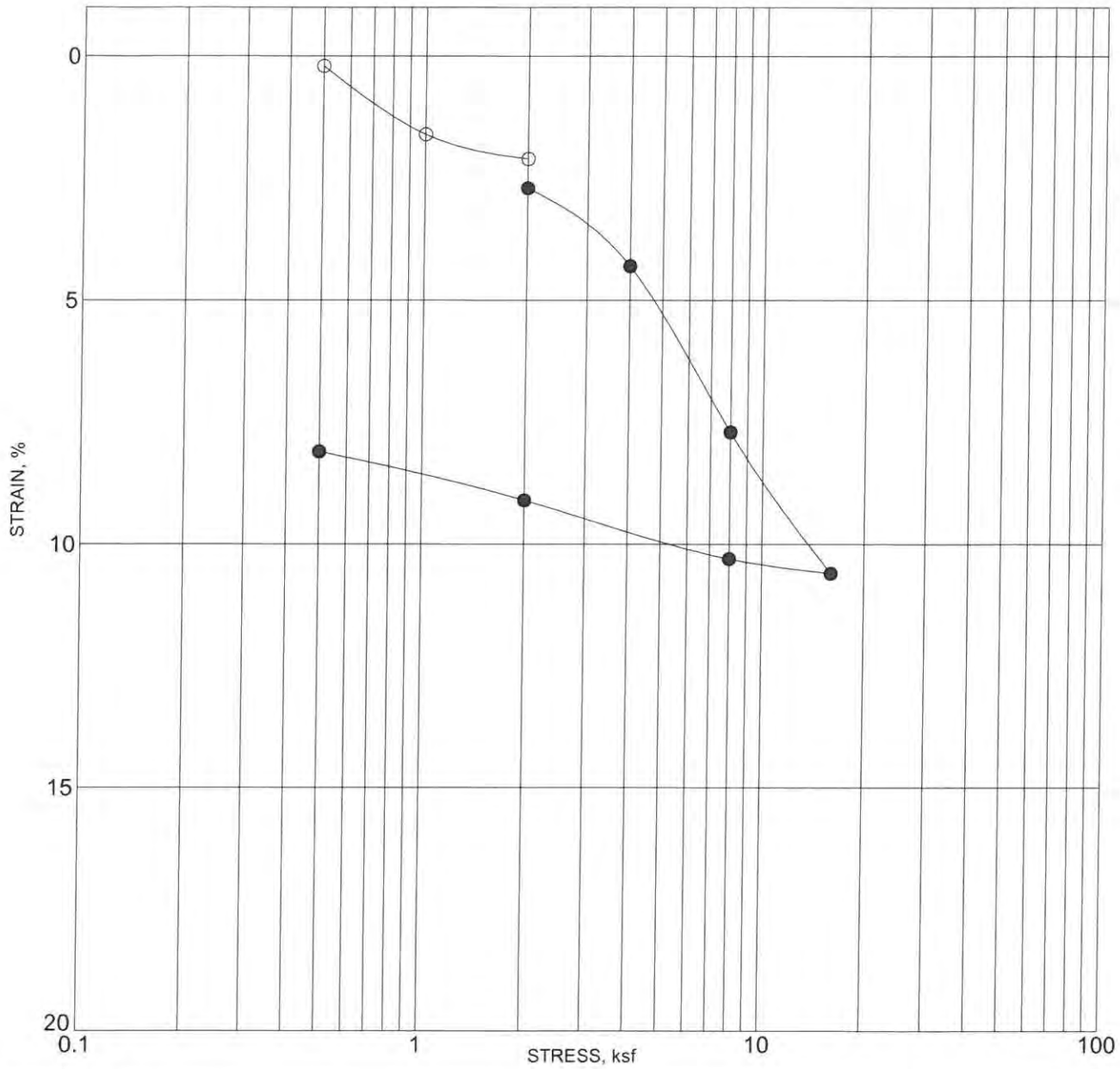
CONSOLIDATION TEST RESULTS

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. B-4b



BORING NO. :	BH-15	DEPTH (ft) :	5
DESCRIPTION :	SILTY SAND (SM)		

	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	PERCENT SATURATION	VOID RATIO
INITIAL	19.5	105		
FINAL	19.8	110.2		

NOTE: SOLID CIRCLES INDICATE READINGS AFTER ADDITION OF WATER

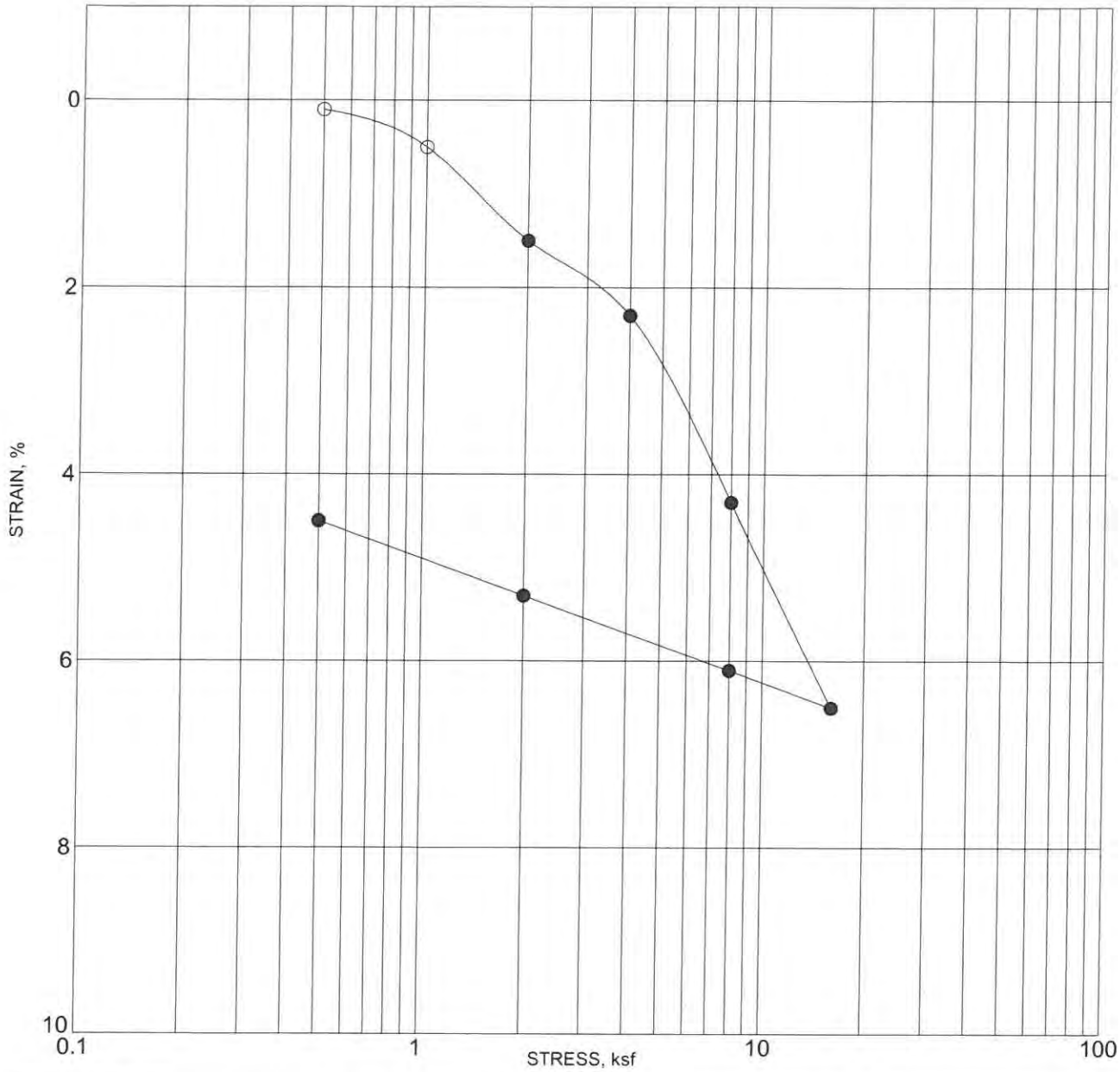
CONSOLIDATION TEST RESULTS

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. B-4c



BORING NO. :	BH-15	DEPTH (ft) :	20
DESCRIPTION :	SILTY SAND (SM)		

	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	PERCENT SATURATION	VOID RATIO
INITIAL	30.9	89		
FINAL	30.5	93		

NOTE: SOLID CIRCLES INDICATE READINGS AFTER ADDITION OF WATER

CONSOLIDATION TEST RESULTS

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. B-4d

APPENDIX C

LIQUEFACTION/SEISMIC SETTLEMENT ANALYSIS

APPENDIX C

LIQUEFACTION/SEISMIC SETTLEMENT ANALYSIS

Liquefaction is defined as the phenomenon where a soil mass exhibits a substantial reduction in its shear strength. This strength reduction is due to the development of excess pore pressure in a soil mass caused by earthquake induced ground motions. Saturated soils behave temporarily as a viscous fluid (liquefaction) and, consequently, lose their capacity to support the structures founded on them. The potential for liquefaction decreases with increasing clay and gravel content, but increases as the ground acceleration and duration of shaking increase. Liquefaction potential has been found to be the greatest where the groundwater level and loose sands occur within 50 feet of the ground surface.

Our liquefaction analyses are based on the *Special Publication 117A: Guidelines for Evaluating and Mitigating Seismic Hazards in California* (9/2008), *Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Liquefaction Hazards in California* (3/1999), and *2013 California Building Code*.

The subsurface data obtained from exploratory boring was used to evaluate the liquefaction/seismic settlement potential of the area. The Logs of Borings are presented in Appendix A, *Field Exploration*. The liquefaction potential and seismic settlement analyses were performed utilizing SPT data obtained from boring BH-15 for the upper 46.5 feet of soils, using *LiquefyPro,* Version 5.8d, 2009, by Civil Tech Software. The following seismic parameters are used for liquefaction potential analyses.

Table No. D-1, Seismic Parameters Used in Liquefaction Analysis

Groundwater Depth* (feet)	Earthquake Magnitude** Mw	Peak Ground Acceleration*** (g)
16	6.69	0.77

* Based on Groundwater encountered during field exploration.
** Based on USGS 2008 NSHMP PSHA Interactive Deaggregation web site.
** Based on PGA_M per section 21.5 of ASCE 7-10.

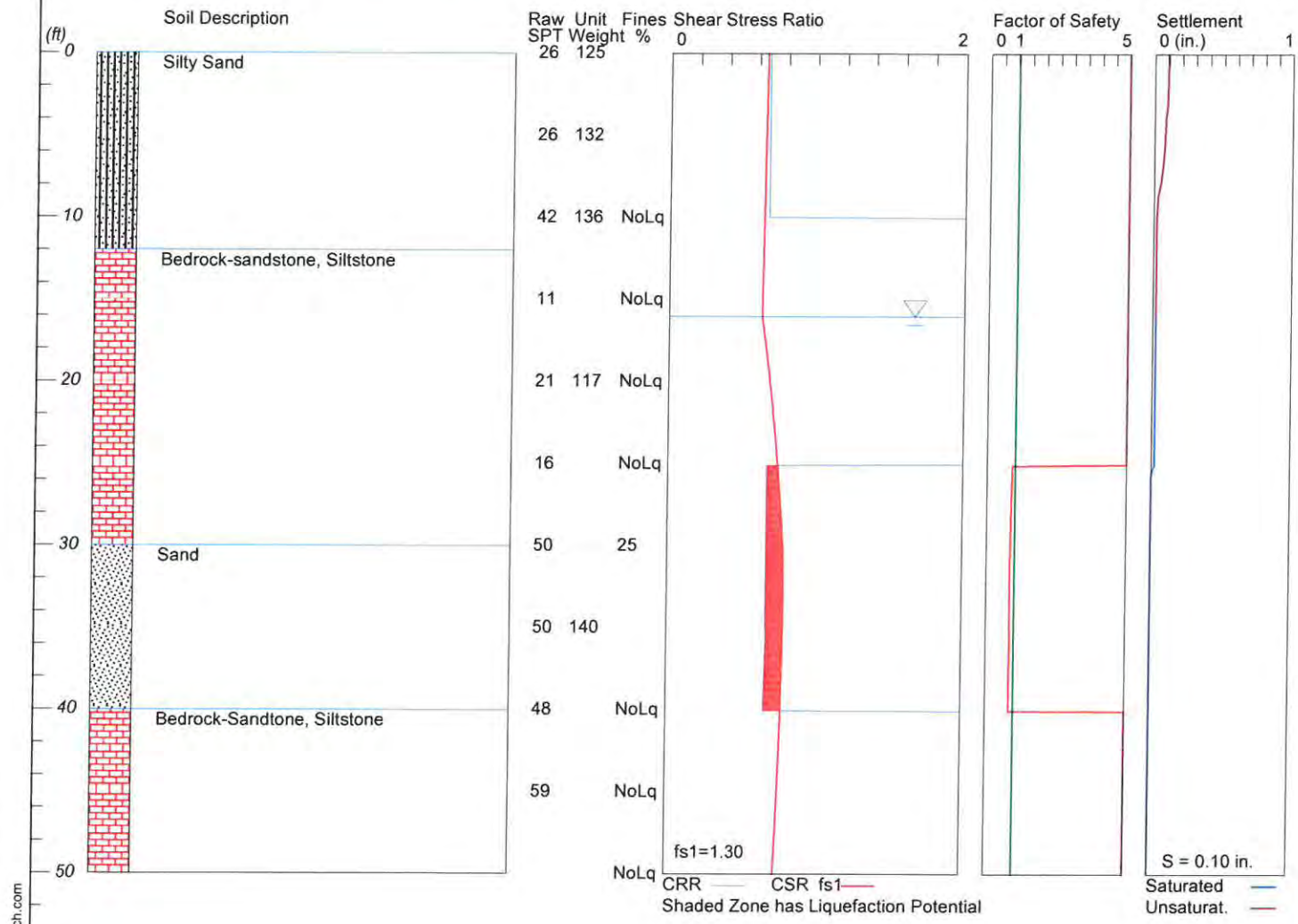
The results of our liquefaction analyses indicate the project site is not susceptible to liquefaction as presented in the attached calculations. The estimated seismic settlement is approximately 0.10 inches with differential settlement of approximately 0.05 inches.

LIQUEFACTION ANALYSIS

MT. SAN ANTONIO COLLEGE

Hole No.=BH-15 Water Depth=16 ft Surface Elev.=706

Magnitude=6.69
Acceleration=0.77g



LiquefyPro CivilTech Software USA www.civiltech.com

****

LIQUEFACTION ANALYSIS SUMMARY
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Font: Courier New, Regular, Size 8 is recommended for this report.
Licensed to , 7/14/2014 4:44:05 PM

Input File Name: E:\Liquefy5\13-31-339-01-BH-15.liq
Title: MT. SAN ANTONIO COLLEGE
Subtitle: 13-31-339-01

Surface Elev.=706
Hole No.=BH-15
Depth of Hole= 50.00 ft
Water Table during Earthquake= 16.00 ft
Water Table during In-Situ Testing= 16.00 ft
Max. Acceleration= 0.77 g
Earthquake Magnitude= 6.69

Input Data:
Surface Elev.=706
Hole No.=BH-15
Depth of Hole=50.00 ft
Water Table during Earthquake= 16.00 ft
Water Table during In-Situ Testing= 16.00 ft
Max. Acceleration=0.77 g
Earthquake Magnitude=6.69
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. SPT or BPT Calculation.
2. Settlement Analysis Method: Tokimatsu/Seed
3. Fines Correction for Liquefaction: Stark/Olson et al.*
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
6. Hammer Energy Ratio, Ce = 1.3
7. Borehole Diameter, Cb= 1.15
8. Sampling Method, Cs= 1.12
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth ft	SPT	gamma pcf	Fines %
0.00	26.00	125.00	0.00
5.00	26.00	132.00	0.00
10.00	42.00	136.00	NoLiq
15.00	11.00	136.00	NoLiq
20.00	21.00	117.00	NoLiq
25.00	16.00	117.00	NoLiq
30.00	50.00	117.00	25.00
35.00	50.00	140.00	25.00
40.00	48.00	140.00	NoLiq
45.00	59.00	140.00	NoLiq
50.00	59.00	140.00	NoLiq

Output Results:
Settlement of Saturated Sands=0.02 in.
Settlement of Unsaturated Sands=0.08 in.
Total Settlement of Saturated and Unsaturated Sands=0.10 in.
Differential Settlement=0.049 to 0.065 in.

Depth	CRRm	CSRfs	F.S.	S_sat.	S_dry	S_all

ft				in.	in.	Liquefy.sum in.
0.00	0.67	0.65	5.00	0.02	0.08	0.10
0.05	0.67	0.65	5.00	0.02	0.08	0.10
0.10	0.67	0.65	5.00	0.02	0.08	0.10
0.15	0.67	0.65	5.00	0.02	0.08	0.10
0.20	0.67	0.65	5.00	0.02	0.08	0.10
0.25	0.67	0.65	5.00	0.02	0.08	0.10
0.30	0.67	0.65	5.00	0.02	0.08	0.10
0.35	0.67	0.65	5.00	0.02	0.08	0.10
0.40	0.67	0.65	5.00	0.02	0.08	0.10
0.45	0.67	0.65	5.00	0.02	0.08	0.10
0.50	0.67	0.65	5.00	0.02	0.08	0.10
0.55	0.67	0.65	5.00	0.02	0.08	0.10
0.60	0.67	0.65	5.00	0.02	0.08	0.10
0.65	0.67	0.65	5.00	0.02	0.08	0.10
0.70	0.67	0.65	5.00	0.02	0.08	0.10
0.75	0.67	0.65	5.00	0.02	0.08	0.10
0.80	0.67	0.65	5.00	0.02	0.08	0.10
0.85	0.67	0.65	5.00	0.02	0.07	0.10
0.90	0.67	0.65	5.00	0.02	0.07	0.10
0.95	0.67	0.65	5.00	0.02	0.07	0.10
1.00	0.67	0.65	5.00	0.02	0.07	0.10
1.05	0.67	0.65	5.00	0.02	0.07	0.10
1.10	0.67	0.65	5.00	0.02	0.07	0.10
1.15	0.67	0.65	5.00	0.02	0.07	0.10
1.20	0.67	0.65	5.00	0.02	0.07	0.10
1.25	0.67	0.65	5.00	0.02	0.07	0.10
1.30	0.67	0.65	5.00	0.02	0.07	0.10
1.35	0.67	0.65	5.00	0.02	0.07	0.10
1.40	0.67	0.65	5.00	0.02	0.07	0.10
1.45	0.67	0.65	5.00	0.02	0.07	0.10
1.50	0.67	0.65	5.00	0.02	0.07	0.10
1.55	0.67	0.65	5.00	0.02	0.07	0.10
1.60	0.67	0.65	5.00	0.02	0.07	0.10
1.65	0.67	0.65	5.00	0.02	0.07	0.10
1.70	0.67	0.65	5.00	0.02	0.07	0.10
1.75	0.67	0.65	5.00	0.02	0.07	0.10
1.80	0.67	0.65	5.00	0.02	0.07	0.10
1.85	0.67	0.65	5.00	0.02	0.07	0.10
1.90	0.67	0.65	5.00	0.02	0.07	0.10
1.95	0.67	0.65	5.00	0.02	0.07	0.10
2.00	0.67	0.65	5.00	0.02	0.07	0.10
2.05	0.67	0.65	5.00	0.02	0.07	0.10
2.10	0.67	0.65	5.00	0.02	0.07	0.10
2.15	0.67	0.65	5.00	0.02	0.07	0.10
2.20	0.67	0.65	5.00	0.02	0.07	0.10
2.25	0.67	0.65	5.00	0.02	0.07	0.10
2.30	0.67	0.65	5.00	0.02	0.07	0.10
2.35	0.67	0.65	5.00	0.02	0.07	0.09
2.40	0.67	0.65	5.00	0.02	0.07	0.09
2.45	0.67	0.65	5.00	0.02	0.07	0.09
2.50	0.67	0.65	5.00	0.02	0.07	0.09
2.55	0.67	0.65	5.00	0.02	0.07	0.09
2.60	0.67	0.65	5.00	0.02	0.07	0.09
2.65	0.67	0.65	5.00	0.02	0.07	0.09
2.70	0.67	0.65	5.00	0.02	0.07	0.09
2.75	0.67	0.65	5.00	0.02	0.07	0.09
2.80	0.67	0.65	5.00	0.02	0.07	0.09
2.85	0.67	0.65	5.00	0.02	0.07	0.09
2.90	0.67	0.65	5.00	0.02	0.07	0.09
2.95	0.67	0.65	5.00	0.02	0.07	0.09
3.00	0.67	0.65	5.00	0.02	0.07	0.09
3.05	0.67	0.65	5.00	0.02	0.07	0.09
3.10	0.67	0.65	5.00	0.02	0.07	0.09
3.15	0.67	0.65	5.00	0.02	0.07	0.09
3.20	0.67	0.65	5.00	0.02	0.07	0.09

						Liquefy.sum
3.25	0.67	0.65	5.00	0.02	0.07	0.09
3.30	0.67	0.65	5.00	0.02	0.07	0.09
3.35	0.67	0.65	5.00	0.02	0.07	0.09
3.40	0.67	0.65	5.00	0.02	0.07	0.09
3.45	0.67	0.65	5.00	0.02	0.07	0.09
3.50	0.67	0.65	5.00	0.02	0.07	0.09
3.55	0.67	0.65	5.00	0.02	0.07	0.09
3.60	0.67	0.65	5.00	0.02	0.07	0.09
3.65	0.67	0.65	5.00	0.02	0.06	0.09
3.70	0.67	0.65	5.00	0.02	0.06	0.09
3.75	0.67	0.64	5.00	0.02	0.06	0.09
3.80	0.67	0.64	5.00	0.02	0.06	0.08
3.85	0.67	0.64	5.00	0.02	0.06	0.08
3.90	0.67	0.64	5.00	0.02	0.06	0.08
3.95	0.67	0.64	5.00	0.02	0.06	0.08
4.00	0.67	0.64	5.00	0.02	0.06	0.08
4.05	0.67	0.64	5.00	0.02	0.06	0.08
4.10	0.67	0.64	5.00	0.02	0.06	0.08
4.15	0.67	0.64	5.00	0.02	0.06	0.08
4.20	0.67	0.64	5.00	0.02	0.06	0.08
4.25	0.67	0.64	5.00	0.02	0.06	0.08
4.30	0.67	0.64	5.00	0.02	0.06	0.08
4.35	0.67	0.64	5.00	0.02	0.06	0.08
4.40	0.67	0.64	5.00	0.02	0.06	0.08
4.45	0.67	0.64	5.00	0.02	0.06	0.08
4.50	0.67	0.64	5.00	0.02	0.06	0.08
4.55	0.67	0.64	5.00	0.02	0.06	0.08
4.60	0.67	0.64	5.00	0.02	0.06	0.08
4.65	0.67	0.64	5.00	0.02	0.06	0.08
4.70	0.67	0.64	5.00	0.02	0.06	0.08
4.75	0.67	0.64	5.00	0.02	0.06	0.08
4.80	0.67	0.64	5.00	0.02	0.06	0.08
4.85	0.67	0.64	5.00	0.02	0.06	0.08
4.90	0.67	0.64	5.00	0.02	0.06	0.08
4.95	0.67	0.64	5.00	0.02	0.06	0.08
5.00	0.67	0.64	5.00	0.02	0.06	0.08
5.05	0.67	0.64	5.00	0.02	0.06	0.08
5.10	0.67	0.64	5.00	0.02	0.06	0.08
5.15	0.67	0.64	5.00	0.02	0.06	0.08
5.20	0.67	0.64	5.00	0.02	0.05	0.08
5.25	0.67	0.64	5.00	0.02	0.05	0.08
5.30	0.67	0.64	5.00	0.02	0.05	0.08
5.35	0.67	0.64	5.00	0.02	0.05	0.08
5.40	0.67	0.64	5.00	0.02	0.05	0.08
5.45	0.67	0.64	5.00	0.02	0.05	0.08
5.50	0.67	0.64	5.00	0.02	0.05	0.08
5.55	0.67	0.64	5.00	0.02	0.05	0.08
5.60	0.67	0.64	5.00	0.02	0.05	0.08
5.65	0.67	0.64	5.00	0.02	0.05	0.07
5.70	0.67	0.64	5.00	0.02	0.05	0.07
5.75	0.67	0.64	5.00	0.02	0.05	0.07
5.80	0.67	0.64	5.00	0.02	0.05	0.07
5.85	0.67	0.64	5.00	0.02	0.05	0.07
5.90	0.67	0.64	5.00	0.02	0.05	0.07
5.95	0.67	0.64	5.00	0.02	0.05	0.07
6.00	0.67	0.64	5.00	0.02	0.05	0.07
6.05	0.67	0.64	5.00	0.02	0.05	0.07
6.10	0.67	0.64	5.00	0.02	0.05	0.07
6.15	0.67	0.64	5.00	0.02	0.05	0.07
6.20	0.67	0.64	5.00	0.02	0.05	0.07
6.25	0.67	0.64	5.00	0.02	0.05	0.07
6.30	0.67	0.64	5.00	0.02	0.05	0.07
6.35	0.67	0.64	5.00	0.02	0.05	0.07
6.40	0.67	0.64	5.00	0.02	0.05	0.07
6.45	0.67	0.64	5.00	0.02	0.05	0.07
6.50	0.67	0.64	5.00	0.02	0.05	0.07
6.55	0.67	0.64	5.00	0.02	0.04	0.07

						Liquefy.sum
6.60	0.67	0.64	5.00	0.02	0.04	0.07
6.65	0.67	0.64	5.00	0.02	0.04	0.07
6.70	0.67	0.64	5.00	0.02	0.04	0.07
6.75	0.67	0.64	5.00	0.02	0.04	0.07
6.80	0.67	0.64	5.00	0.02	0.04	0.07
6.85	0.67	0.64	5.00	0.02	0.04	0.06
6.90	0.67	0.64	5.00	0.02	0.04	0.06
6.95	0.67	0.64	5.00	0.02	0.04	0.06
7.00	0.67	0.64	5.00	0.02	0.04	0.06
7.05	0.67	0.64	5.00	0.02	0.04	0.06
7.10	0.67	0.64	5.00	0.02	0.04	0.06
7.15	0.67	0.64	5.00	0.02	0.04	0.06
7.20	0.67	0.64	5.00	0.02	0.04	0.06
7.25	0.67	0.64	5.00	0.02	0.04	0.06
7.30	0.67	0.64	5.00	0.02	0.04	0.06
7.35	0.67	0.64	5.00	0.02	0.04	0.06
7.40	0.67	0.64	5.00	0.02	0.03	0.06
7.45	0.67	0.64	5.00	0.02	0.03	0.06
7.50	0.67	0.64	5.00	0.02	0.03	0.06
7.55	0.67	0.64	5.00	0.02	0.03	0.06
7.60	0.67	0.64	5.00	0.02	0.03	0.05
7.65	0.67	0.64	5.00	0.02	0.03	0.05
7.70	0.67	0.64	5.00	0.02	0.03	0.05
7.75	0.67	0.64	5.00	0.02	0.03	0.05
7.80	0.67	0.64	5.00	0.02	0.03	0.05
7.85	0.67	0.64	5.00	0.02	0.03	0.05
7.90	0.67	0.64	5.00	0.02	0.03	0.05
7.95	0.67	0.64	5.00	0.02	0.02	0.05
8.00	0.67	0.64	5.00	0.02	0.02	0.05
8.05	0.67	0.64	5.00	0.02	0.02	0.05
8.10	0.67	0.64	5.00	0.02	0.02	0.04
8.15	0.67	0.64	5.00	0.02	0.02	0.04
8.20	0.67	0.64	5.00	0.02	0.02	0.04
8.25	0.67	0.64	5.00	0.02	0.02	0.04
8.30	0.67	0.64	5.00	0.02	0.02	0.04
8.35	0.67	0.64	5.00	0.02	0.02	0.04
8.40	0.67	0.64	5.00	0.02	0.01	0.04
8.45	0.67	0.64	5.00	0.02	0.01	0.04
8.50	0.67	0.64	5.00	0.02	0.01	0.04
8.55	0.67	0.64	5.00	0.02	0.01	0.03
8.60	0.67	0.64	5.00	0.02	0.01	0.03
8.65	0.67	0.64	5.00	0.02	0.01	0.03
8.70	0.67	0.64	5.00	0.02	0.01	0.03
8.75	0.67	0.64	5.00	0.02	0.01	0.03
8.80	0.67	0.64	5.00	0.02	0.01	0.03
8.85	0.67	0.64	5.00	0.02	0.01	0.03
8.90	0.67	0.64	5.00	0.02	0.01	0.03
8.95	0.67	0.64	5.00	0.02	0.01	0.03
9.00	0.67	0.64	5.00	0.02	0.01	0.03
9.05	0.67	0.64	5.00	0.02	0.01	0.03
9.10	0.67	0.64	5.00	0.02	0.01	0.03
9.15	0.67	0.64	5.00	0.02	0.01	0.03
9.20	0.67	0.64	5.00	0.02	0.01	0.03
9.25	0.67	0.64	5.00	0.02	0.00	0.03
9.30	0.67	0.64	5.00	0.02	0.00	0.03
9.35	0.67	0.64	5.00	0.02	0.00	0.03
9.40	0.67	0.64	5.00	0.02	0.00	0.03
9.45	0.67	0.64	5.00	0.02	0.00	0.03
9.50	0.67	0.64	5.00	0.02	0.00	0.03
9.55	0.67	0.64	5.00	0.02	0.00	0.03
9.60	0.67	0.64	5.00	0.02	0.00	0.03
9.65	0.67	0.64	5.00	0.02	0.00	0.03
9.70	0.67	0.64	5.00	0.02	0.00	0.02
9.75	0.67	0.64	5.00	0.02	0.00	0.02
9.80	0.67	0.64	5.00	0.02	0.00	0.02
9.85	0.67	0.64	5.00	0.02	0.00	0.02
9.90	0.67	0.64	5.00	0.02	0.00	0.02

						Liquefy.sum
9.95	0.67	0.64	5.00	0.02	0.00	0.02
10.00	2.00	0.64	5.00	0.02	0.00	0.02
10.05	2.00	0.64	5.00	0.02	0.00	0.02
10.10	2.00	0.64	5.00	0.02	0.00	0.02
10.15	2.00	0.64	5.00	0.02	0.00	0.02
10.20	2.00	0.64	5.00	0.02	0.00	0.02
10.25	2.00	0.64	5.00	0.02	0.00	0.02
10.30	2.00	0.64	5.00	0.02	0.00	0.02
10.35	2.00	0.63	5.00	0.02	0.00	0.02
10.40	2.00	0.63	5.00	0.02	0.00	0.02
10.45	2.00	0.63	5.00	0.02	0.00	0.02
10.50	2.00	0.63	5.00	0.02	0.00	0.02
10.55	2.00	0.63	5.00	0.02	0.00	0.02
10.60	2.00	0.63	5.00	0.02	0.00	0.02
10.65	2.00	0.63	5.00	0.02	0.00	0.02
10.70	2.00	0.63	5.00	0.02	0.00	0.02
10.75	2.00	0.63	5.00	0.02	0.00	0.02
10.80	2.00	0.63	5.00	0.02	0.00	0.02
10.85	2.00	0.63	5.00	0.02	0.00	0.02
10.90	2.00	0.63	5.00	0.02	0.00	0.02
10.95	2.00	0.63	5.00	0.02	0.00	0.02
11.00	2.00	0.63	5.00	0.02	0.00	0.02
11.05	2.00	0.63	5.00	0.02	0.00	0.02
11.10	2.00	0.63	5.00	0.02	0.00	0.02
11.15	2.00	0.63	5.00	0.02	0.00	0.02
11.20	2.00	0.63	5.00	0.02	0.00	0.02
11.25	2.00	0.63	5.00	0.02	0.00	0.02
11.30	2.00	0.63	5.00	0.02	0.00	0.02
11.35	2.00	0.63	5.00	0.02	0.00	0.02
11.40	2.00	0.63	5.00	0.02	0.00	0.02
11.45	2.00	0.63	5.00	0.02	0.00	0.02
11.50	2.00	0.63	5.00	0.02	0.00	0.02
11.55	2.00	0.63	5.00	0.02	0.00	0.02
11.60	2.00	0.63	5.00	0.02	0.00	0.02
11.65	2.00	0.63	5.00	0.02	0.00	0.02
11.70	2.00	0.63	5.00	0.02	0.00	0.02
11.75	2.00	0.63	5.00	0.02	0.00	0.02
11.80	2.00	0.63	5.00	0.02	0.00	0.02
11.85	2.00	0.63	5.00	0.02	0.00	0.02
11.90	2.00	0.63	5.00	0.02	0.00	0.02
11.95	2.00	0.63	5.00	0.02	0.00	0.02
12.00	2.00	0.63	5.00	0.02	0.00	0.02
12.05	2.00	0.63	5.00	0.02	0.00	0.02
12.10	2.00	0.63	5.00	0.02	0.00	0.02
12.15	2.00	0.63	5.00	0.02	0.00	0.02
12.20	2.00	0.63	5.00	0.02	0.00	0.02
12.25	2.00	0.63	5.00	0.02	0.00	0.02
12.30	2.00	0.63	5.00	0.02	0.00	0.02
12.35	2.00	0.63	5.00	0.02	0.00	0.02
12.40	2.00	0.63	5.00	0.02	0.00	0.02
12.45	2.00	0.63	5.00	0.02	0.00	0.02
12.50	2.00	0.63	5.00	0.02	0.00	0.02
12.55	2.00	0.63	5.00	0.02	0.00	0.02
12.60	2.00	0.63	5.00	0.02	0.00	0.02
12.65	2.00	0.63	5.00	0.02	0.00	0.02
12.70	2.00	0.63	5.00	0.02	0.00	0.02
12.75	2.00	0.63	5.00	0.02	0.00	0.02
12.80	2.00	0.63	5.00	0.02	0.00	0.02
12.85	2.00	0.63	5.00	0.02	0.00	0.02
12.90	2.00	0.63	5.00	0.02	0.00	0.02
12.95	2.00	0.63	5.00	0.02	0.00	0.02
13.00	2.00	0.63	5.00	0.02	0.00	0.02
13.05	2.00	0.63	5.00	0.02	0.00	0.02
13.10	2.00	0.63	5.00	0.02	0.00	0.02
13.15	2.00	0.63	5.00	0.02	0.00	0.02
13.20	2.00	0.63	5.00	0.02	0.00	0.02
13.25	2.00	0.63	5.00	0.02	0.00	0.02

13.30	2.00	0.63	5.00	0.02	0.00	0.02
13.35	2.00	0.63	5.00	0.02	0.00	0.02
13.40	2.00	0.63	5.00	0.02	0.00	0.02
13.45	2.00	0.63	5.00	0.02	0.00	0.02
13.50	2.00	0.63	5.00	0.02	0.00	0.02
13.55	2.00	0.63	5.00	0.02	0.00	0.02
13.60	2.00	0.63	5.00	0.02	0.00	0.02
13.65	2.00	0.63	5.00	0.02	0.00	0.02
13.70	2.00	0.63	5.00	0.02	0.00	0.02
13.75	2.00	0.63	5.00	0.02	0.00	0.02
13.80	2.00	0.63	5.00	0.02	0.00	0.02
13.85	2.00	0.63	5.00	0.02	0.00	0.02
13.90	2.00	0.63	5.00	0.02	0.00	0.02
13.95	2.00	0.63	5.00	0.02	0.00	0.02
14.00	2.00	0.63	5.00	0.02	0.00	0.02
14.05	2.00	0.63	5.00	0.02	0.00	0.02
14.10	2.00	0.63	5.00	0.02	0.00	0.02
14.15	2.00	0.63	5.00	0.02	0.00	0.02
14.20	2.00	0.63	5.00	0.02	0.00	0.02
14.25	2.00	0.63	5.00	0.02	0.00	0.02
14.30	2.00	0.63	5.00	0.02	0.00	0.02
14.35	2.00	0.63	5.00	0.02	0.00	0.02
14.40	2.00	0.63	5.00	0.02	0.00	0.02
14.45	2.00	0.63	5.00	0.02	0.00	0.02
14.50	2.00	0.63	5.00	0.02	0.00	0.02
14.55	2.00	0.63	5.00	0.02	0.00	0.02
14.60	2.00	0.63	5.00	0.02	0.00	0.02
14.65	2.00	0.63	5.00	0.02	0.00	0.02
14.70	2.00	0.63	5.00	0.02	0.00	0.02
14.75	2.00	0.63	5.00	0.02	0.00	0.02
14.80	2.00	0.63	5.00	0.02	0.00	0.02
14.85	2.00	0.63	5.00	0.02	0.00	0.02
14.90	2.00	0.63	5.00	0.02	0.00	0.02
14.95	2.00	0.63	5.00	0.02	0.00	0.02
15.00	2.00	0.63	5.00	0.02	0.00	0.02
15.05	2.00	0.63	5.00	0.02	0.00	0.02
15.10	2.00	0.63	5.00	0.02	0.00	0.02
15.15	2.00	0.63	5.00	0.02	0.00	0.02
15.20	2.00	0.63	5.00	0.02	0.00	0.02
15.25	2.00	0.63	5.00	0.02	0.00	0.02
15.30	2.00	0.63	5.00	0.02	0.00	0.02
15.35	2.00	0.63	5.00	0.02	0.00	0.02
15.40	2.00	0.63	5.00	0.02	0.00	0.02
15.45	2.00	0.63	5.00	0.02	0.00	0.02
15.50	2.00	0.63	5.00	0.02	0.00	0.02
15.55	2.00	0.63	5.00	0.02	0.00	0.02
15.60	2.00	0.63	5.00	0.02	0.00	0.02
15.65	2.00	0.63	5.00	0.02	0.00	0.02
15.70	2.00	0.63	5.00	0.02	0.00	0.02
15.75	2.00	0.63	5.00	0.02	0.00	0.02
15.80	2.00	0.63	5.00	0.02	0.00	0.02
15.85	2.00	0.63	5.00	0.02	0.00	0.02
15.90	2.00	0.63	5.00	0.02	0.00	0.02
15.95	2.00	0.63	5.00	0.02	0.00	0.02
16.00	2.00	0.63	5.00	0.02	0.00	0.02
16.05	2.00	0.63	5.00	0.02	0.00	0.02
16.10	2.00	0.63	5.00	0.02	0.00	0.02
16.15	2.00	0.63	5.00	0.02	0.00	0.02
16.20	2.00	0.63	5.00	0.02	0.00	0.02
16.25	2.00	0.63	5.00	0.02	0.00	0.02
16.30	2.00	0.63	5.00	0.02	0.00	0.02
16.35	2.00	0.63	5.00	0.02	0.00	0.02
16.40	2.00	0.63	5.00	0.02	0.00	0.02
16.45	2.00	0.63	5.00	0.02	0.00	0.02
16.50	2.00	0.63	5.00	0.02	0.00	0.02
16.55	2.00	0.64	5.00	0.02	0.00	0.02
16.60	2.00	0.64	5.00	0.02	0.00	0.02

16.65	2.00	0.64	5.00	0.02	0.00	0.02
16.70	2.00	0.64	5.00	0.02	0.00	0.02
16.75	2.00	0.64	5.00	0.02	0.00	0.02
16.80	2.00	0.64	5.00	0.02	0.00	0.02
16.85	2.00	0.64	5.00	0.02	0.00	0.02
16.90	2.00	0.64	5.00	0.02	0.00	0.02
16.95	2.00	0.64	5.00	0.02	0.00	0.02
17.00	2.00	0.64	5.00	0.02	0.00	0.02
17.05	2.00	0.64	5.00	0.02	0.00	0.02
17.10	2.00	0.64	5.00	0.02	0.00	0.02
17.15	2.00	0.64	5.00	0.02	0.00	0.02
17.20	2.00	0.65	5.00	0.02	0.00	0.02
17.25	2.00	0.65	5.00	0.02	0.00	0.02
17.30	2.00	0.65	5.00	0.02	0.00	0.02
17.35	2.00	0.65	5.00	0.02	0.00	0.02
17.40	2.00	0.65	5.00	0.02	0.00	0.02
17.45	2.00	0.65	5.00	0.02	0.00	0.02
17.50	2.00	0.65	5.00	0.02	0.00	0.02
17.55	2.00	0.65	5.00	0.02	0.00	0.02
17.60	2.00	0.65	5.00	0.02	0.00	0.02
17.65	2.00	0.65	5.00	0.02	0.00	0.02
17.70	2.00	0.65	5.00	0.02	0.00	0.02
17.75	2.00	0.65	5.00	0.02	0.00	0.02
17.80	2.00	0.65	5.00	0.02	0.00	0.02
17.85	2.00	0.66	5.00	0.02	0.00	0.02
17.90	2.00	0.66	5.00	0.02	0.00	0.02
17.95	2.00	0.66	5.00	0.02	0.00	0.02
18.00	2.00	0.66	5.00	0.02	0.00	0.02
18.05	2.00	0.66	5.00	0.02	0.00	0.02
18.10	2.00	0.66	5.00	0.02	0.00	0.02
18.15	2.00	0.66	5.00	0.02	0.00	0.02
18.20	2.00	0.66	5.00	0.02	0.00	0.02
18.25	2.00	0.66	5.00	0.02	0.00	0.02
18.30	2.00	0.66	5.00	0.02	0.00	0.02
18.35	2.00	0.66	5.00	0.02	0.00	0.02
18.40	2.00	0.66	5.00	0.02	0.00	0.02
18.45	2.00	0.66	5.00	0.02	0.00	0.02
18.50	2.00	0.67	5.00	0.02	0.00	0.02
18.55	2.00	0.67	5.00	0.02	0.00	0.02
18.60	2.00	0.67	5.00	0.02	0.00	0.02
18.65	2.00	0.67	5.00	0.02	0.00	0.02
18.70	2.00	0.67	5.00	0.02	0.00	0.02
18.75	2.00	0.67	5.00	0.02	0.00	0.02
18.80	2.00	0.67	5.00	0.02	0.00	0.02
18.85	2.00	0.67	5.00	0.02	0.00	0.02
18.90	2.00	0.67	5.00	0.02	0.00	0.02
18.95	2.00	0.67	5.00	0.02	0.00	0.02
19.00	2.00	0.67	5.00	0.02	0.00	0.02
19.05	2.00	0.67	5.00	0.02	0.00	0.02
19.10	2.00	0.67	5.00	0.02	0.00	0.02
19.15	2.00	0.67	5.00	0.02	0.00	0.02
19.20	2.00	0.67	5.00	0.02	0.00	0.02
19.25	2.00	0.68	5.00	0.02	0.00	0.02
19.30	2.00	0.68	5.00	0.02	0.00	0.02
19.35	2.00	0.68	5.00	0.02	0.00	0.02
19.40	2.00	0.68	5.00	0.02	0.00	0.02
19.45	2.00	0.68	5.00	0.02	0.00	0.02
19.50	2.00	0.68	5.00	0.02	0.00	0.02
19.55	2.00	0.68	5.00	0.02	0.00	0.02
19.60	2.00	0.68	5.00	0.02	0.00	0.02
19.65	2.00	0.68	5.00	0.02	0.00	0.02
19.70	2.00	0.68	5.00	0.02	0.00	0.02
19.75	2.00	0.68	5.00	0.02	0.00	0.02
19.80	2.00	0.68	5.00	0.02	0.00	0.02
19.85	2.00	0.68	5.00	0.02	0.00	0.02
19.90	2.00	0.68	5.00	0.02	0.00	0.02
19.95	2.00	0.68	5.00	0.02	0.00	0.02

20.00	2.00	0.69	5.00	0.02	0.00	0.02
20.05	2.00	0.69	5.00	0.02	0.00	0.02
20.10	2.00	0.69	5.00	0.02	0.00	0.02
20.15	2.00	0.69	5.00	0.02	0.00	0.02
20.20	2.00	0.69	5.00	0.02	0.00	0.02
20.25	2.00	0.69	5.00	0.02	0.00	0.02
20.30	2.00	0.69	5.00	0.02	0.00	0.02
20.35	2.00	0.69	5.00	0.02	0.00	0.02
20.40	2.00	0.69	5.00	0.02	0.00	0.02
20.45	2.00	0.69	5.00	0.02	0.00	0.02
20.50	2.00	0.69	5.00	0.02	0.00	0.02
20.55	2.00	0.69	5.00	0.02	0.00	0.02
20.60	2.00	0.69	5.00	0.02	0.00	0.02
20.65	2.00	0.69	5.00	0.02	0.00	0.02
20.70	2.00	0.69	5.00	0.02	0.00	0.02
20.75	2.00	0.70	5.00	0.02	0.00	0.02
20.80	2.00	0.70	5.00	0.02	0.00	0.02
20.85	2.00	0.70	5.00	0.02	0.00	0.02
20.90	2.00	0.70	5.00	0.02	0.00	0.02
20.95	2.00	0.70	5.00	0.02	0.00	0.02
21.00	2.00	0.70	5.00	0.02	0.00	0.02
21.05	2.00	0.70	5.00	0.02	0.00	0.02
21.10	2.00	0.70	5.00	0.02	0.00	0.02
21.15	2.00	0.70	5.00	0.02	0.00	0.02
21.20	2.00	0.70	5.00	0.02	0.00	0.02
21.25	2.00	0.70	5.00	0.02	0.00	0.02
21.30	2.00	0.70	5.00	0.02	0.00	0.02
21.35	2.00	0.70	5.00	0.02	0.00	0.02
21.40	2.00	0.70	5.00	0.02	0.00	0.02
21.45	2.00	0.70	5.00	0.02	0.00	0.02
21.50	2.00	0.70	5.00	0.02	0.00	0.02
21.55	2.00	0.70	5.00	0.02	0.00	0.02
21.60	2.00	0.71	5.00	0.02	0.00	0.02
21.65	2.00	0.71	5.00	0.02	0.00	0.02
21.70	2.00	0.71	5.00	0.02	0.00	0.02
21.75	2.00	0.71	5.00	0.02	0.00	0.02
21.80	2.00	0.71	5.00	0.02	0.00	0.02
21.85	2.00	0.71	5.00	0.02	0.00	0.02
21.90	2.00	0.71	5.00	0.02	0.00	0.02
21.95	2.00	0.71	5.00	0.02	0.00	0.02
22.00	2.00	0.71	5.00	0.02	0.00	0.02
22.05	2.00	0.71	5.00	0.02	0.00	0.02
22.10	2.00	0.71	5.00	0.02	0.00	0.02
22.15	2.00	0.71	5.00	0.02	0.00	0.02
22.20	2.00	0.71	5.00	0.02	0.00	0.02
22.25	2.00	0.71	5.00	0.02	0.00	0.02
22.30	2.00	0.71	5.00	0.02	0.00	0.02
22.35	2.00	0.71	5.00	0.02	0.00	0.02
22.40	2.00	0.71	5.00	0.02	0.00	0.02
22.45	2.00	0.72	5.00	0.02	0.00	0.02
22.50	2.00	0.72	5.00	0.02	0.00	0.02
22.55	2.00	0.72	5.00	0.02	0.00	0.02
22.60	2.00	0.72	5.00	0.02	0.00	0.02
22.65	2.00	0.72	5.00	0.02	0.00	0.02
22.70	2.00	0.72	5.00	0.02	0.00	0.02
22.75	2.00	0.72	5.00	0.02	0.00	0.02
22.80	2.00	0.72	5.00	0.02	0.00	0.02
22.85	2.00	0.72	5.00	0.02	0.00	0.02
22.90	2.00	0.72	5.00	0.02	0.00	0.02
22.95	2.00	0.72	5.00	0.02	0.00	0.02
23.00	2.00	0.72	5.00	0.02	0.00	0.02
23.05	2.00	0.72	5.00	0.02	0.00	0.02
23.10	2.00	0.72	5.00	0.02	0.00	0.02
23.15	2.00	0.72	5.00	0.02	0.00	0.02
23.20	2.00	0.72	5.00	0.02	0.00	0.02
23.25	2.00	0.72	5.00	0.02	0.00	0.02
23.30	2.00	0.72	5.00	0.02	0.00	0.02

23.35	2.00	0.73	5.00	0.02	0.00	0.02
23.40	2.00	0.73	5.00	0.02	0.00	0.02
23.45	2.00	0.73	5.00	0.02	0.00	0.02
23.50	2.00	0.73	5.00	0.02	0.00	0.02
23.55	2.00	0.73	5.00	0.02	0.00	0.02
23.60	2.00	0.73	5.00	0.02	0.00	0.02
23.65	2.00	0.73	5.00	0.02	0.00	0.02
23.70	2.00	0.73	5.00	0.02	0.00	0.02
23.75	2.00	0.73	5.00	0.02	0.00	0.02
23.80	2.00	0.73	5.00	0.02	0.00	0.02
23.85	2.00	0.73	5.00	0.02	0.00	0.02
23.90	2.00	0.73	5.00	0.02	0.00	0.02
23.95	2.00	0.73	5.00	0.02	0.00	0.02
24.00	2.00	0.73	5.00	0.02	0.00	0.02
24.05	2.00	0.73	5.00	0.02	0.00	0.02
24.10	2.00	0.73	5.00	0.02	0.00	0.02
24.15	2.00	0.73	5.00	0.02	0.00	0.02
24.20	2.00	0.73	5.00	0.02	0.00	0.02
24.25	2.00	0.74	5.00	0.02	0.00	0.02
24.30	2.00	0.74	5.00	0.02	0.00	0.02
24.35	2.00	0.74	5.00	0.02	0.00	0.02
24.40	2.00	0.74	5.00	0.02	0.00	0.02
24.45	2.00	0.74	5.00	0.02	0.00	0.02
24.50	2.00	0.74	5.00	0.02	0.00	0.02
24.55	2.00	0.74	5.00	0.02	0.00	0.02
24.60	2.00	0.74	5.00	0.02	0.00	0.02
24.65	2.00	0.74	5.00	0.02	0.00	0.02
24.70	2.00	0.74	5.00	0.02	0.00	0.02
24.75	2.00	0.74	5.00	0.02	0.00	0.02
24.80	2.00	0.74	5.00	0.02	0.00	0.02
24.85	2.00	0.74	5.00	0.02	0.00	0.02
24.90	2.00	0.74	5.00	0.02	0.00	0.02
24.95	2.00	0.74	5.00	0.02	0.00	0.02
25.00	2.00	0.74	5.00	0.02	0.00	0.02
25.05	0.67	0.74	0.90*	0.02	0.00	0.02
25.10	0.67	0.74	0.90*	0.02	0.00	0.02
25.15	0.67	0.74	0.90*	0.02	0.00	0.02
25.20	0.67	0.74	0.90*	0.02	0.00	0.02
25.25	0.67	0.75	0.90*	0.01	0.00	0.01
25.30	0.67	0.75	0.90*	0.01	0.00	0.01
25.35	0.67	0.75	0.90*	0.01	0.00	0.01
25.40	0.67	0.75	0.90*	0.01	0.00	0.01
25.45	0.67	0.75	0.90*	0.01	0.00	0.01
25.50	0.67	0.75	0.90*	0.00	0.00	0.00
25.55	0.67	0.75	0.90*	0.00	0.00	0.00
25.60	0.67	0.75	0.89*	0.00	0.00	0.00
25.65	0.67	0.75	0.89*	0.00	0.00	0.00
25.70	0.67	0.75	0.89*	0.00	0.00	0.00
25.75	0.67	0.75	0.89*	0.00	0.00	0.00
25.80	0.67	0.75	0.89*	0.00	0.00	0.00
25.85	0.67	0.75	0.89*	0.00	0.00	0.00
25.90	0.67	0.75	0.89*	0.00	0.00	0.00
25.95	0.67	0.75	0.89*	0.00	0.00	0.00
26.00	0.67	0.75	0.89*	0.00	0.00	0.00
26.05	0.67	0.75	0.89*	0.00	0.00	0.00
26.10	0.67	0.75	0.89*	0.00	0.00	0.00
26.15	0.67	0.75	0.89*	0.00	0.00	0.00
26.20	0.67	0.75	0.89*	0.00	0.00	0.00
26.25	0.67	0.75	0.89*	0.00	0.00	0.00
26.30	0.67	0.76	0.89*	0.00	0.00	0.00
26.35	0.67	0.76	0.89*	0.00	0.00	0.00
26.40	0.67	0.76	0.89*	0.00	0.00	0.00
26.45	0.67	0.76	0.89*	0.00	0.00	0.00
26.50	0.67	0.76	0.88*	0.00	0.00	0.00
26.55	0.67	0.76	0.88*	0.00	0.00	0.00
26.60	0.67	0.76	0.88*	0.00	0.00	0.00
26.65	0.67	0.76	0.88*	0.00	0.00	0.00

26.70	0.67	0.76	0.88*	0.00	0.00	0.00
26.75	0.67	0.76	0.88*	0.00	0.00	0.00
26.80	0.67	0.76	0.88*	0.00	0.00	0.00
26.85	0.67	0.76	0.88*	0.00	0.00	0.00
26.90	0.67	0.76	0.88*	0.00	0.00	0.00
26.95	0.67	0.76	0.88*	0.00	0.00	0.00
27.00	0.67	0.76	0.88*	0.00	0.00	0.00
27.05	0.67	0.76	0.88*	0.00	0.00	0.00
27.10	0.67	0.76	0.88*	0.00	0.00	0.00
27.15	0.67	0.76	0.88*	0.00	0.00	0.00
27.20	0.67	0.76	0.88*	0.00	0.00	0.00
27.25	0.67	0.76	0.88*	0.00	0.00	0.00
27.30	0.67	0.76	0.88*	0.00	0.00	0.00
27.35	0.67	0.76	0.88*	0.00	0.00	0.00
27.40	0.67	0.76	0.88*	0.00	0.00	0.00
27.45	0.67	0.77	0.87*	0.00	0.00	0.00
27.50	0.67	0.77	0.87*	0.00	0.00	0.00
27.55	0.67	0.77	0.87*	0.00	0.00	0.00
27.60	0.67	0.77	0.87*	0.00	0.00	0.00
27.65	0.67	0.77	0.87*	0.00	0.00	0.00
27.70	0.67	0.77	0.87*	0.00	0.00	0.00
27.75	0.67	0.77	0.87*	0.00	0.00	0.00
27.80	0.67	0.77	0.87*	0.00	0.00	0.00
27.85	0.67	0.77	0.87*	0.00	0.00	0.00
27.90	0.67	0.77	0.87*	0.00	0.00	0.00
27.95	0.67	0.77	0.87*	0.00	0.00	0.00
28.00	0.67	0.77	0.87*	0.00	0.00	0.00
28.05	0.67	0.77	0.87*	0.00	0.00	0.00
28.10	0.67	0.77	0.87*	0.00	0.00	0.00
28.15	0.67	0.77	0.87*	0.00	0.00	0.00
28.20	0.67	0.77	0.87*	0.00	0.00	0.00
28.25	0.67	0.77	0.87*	0.00	0.00	0.00
28.30	0.67	0.77	0.87*	0.00	0.00	0.00
28.35	0.67	0.77	0.87*	0.00	0.00	0.00
28.40	0.67	0.77	0.87*	0.00	0.00	0.00
28.45	0.67	0.77	0.87*	0.00	0.00	0.00
28.50	0.67	0.77	0.86*	0.00	0.00	0.00
28.55	0.67	0.77	0.86*	0.00	0.00	0.00
28.60	0.67	0.78	0.86*	0.00	0.00	0.00
28.65	0.67	0.78	0.86*	0.00	0.00	0.00
28.70	0.67	0.78	0.86*	0.00	0.00	0.00
28.75	0.67	0.78	0.86*	0.00	0.00	0.00
28.80	0.67	0.78	0.86*	0.00	0.00	0.00
28.85	0.67	0.78	0.86*	0.00	0.00	0.00
28.90	0.67	0.78	0.86*	0.00	0.00	0.00
28.95	0.67	0.78	0.86*	0.00	0.00	0.00
29.00	0.67	0.78	0.86*	0.00	0.00	0.00
29.05	0.67	0.78	0.86*	0.00	0.00	0.00
29.10	0.67	0.78	0.86*	0.00	0.00	0.00
29.15	0.67	0.78	0.86*	0.00	0.00	0.00
29.20	0.67	0.78	0.86*	0.00	0.00	0.00
29.25	0.67	0.78	0.86*	0.00	0.00	0.00
29.30	0.67	0.78	0.86*	0.00	0.00	0.00
29.35	0.67	0.78	0.86*	0.00	0.00	0.00
29.40	0.67	0.78	0.86*	0.00	0.00	0.00
29.45	0.67	0.78	0.86*	0.00	0.00	0.00
29.50	0.67	0.78	0.86*	0.00	0.00	0.00
29.55	0.67	0.78	0.86*	0.00	0.00	0.00
29.60	0.67	0.78	0.86*	0.00	0.00	0.00
29.65	0.67	0.78	0.85*	0.00	0.00	0.00
29.70	0.67	0.78	0.85*	0.00	0.00	0.00
29.75	0.67	0.78	0.85*	0.00	0.00	0.00
29.80	0.67	0.78	0.85*	0.00	0.00	0.00
29.85	0.67	0.78	0.85*	0.00	0.00	0.00
29.90	0.67	0.79	0.85*	0.00	0.00	0.00
29.95	0.67	0.79	0.85*	0.00	0.00	0.00
30.00	0.67	0.79	0.85*	0.00	0.00	0.00

						Liquefy.sum
30.05	0.67	0.79	0.85*	0.00	0.00	0.00
30.10	0.67	0.79	0.85*	0.00	0.00	0.00
30.15	0.67	0.79	0.85*	0.00	0.00	0.00
30.20	0.67	0.79	0.85*	0.00	0.00	0.00
30.25	0.67	0.79	0.85*	0.00	0.00	0.00
30.30	0.67	0.79	0.85*	0.00	0.00	0.00
30.35	0.67	0.79	0.85*	0.00	0.00	0.00
30.40	0.67	0.79	0.85*	0.00	0.00	0.00
30.45	0.67	0.79	0.85*	0.00	0.00	0.00
30.50	0.67	0.79	0.85*	0.00	0.00	0.00
30.55	0.67	0.79	0.85*	0.00	0.00	0.00
30.60	0.67	0.79	0.85*	0.00	0.00	0.00
30.65	0.67	0.79	0.85*	0.00	0.00	0.00
30.70	0.67	0.79	0.85*	0.00	0.00	0.00
30.75	0.67	0.79	0.85*	0.00	0.00	0.00
30.80	0.67	0.79	0.85*	0.00	0.00	0.00
30.85	0.67	0.79	0.85*	0.00	0.00	0.00
30.90	0.67	0.79	0.85*	0.00	0.00	0.00
30.95	0.67	0.79	0.85*	0.00	0.00	0.00
31.00	0.67	0.79	0.85*	0.00	0.00	0.00
31.05	0.67	0.79	0.85*	0.00	0.00	0.00
31.10	0.67	0.79	0.85*	0.00	0.00	0.00
31.15	0.67	0.79	0.85*	0.00	0.00	0.00
31.20	0.67	0.79	0.85*	0.00	0.00	0.00
31.25	0.67	0.79	0.85*	0.00	0.00	0.00
31.30	0.67	0.79	0.85*	0.00	0.00	0.00
31.35	0.67	0.79	0.85*	0.00	0.00	0.00
31.40	0.67	0.79	0.85*	0.00	0.00	0.00
31.45	0.67	0.79	0.85*	0.00	0.00	0.00
31.50	0.67	0.79	0.85*	0.00	0.00	0.00
31.55	0.67	0.79	0.85*	0.00	0.00	0.00
31.60	0.67	0.79	0.85*	0.00	0.00	0.00
31.65	0.67	0.79	0.85*	0.00	0.00	0.00
31.70	0.67	0.79	0.85*	0.00	0.00	0.00
31.75	0.67	0.79	0.85*	0.00	0.00	0.00
31.80	0.67	0.79	0.85*	0.00	0.00	0.00
31.85	0.67	0.79	0.85*	0.00	0.00	0.00
31.90	0.67	0.79	0.85*	0.00	0.00	0.00
31.95	0.67	0.79	0.85*	0.00	0.00	0.00
32.00	0.67	0.79	0.85*	0.00	0.00	0.00
32.05	0.67	0.79	0.85*	0.00	0.00	0.00
32.10	0.67	0.79	0.85*	0.00	0.00	0.00
32.15	0.67	0.79	0.85*	0.00	0.00	0.00
32.20	0.67	0.79	0.85*	0.00	0.00	0.00
32.25	0.67	0.79	0.85*	0.00	0.00	0.00
32.30	0.67	0.79	0.85*	0.00	0.00	0.00
32.35	0.67	0.79	0.85*	0.00	0.00	0.00
32.40	0.67	0.79	0.85*	0.00	0.00	0.00
32.45	0.67	0.79	0.85*	0.00	0.00	0.00
32.50	0.67	0.79	0.85*	0.00	0.00	0.00
32.55	0.67	0.79	0.85*	0.00	0.00	0.00
32.60	0.67	0.79	0.85*	0.00	0.00	0.00
32.65	0.67	0.79	0.85*	0.00	0.00	0.00
32.70	0.67	0.79	0.85*	0.00	0.00	0.00
32.75	0.67	0.79	0.85*	0.00	0.00	0.00
32.80	0.67	0.79	0.85*	0.00	0.00	0.00
32.85	0.67	0.79	0.85*	0.00	0.00	0.00
32.90	0.67	0.79	0.85*	0.00	0.00	0.00
32.95	0.67	0.79	0.85*	0.00	0.00	0.00
33.00	0.67	0.79	0.85*	0.00	0.00	0.00
33.05	0.67	0.79	0.85*	0.00	0.00	0.00
33.10	0.67	0.79	0.85*	0.00	0.00	0.00
33.15	0.67	0.79	0.85*	0.00	0.00	0.00
33.20	0.67	0.79	0.85*	0.00	0.00	0.00
33.25	0.67	0.79	0.85*	0.00	0.00	0.00
33.30	0.67	0.79	0.85*	0.00	0.00	0.00
33.35	0.67	0.79	0.85*	0.00	0.00	0.00

33.40	0.67	0.79	0.85*	0.00	0.00	0.00
33.45	0.67	0.79	0.85*	0.00	0.00	0.00
33.50	0.67	0.79	0.85*	0.00	0.00	0.00
33.55	0.67	0.79	0.85*	0.00	0.00	0.00
33.60	0.67	0.79	0.85*	0.00	0.00	0.00
33.65	0.67	0.79	0.85*	0.00	0.00	0.00
33.70	0.67	0.79	0.85*	0.00	0.00	0.00
33.75	0.67	0.79	0.85*	0.00	0.00	0.00
33.80	0.67	0.79	0.85*	0.00	0.00	0.00
33.85	0.67	0.79	0.85*	0.00	0.00	0.00
33.90	0.67	0.79	0.85*	0.00	0.00	0.00
33.95	0.67	0.79	0.85*	0.00	0.00	0.00
34.00	0.67	0.79	0.85*	0.00	0.00	0.00
34.05	0.67	0.79	0.85*	0.00	0.00	0.00
34.10	0.67	0.79	0.85*	0.00	0.00	0.00
34.15	0.67	0.79	0.85*	0.00	0.00	0.00
34.20	0.67	0.79	0.85*	0.00	0.00	0.00
34.25	0.67	0.79	0.85*	0.00	0.00	0.00
34.30	0.67	0.79	0.85*	0.00	0.00	0.00
34.35	0.67	0.79	0.85*	0.00	0.00	0.00
34.40	0.67	0.79	0.85*	0.00	0.00	0.00
34.45	0.67	0.79	0.85*	0.00	0.00	0.00
34.50	0.67	0.79	0.85*	0.00	0.00	0.00
34.55	0.67	0.79	0.85*	0.00	0.00	0.00
34.60	0.67	0.79	0.85*	0.00	0.00	0.00
34.65	0.67	0.79	0.85*	0.00	0.00	0.00
34.70	0.67	0.79	0.85*	0.00	0.00	0.00
34.75	0.67	0.79	0.85*	0.00	0.00	0.00
34.80	0.67	0.79	0.85*	0.00	0.00	0.00
34.85	0.67	0.79	0.85*	0.00	0.00	0.00
34.90	0.67	0.79	0.85*	0.00	0.00	0.00
34.95	0.67	0.79	0.85*	0.00	0.00	0.00
35.00	0.67	0.79	0.85*	0.00	0.00	0.00
35.05	0.67	0.79	0.85*	0.00	0.00	0.00
35.10	0.67	0.79	0.85*	0.00	0.00	0.00
35.15	0.67	0.79	0.85*	0.00	0.00	0.00
35.20	0.67	0.79	0.85*	0.00	0.00	0.00
35.25	0.67	0.79	0.85*	0.00	0.00	0.00
35.30	0.67	0.79	0.85*	0.00	0.00	0.00
35.35	0.67	0.79	0.85*	0.00	0.00	0.00
35.40	0.67	0.79	0.85*	0.00	0.00	0.00
35.45	0.67	0.79	0.85*	0.00	0.00	0.00
35.50	0.67	0.79	0.85*	0.00	0.00	0.00
35.55	0.67	0.79	0.85*	0.00	0.00	0.00
35.60	0.67	0.79	0.85*	0.00	0.00	0.00
35.65	0.67	0.79	0.85*	0.00	0.00	0.00
35.70	0.67	0.79	0.85*	0.00	0.00	0.00
35.75	0.67	0.79	0.85*	0.00	0.00	0.00
35.80	0.67	0.79	0.85*	0.00	0.00	0.00
35.85	0.67	0.79	0.85*	0.00	0.00	0.00
35.90	0.67	0.79	0.85*	0.00	0.00	0.00
35.95	0.67	0.79	0.85*	0.00	0.00	0.00
36.00	0.67	0.79	0.85*	0.00	0.00	0.00
36.05	0.67	0.79	0.85*	0.00	0.00	0.00
36.10	0.67	0.79	0.85*	0.00	0.00	0.00
36.15	0.67	0.79	0.85*	0.00	0.00	0.00
36.20	0.67	0.79	0.85*	0.00	0.00	0.00
36.25	0.67	0.79	0.85*	0.00	0.00	0.00
36.30	0.67	0.79	0.85*	0.00	0.00	0.00
36.35	0.67	0.79	0.85*	0.00	0.00	0.00
36.40	0.67	0.79	0.85*	0.00	0.00	0.00
36.45	0.67	0.79	0.85*	0.00	0.00	0.00
36.50	0.67	0.79	0.85*	0.00	0.00	0.00
36.55	0.67	0.79	0.85*	0.00	0.00	0.00
36.60	0.67	0.79	0.85*	0.00	0.00	0.00
36.65	0.67	0.79	0.85*	0.00	0.00	0.00
36.70	0.67	0.79	0.85*	0.00	0.00	0.00

36.75	0.67	0.79	0.85*	0.00	0.00	0.00
36.80	0.67	0.79	0.85*	0.00	0.00	0.00
36.85	0.67	0.79	0.85*	0.00	0.00	0.00
36.90	0.67	0.79	0.85*	0.00	0.00	0.00
36.95	0.67	0.79	0.85*	0.00	0.00	0.00
37.00	0.67	0.79	0.85*	0.00	0.00	0.00
37.05	0.67	0.79	0.85*	0.00	0.00	0.00
37.10	0.67	0.79	0.85*	0.00	0.00	0.00
37.15	0.67	0.79	0.85*	0.00	0.00	0.00
37.20	0.67	0.79	0.85*	0.00	0.00	0.00
37.25	0.67	0.79	0.85*	0.00	0.00	0.00
37.30	0.67	0.79	0.85*	0.00	0.00	0.00
37.35	0.67	0.79	0.85*	0.00	0.00	0.00
37.40	0.67	0.79	0.85*	0.00	0.00	0.00
37.45	0.67	0.79	0.85*	0.00	0.00	0.00
37.50	0.67	0.79	0.85*	0.00	0.00	0.00
37.55	0.67	0.79	0.85*	0.00	0.00	0.00
37.60	0.67	0.79	0.85*	0.00	0.00	0.00
37.65	0.67	0.79	0.85*	0.00	0.00	0.00
37.70	0.67	0.78	0.85*	0.00	0.00	0.00
37.75	0.67	0.78	0.85*	0.00	0.00	0.00
37.80	0.67	0.78	0.85*	0.00	0.00	0.00
37.85	0.67	0.78	0.85*	0.00	0.00	0.00
37.90	0.67	0.78	0.85*	0.00	0.00	0.00
37.95	0.67	0.78	0.85*	0.00	0.00	0.00
38.00	0.67	0.78	0.85*	0.00	0.00	0.00
38.05	0.67	0.78	0.85*	0.00	0.00	0.00
38.10	0.67	0.78	0.85*	0.00	0.00	0.00
38.15	0.67	0.78	0.85*	0.00	0.00	0.00
38.20	0.67	0.78	0.85*	0.00	0.00	0.00
38.25	0.67	0.78	0.85*	0.00	0.00	0.00
38.30	0.67	0.78	0.85*	0.00	0.00	0.00
38.35	0.67	0.78	0.85*	0.00	0.00	0.00
38.40	0.67	0.78	0.85*	0.00	0.00	0.00
38.45	0.67	0.78	0.85*	0.00	0.00	0.00
38.50	0.67	0.78	0.85*	0.00	0.00	0.00
38.55	0.67	0.78	0.85*	0.00	0.00	0.00
38.60	0.66	0.78	0.85*	0.00	0.00	0.00
38.65	0.66	0.78	0.85*	0.00	0.00	0.00
38.70	0.66	0.78	0.85*	0.00	0.00	0.00
38.75	0.66	0.78	0.85*	0.00	0.00	0.00
38.80	0.66	0.78	0.85*	0.00	0.00	0.00
38.85	0.66	0.78	0.85*	0.00	0.00	0.00
38.90	0.66	0.78	0.85*	0.00	0.00	0.00
38.95	0.66	0.78	0.85*	0.00	0.00	0.00
39.00	0.66	0.78	0.85*	0.00	0.00	0.00
39.05	0.66	0.78	0.85*	0.00	0.00	0.00
39.10	0.66	0.78	0.85*	0.00	0.00	0.00
39.15	0.66	0.78	0.85*	0.00	0.00	0.00
39.20	0.66	0.78	0.85*	0.00	0.00	0.00
39.25	0.66	0.78	0.85*	0.00	0.00	0.00
39.30	0.66	0.78	0.85*	0.00	0.00	0.00
39.35	0.66	0.78	0.85*	0.00	0.00	0.00
39.40	0.66	0.78	0.85*	0.00	0.00	0.00
39.45	0.66	0.78	0.85*	0.00	0.00	0.00
39.50	0.66	0.78	0.85*	0.00	0.00	0.00
39.55	0.66	0.78	0.85*	0.00	0.00	0.00
39.60	0.66	0.78	0.85*	0.00	0.00	0.00
39.65	0.66	0.78	0.85*	0.00	0.00	0.00
39.70	0.66	0.78	0.85*	0.00	0.00	0.00
39.75	0.66	0.78	0.85*	0.00	0.00	0.00
39.80	0.66	0.78	0.85*	0.00	0.00	0.00
39.85	0.66	0.78	0.85*	0.00	0.00	0.00
39.90	0.66	0.78	0.85*	0.00	0.00	0.00
39.95	0.66	0.78	0.85*	0.00	0.00	0.00
40.00	0.66	0.78	0.85*	0.00	0.00	0.00
40.05	2.00	0.78	5.00	0.00	0.00	0.00

40.10	2.00	0.78	5.00	0.00	0.00	0.00
40.15	2.00	0.78	5.00	0.00	0.00	0.00
40.20	2.00	0.78	5.00	0.00	0.00	0.00
40.25	2.00	0.78	5.00	0.00	0.00	0.00
40.30	2.00	0.78	5.00	0.00	0.00	0.00
40.35	2.00	0.78	5.00	0.00	0.00	0.00
40.40	2.00	0.78	5.00	0.00	0.00	0.00
40.45	2.00	0.78	5.00	0.00	0.00	0.00
40.50	2.00	0.78	5.00	0.00	0.00	0.00
40.55	2.00	0.78	5.00	0.00	0.00	0.00
40.60	2.00	0.78	5.00	0.00	0.00	0.00
40.65	2.00	0.78	5.00	0.00	0.00	0.00
40.70	2.00	0.78	5.00	0.00	0.00	0.00
40.75	2.00	0.78	5.00	0.00	0.00	0.00
40.80	2.00	0.78	5.00	0.00	0.00	0.00
40.85	2.00	0.78	5.00	0.00	0.00	0.00
40.90	2.00	0.78	5.00	0.00	0.00	0.00
40.95	2.00	0.78	5.00	0.00	0.00	0.00
41.00	2.00	0.78	5.00	0.00	0.00	0.00
41.05	2.00	0.78	5.00	0.00	0.00	0.00
41.10	2.00	0.78	5.00	0.00	0.00	0.00
41.15	2.00	0.78	5.00	0.00	0.00	0.00
41.20	2.00	0.78	5.00	0.00	0.00	0.00
41.25	2.00	0.78	5.00	0.00	0.00	0.00
41.30	2.00	0.78	5.00	0.00	0.00	0.00
41.35	2.00	0.78	5.00	0.00	0.00	0.00
41.40	2.00	0.77	5.00	0.00	0.00	0.00
41.45	2.00	0.77	5.00	0.00	0.00	0.00
41.50	2.00	0.77	5.00	0.00	0.00	0.00
41.55	2.00	0.77	5.00	0.00	0.00	0.00
41.60	2.00	0.77	5.00	0.00	0.00	0.00
41.65	2.00	0.77	5.00	0.00	0.00	0.00
41.70	2.00	0.77	5.00	0.00	0.00	0.00
41.75	2.00	0.77	5.00	0.00	0.00	0.00
41.80	2.00	0.77	5.00	0.00	0.00	0.00
41.85	2.00	0.77	5.00	0.00	0.00	0.00
41.90	2.00	0.77	5.00	0.00	0.00	0.00
41.95	2.00	0.77	5.00	0.00	0.00	0.00
42.00	2.00	0.77	5.00	0.00	0.00	0.00
42.05	2.00	0.77	5.00	0.00	0.00	0.00
42.10	2.00	0.77	5.00	0.00	0.00	0.00
42.15	2.00	0.77	5.00	0.00	0.00	0.00
42.20	2.00	0.77	5.00	0.00	0.00	0.00
42.25	2.00	0.77	5.00	0.00	0.00	0.00
42.30	2.00	0.77	5.00	0.00	0.00	0.00
42.35	2.00	0.77	5.00	0.00	0.00	0.00
42.40	2.00	0.77	5.00	0.00	0.00	0.00
42.45	2.00	0.77	5.00	0.00	0.00	0.00
42.50	2.00	0.77	5.00	0.00	0.00	0.00
42.55	2.00	0.77	5.00	0.00	0.00	0.00
42.60	2.00	0.77	5.00	0.00	0.00	0.00
42.65	2.00	0.77	5.00	0.00	0.00	0.00
42.70	2.00	0.77	5.00	0.00	0.00	0.00
42.75	2.00	0.77	5.00	0.00	0.00	0.00
42.80	2.00	0.77	5.00	0.00	0.00	0.00
42.85	2.00	0.77	5.00	0.00	0.00	0.00
42.90	2.00	0.77	5.00	0.00	0.00	0.00
42.95	2.00	0.77	5.00	0.00	0.00	0.00
43.00	2.00	0.77	5.00	0.00	0.00	0.00
43.05	2.00	0.77	5.00	0.00	0.00	0.00
43.10	2.00	0.77	5.00	0.00	0.00	0.00
43.15	2.00	0.77	5.00	0.00	0.00	0.00
43.20	2.00	0.77	5.00	0.00	0.00	0.00
43.25	2.00	0.77	5.00	0.00	0.00	0.00
43.30	2.00	0.77	5.00	0.00	0.00	0.00
43.35	2.00	0.77	5.00	0.00	0.00	0.00
43.40	2.00	0.77	5.00	0.00	0.00	0.00

43.45	2.00	0.77	5.00	0.00	0.00	0.00
43.50	2.00	0.77	5.00	0.00	0.00	0.00
43.55	2.00	0.77	5.00	0.00	0.00	0.00
43.60	2.00	0.77	5.00	0.00	0.00	0.00
43.65	2.00	0.77	5.00	0.00	0.00	0.00
43.70	2.00	0.77	5.00	0.00	0.00	0.00
43.75	2.00	0.77	5.00	0.00	0.00	0.00
43.80	2.00	0.77	5.00	0.00	0.00	0.00
43.85	2.00	0.77	5.00	0.00	0.00	0.00
43.90	2.00	0.77	5.00	0.00	0.00	0.00
43.95	2.00	0.77	5.00	0.00	0.00	0.00
44.00	2.00	0.77	5.00	0.00	0.00	0.00
44.05	2.00	0.77	5.00	0.00	0.00	0.00
44.10	2.00	0.77	5.00	0.00	0.00	0.00
44.15	2.00	0.77	5.00	0.00	0.00	0.00
44.20	2.00	0.76	5.00	0.00	0.00	0.00
44.25	2.00	0.76	5.00	0.00	0.00	0.00
44.30	2.00	0.76	5.00	0.00	0.00	0.00
44.35	2.00	0.76	5.00	0.00	0.00	0.00
44.40	2.00	0.76	5.00	0.00	0.00	0.00
44.45	2.00	0.76	5.00	0.00	0.00	0.00
44.50	2.00	0.76	5.00	0.00	0.00	0.00
44.55	2.00	0.76	5.00	0.00	0.00	0.00
44.60	2.00	0.76	5.00	0.00	0.00	0.00
44.65	2.00	0.76	5.00	0.00	0.00	0.00
44.70	2.00	0.76	5.00	0.00	0.00	0.00
44.75	2.00	0.76	5.00	0.00	0.00	0.00
44.80	2.00	0.76	5.00	0.00	0.00	0.00
44.85	2.00	0.76	5.00	0.00	0.00	0.00
44.90	2.00	0.76	5.00	0.00	0.00	0.00
44.95	2.00	0.76	5.00	0.00	0.00	0.00
45.00	2.00	0.76	5.00	0.00	0.00	0.00
45.05	2.00	0.76	5.00	0.00	0.00	0.00
45.10	2.00	0.76	5.00	0.00	0.00	0.00
45.15	2.00	0.76	5.00	0.00	0.00	0.00
45.20	2.00	0.76	5.00	0.00	0.00	0.00
45.25	2.00	0.76	5.00	0.00	0.00	0.00
45.30	2.00	0.76	5.00	0.00	0.00	0.00
45.35	2.00	0.76	5.00	0.00	0.00	0.00
45.40	2.00	0.76	5.00	0.00	0.00	0.00
45.45	2.00	0.76	5.00	0.00	0.00	0.00
45.50	2.00	0.76	5.00	0.00	0.00	0.00
45.55	2.00	0.76	5.00	0.00	0.00	0.00
45.60	2.00	0.76	5.00	0.00	0.00	0.00
45.65	2.00	0.76	5.00	0.00	0.00	0.00
45.70	2.00	0.76	5.00	0.00	0.00	0.00
45.75	2.00	0.76	5.00	0.00	0.00	0.00
45.80	2.00	0.76	5.00	0.00	0.00	0.00
45.85	2.00	0.76	5.00	0.00	0.00	0.00
45.90	2.00	0.76	5.00	0.00	0.00	0.00
45.95	2.00	0.76	5.00	0.00	0.00	0.00
46.00	2.00	0.76	5.00	0.00	0.00	0.00
46.05	2.00	0.76	5.00	0.00	0.00	0.00
46.10	2.00	0.76	5.00	0.00	0.00	0.00
46.15	2.00	0.76	5.00	0.00	0.00	0.00
46.20	2.00	0.76	5.00	0.00	0.00	0.00
46.25	2.00	0.76	5.00	0.00	0.00	0.00
46.30	2.00	0.76	5.00	0.00	0.00	0.00
46.35	2.00	0.76	5.00	0.00	0.00	0.00
46.40	2.00	0.76	5.00	0.00	0.00	0.00
46.45	2.00	0.76	5.00	0.00	0.00	0.00
46.50	2.00	0.76	5.00	0.00	0.00	0.00
46.55	2.00	0.76	5.00	0.00	0.00	0.00
46.60	2.00	0.75	5.00	0.00	0.00	0.00
46.65	2.00	0.75	5.00	0.00	0.00	0.00
46.70	2.00	0.75	5.00	0.00	0.00	0.00
46.75	2.00	0.75	5.00	0.00	0.00	0.00

46.80	2.00	0.75	5.00	0.00	0.00	0.00
46.85	2.00	0.75	5.00	0.00	0.00	0.00
46.90	2.00	0.75	5.00	0.00	0.00	0.00
46.95	2.00	0.75	5.00	0.00	0.00	0.00
47.00	2.00	0.75	5.00	0.00	0.00	0.00
47.05	2.00	0.75	5.00	0.00	0.00	0.00
47.10	2.00	0.75	5.00	0.00	0.00	0.00
47.15	2.00	0.75	5.00	0.00	0.00	0.00
47.20	2.00	0.75	5.00	0.00	0.00	0.00
47.25	2.00	0.75	5.00	0.00	0.00	0.00
47.30	2.00	0.75	5.00	0.00	0.00	0.00
47.35	2.00	0.75	5.00	0.00	0.00	0.00
47.40	2.00	0.75	5.00	0.00	0.00	0.00
47.45	2.00	0.75	5.00	0.00	0.00	0.00
47.50	2.00	0.75	5.00	0.00	0.00	0.00
47.55	2.00	0.75	5.00	0.00	0.00	0.00
47.60	2.00	0.75	5.00	0.00	0.00	0.00
47.65	2.00	0.75	5.00	0.00	0.00	0.00
47.70	2.00	0.75	5.00	0.00	0.00	0.00
47.75	2.00	0.75	5.00	0.00	0.00	0.00
47.80	2.00	0.75	5.00	0.00	0.00	0.00
47.85	2.00	0.75	5.00	0.00	0.00	0.00
47.90	2.00	0.75	5.00	0.00	0.00	0.00
47.95	2.00	0.75	5.00	0.00	0.00	0.00
48.00	2.00	0.75	5.00	0.00	0.00	0.00
48.05	2.00	0.75	5.00	0.00	0.00	0.00
48.10	2.00	0.75	5.00	0.00	0.00	0.00
48.15	2.00	0.75	5.00	0.00	0.00	0.00
48.20	2.00	0.75	5.00	0.00	0.00	0.00
48.25	2.00	0.75	5.00	0.00	0.00	0.00
48.30	2.00	0.75	5.00	0.00	0.00	0.00
48.35	2.00	0.75	5.00	0.00	0.00	0.00
48.40	2.00	0.75	5.00	0.00	0.00	0.00
48.45	2.00	0.75	5.00	0.00	0.00	0.00
48.50	2.00	0.75	5.00	0.00	0.00	0.00
48.55	2.00	0.75	5.00	0.00	0.00	0.00
48.60	2.00	0.75	5.00	0.00	0.00	0.00
48.65	2.00	0.75	5.00	0.00	0.00	0.00
48.70	2.00	0.75	5.00	0.00	0.00	0.00
48.75	2.00	0.75	5.00	0.00	0.00	0.00
48.80	2.00	0.74	5.00	0.00	0.00	0.00
48.85	2.00	0.74	5.00	0.00	0.00	0.00
48.90	2.00	0.74	5.00	0.00	0.00	0.00
48.95	2.00	0.74	5.00	0.00	0.00	0.00
49.00	2.00	0.74	5.00	0.00	0.00	0.00
49.05	2.00	0.74	5.00	0.00	0.00	0.00
49.10	2.00	0.74	5.00	0.00	0.00	0.00
49.15	2.00	0.74	5.00	0.00	0.00	0.00
49.20	2.00	0.74	5.00	0.00	0.00	0.00
49.25	2.00	0.74	5.00	0.00	0.00	0.00
49.30	2.00	0.74	5.00	0.00	0.00	0.00
49.35	2.00	0.74	5.00	0.00	0.00	0.00
49.40	2.00	0.74	5.00	0.00	0.00	0.00
49.45	2.00	0.74	5.00	0.00	0.00	0.00
49.50	2.00	0.74	5.00	0.00	0.00	0.00
49.55	2.00	0.74	5.00	0.00	0.00	0.00
49.60	2.00	0.74	5.00	0.00	0.00	0.00
49.65	2.00	0.74	5.00	0.00	0.00	0.00
49.70	2.00	0.74	5.00	0.00	0.00	0.00
49.75	2.00	0.74	5.00	0.00	0.00	0.00
49.80	2.00	0.74	5.00	0.00	0.00	0.00
49.85	2.00	0.74	5.00	0.00	0.00	0.00
49.90	2.00	0.74	5.00	0.00	0.00	0.00
49.95	2.00	0.74	5.00	0.00	0.00	0.00
50.00	2.00	0.74	5.00	0.00	0.00	0.00

* F.S.<1, Liquefaction Potential Zone

(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

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1 atm (atmosphere) = 1 tsf (ton/ft2)

CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

APPENDIX D

EARTHWORK SPECIFICATIONS

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EARTHWORK SPECIFICATIONS

D1.1 Scope of Work

The work includes all labor, supplies and construction equipment required to construct the building pads in a good, workmanlike manner, as shown on the drawings and herein specified. The major items of work covered in this section include the following:

- Site Inspection
- Authority of Geotechnical Engineer
- Site Clearing
- Excavations
- Preparation of Fill Areas
- Placement and Compaction of Fill
- Observation and Testing

D1.2 Site Inspection

1. The Contractor shall carefully examine the site and make all inspections necessary, in order to determine the full extent of the work required to make the completed work conform to the drawings and specifications. The Contractor shall satisfy himself as to the nature and location of the work, ground surface and the characteristics of equipment and facilities needed prior to and during prosecution of the work. The Contractor shall satisfy himself as to the character, quality, and quantity of surface and subsurface materials or obstacles to be encountered. Any inaccuracies or discrepancies between the actual field conditions and the drawings, or between the drawings and specifications must be brought to the Owner's attention in order to clarify the exact nature of the work to be performed.

2. This *Geoseismic/Geotechnical Study Report* by Converse Consultants may be used as a reference to the surface and subsurface conditions on this project. The information presented in this report is intended for use in design and is subject to confirmation of the conditions encountered during construction. The exploration logs and related information depict subsurface conditions only at the particular time and location designated on the boring logs. Subsurface conditions at other locations may differ from conditions encountered at the exploration locations. In addition, the passage of time may result in a change in subsurface conditions at the exploration locations. Any review of this information shall not relieve the

Contractor from performing such independent investigation and evaluation to satisfy himself as to the nature of the surface and subsurface conditions to be encountered and the procedures to be used in performing his work.

D1.3 Authority of the Geotechnical Engineer

1. The Geotechnical Engineer will observe the placement of compacted fill and will take sufficient tests to evaluate the uniformity and degree of compaction of filled ground.

2. As the Owner's representative, the Geotechnical Engineer will (a) have the authority to cause the removal and replacement of loose, soft, disturbed and other unsatisfactory soils and uncontrolled fill; (b) have the authority to approve the preparation of native ground to receive fill material; and (c) have the authority to approve or reject soils proposed for use in building areas.

3. The Civil Engineer and/or Owner will decide all questions regarding (a) the interpretation of the drawings and specifications, (b) the acceptable fulfillment of the contract on the part of the Contractor and (c) the matters of compensation.

D1.4 Site Clearing

1. Clearing and grubbing shall consist of the removal from building areas to be graded of all existing structures, pavement, utilities, and vegetation.

2. Organic and inorganic materials resulting from the clearing and grubbing operations shall be hauled away from the areas to be graded.

D1.5 Excavations

1. Based on observations made during our field explorations, the surficial soils can be excavated with conventional earthwork equipment.

D1.6 Preparation of Fill Areas

1. All organic material, organic soils, incompetent alluvium, undocumented fill soils and debris should be removed from the proposed building areas.

2. In order to provide a relative uniform bearing material below shallow foundations, over-excavation and re-compaction of below the foundations and slab-on-grade are recommended. We recommend a minimum 2 feet of onsite soils below the bottom of foundations should be removed, moisture-conditioned if necessary, and replaced as compacted fill. At least the six (6) inches of soil at bottom of over-excavation, cut and transition areas should be scarified and compacted. All

undocumented fill should be removed and replaced with compacted fill. The excavation to remove unsuitable soils should be extended to five (5) feet beyond the building limits and appendages where space is available. All loose, soft or disturbed earth materials should be removed from the bottom of excavations before placing structural fill. The actual depth of removal should be determined based on observations made during grading. After the required removals have been made, the exposed native earth materials shall be excavated to provide a zone of structural fill for the support of footings, slabs-on-grade, and exterior flatwork. The fill thickness under structures should not vary.

3. The subgrade in all areas to receive fill shall be scarified to a minimum depth of six (6) inches, the soil moisture adjusted within three (3) percent of the optimum moisture for granular soils and at above approximately three (3) percent of the optimum moisture for fine-grained soils, and then compacted to at least 90 percent for the upper 10 feet and 95 percent for fill placed 10 feet below proposed finished grade, of the laboratory maximum dry density as determined by ASTM Standard D1557 test method. Scarification may be terminated on moderately hard to hard, cemented earth materials with the approval of the Geotechnical Engineer.

4. Compacted fill may be placed on native soils that have been properly scarified and recompacted as discussed above.

5. All areas to receive compacted fill will be observed and approved by the Geotechnical Engineer before the placement of fill.

D1.7 Placement and Compaction of Fill

1. Compacted fill placed for the support of footings, slabs-on-grade, exterior concrete flatwork, and driveways will be considered structural fill. Structural fill may consist of approved on-site soils or imported fill that meets the criteria indicated below.

2. Fill consisting of selected on-site earth materials or imported soils approved by the Geotechnical Engineer shall be placed in layers on approved earth materials. Soils used as compacted structural fill shall have the following characteristics:

   a. All fill soil particles shall not exceed three (3) inches in nominal size, and shall be free of organic matter and miscellaneous inorganic debris and inert rubble.

3. Imported fill materials shall have an Expansion Index (EI) less than 20. All imported fill should be compacted to at least 90 and 95 percent of the laboratory maximum dry density (ASTM Standard D1557) at about three (3) percent above

optimum moisture for fine grained soils, and within three (3) percent of optimum for granular soils.

4. Fill soils shall be evenly spread in maximum 6-inch to 8-inch lifts, watered or dried as necessary, mixed and compacted to at least the density specified below. The fill shall be placed and compacted on a horizontal plane, unless otherwise approved by the Geotechnical Engineer.

5. All fill placed at the site shall be compacted to at least 90 or 95 percent of the laboratory maximum dry density as determined by ASTM Standard D1557 test method. The on-site soils shall be moisture conditioned within three (3) percent of the optimum moisture for granular soils and at above approximately three (3) percent of the optimum moisture for fine-grained soils. At least the upper 12 inches of subgrade soils underneath the concrete apron, pavement and parking areas should be compacted to a minimum of 95 percent relative compaction.

6. Fill exceeding five (5) feet in height shall not be placed on native slopes that are steeper than 5:1 horizontal: vertical (H:V). Where native slopes are steeper than 5:1 H:V, and the height of the fill is greater than five (5) feet, the fill shall be benched into competent materials. The height and width of the benches shall be at least two (2) feet.

7. Representative samples of materials being used, as compacted fill will be analyzed in the laboratory by the Geotechnical Engineer to obtain information on their physical properties. Maximum laboratory density of each soil type used in the compacted fill will be determined by the ASTM Standard D1557 compaction method.

8. Fill materials shall not be placed, spread or compacted during unfavorable weather conditions. When site grading is interrupted by heavy rain, filling operations shall not resume until the Geotechnical Engineer approves the moisture and density conditions of the previously placed fill.

9. It shall be the Grading Contractor's obligation to take all measures deemed necessary during grading to provide erosion control devices in order to protect slope areas and adjacent properties from storm damage and flood hazard originating on this project. It shall be the contractor's responsibility to maintain slopes in their as-graded form until all slopes are in satisfactory compliance with job specifications, all berms have been properly constructed, and all associated drainage devices meet the requirements of the Civil Engineer.

D1.8 Trench Backfill

The following specifications are recommended to provide a basis for quality control during the placement of trench backfill.

1. Trench excavations to receive backfill shall be free of trash, debris or other unsatisfactory materials at the time of backfill placement.

2. Trench backfill shall be compacted to a minimum relative compaction of 90 percent as per ASTM Standard D1557 test method.

3. Rocks larger than one (1) inch should not be placed within 12 inches of the top of the pipeline or within the upper 12 inches of pavement or structure subgrade. No more than 30 percent of the backfill volume shall be larger than 3/4-inch in largest dimension diameter and rocks shall be well mixed with finer soil.

4. The pipe design engineer should select bedding material for the pipe. Bedding materials generally should have a Sand Equivalent (SE) greater than or equal to 30, as determined by the ASTM Standard D2419 test method.

5. Trench backfill shall be compacted by mechanical methods, such as sheepsfoot, vibrating or pneumatic rollers, or mechanical tampers, to achieve the density specified herein. The backfill materials shall be brought to within three (3) percent of optimum moisture content for granular soils and fine-grained soils, then placed in horizontal layers. The thickness of uncompacted layers should not exceed eight (8) inches. Each layer shall be evenly spread, moistened or dried as necessary, and then tamped or rolled until the specified density has been achieved.

6. The contractor shall select the equipment and processes to be used to achieve the specified density without damage to adjacent ground and completed work.

7. The field density of the compacted soil shall be measured by the ASTM Standard D1556 or ASTM Standard D2922 test methods or equivalent.

8. Observation and field tests should be performed by Converse during construction to confirm that the required degree of compaction has been obtained. Where compaction is less than that specified, additional compactive effort shall be made with adjustment of the moisture content as necessary, until the specified compaction is obtained.

9. It should be the responsibility of the Contractor to maintain safe conditions during cut and/or fill operations.

10. Trench backfill shall not be placed, spread or rolled during unfavorable weather

conditions. When the work is interrupted by heavy rain, fill operations shall not be resumed until field tests by the project's geotechnical consultant indicate that the moisture content and density of the fill are as previously specified.

D1.9 Observation and Testing

1. During the progress of grading, the Geotechnical Engineer will provide observation of the fill placement operations.

2. Field density tests will be made during grading to provide an opinion on the degree of compaction being obtained by the contractor. Where compaction of less than specified herein is indicated, additional compactive effort with adjustment of the moisture content shall be made as necessary, until the required degree of compaction is obtained.

3. A sufficient number of field density tests will be performed to provide an opinion to the degree of compaction achieved. In general, density tests will be performed on each one-foot lift of fill, but not less than one for each 500 cubic yards of fill placed.

BH-3
BH-4
BH-5
BH-6
BH-7
BH-8
BH-2
BH-9
BH-1
BH-16
BH-11
BH-13
BH-12
BH-14
BH-17
BH-18
BH-19
BH-20
BH-21
BH-22
BH-15

APPROXIMATE GAS LINE UTILITY
(5'.6")
(4'.6")
(4'.7")
(6'.7")
(4'.9")
(4'.5")
(4'.4")
(5'.5")
(4'.9")
(5'.8")
(5'.11")
(6'.12")

761 PAD ELVEATION
CONSTRUCT NEW KEYWAY
GRAND AVENUE
WATER DRAIN DITCH
PROPOSED STORM DRAIN
761 PAD ELEVATION
761 PAD ELEVATION
761 PAD ELEVATION
761 PAD ELEVATION
CONSTRUCT NEW KEYWAY
CONSTRUCT NEW KEYWAY
WATER DRAIN DITCH
CONSTRUCT NEW KEYWAY
APPROXIMATE GAS LINE UTILITY
APPROXIMATE GAS LINE UTILITY
APPROXIMATE GAS LINE UTILITY
APPROXIMATE GAS LINE UTILITY
735 BENCH
TWO-FOOT RUN
ONE-FOOT RISE
HEIGHT VARIES
DISTANCE VARIES
REFERENCE: SLOPE GRADING DETAIL BY HELIX ENVIRONMENTAL PLANNING

LEGEND

- APPROXIMATE LOCATION OF BORING
- GEOLOGIC CROSS SECTION
- SLOPES TO BE GRADED TO 2:1 STEP LIKE FASHION
- PROPOSED SOLAR ARRAY
- APPROXIMATE LOCATION OF CANYON BOTTOM SUBDRAINS
- APPROXIMATE LOCATION OF FILL SLOPE STABILZATION KEYWAYS, MAINTAIN SAFE SETBACK FROM GAS MAIN

N

0 50 100
APPROXIMATE SCALE IN FEET

SITE PLAN AND APPROXIMATE LOCATIONS OF BORING

MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Scale 1"=50'
Date JULY 2014
12-19-14

Project No. 13-31-339-01

Drawing No. 2

Converse Consultants

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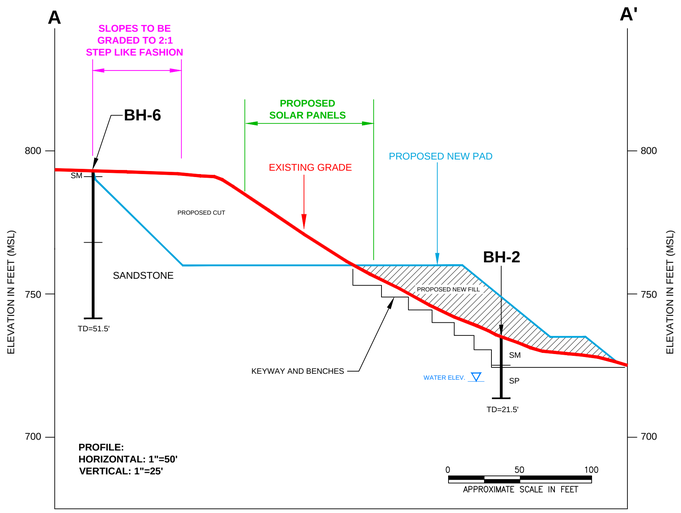

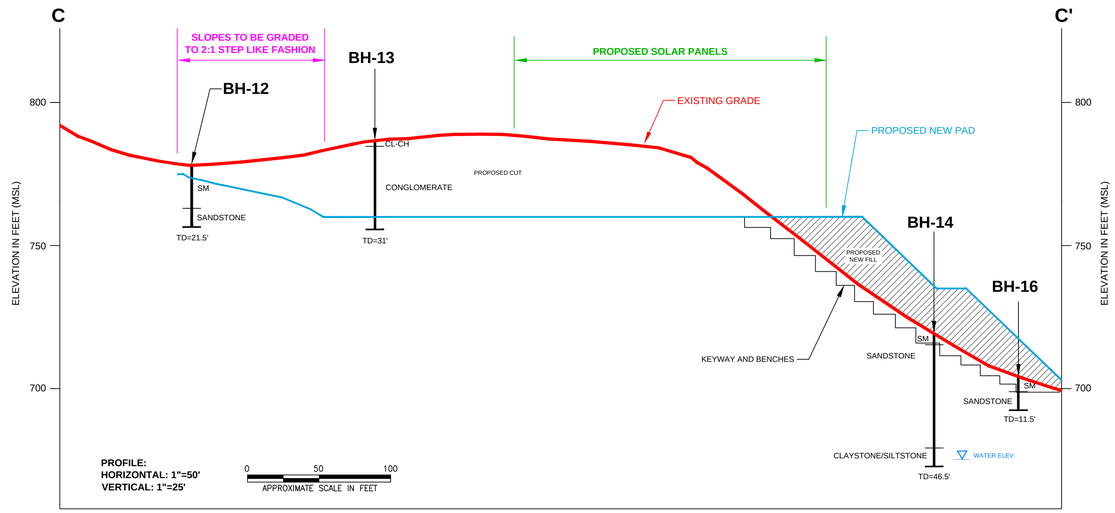

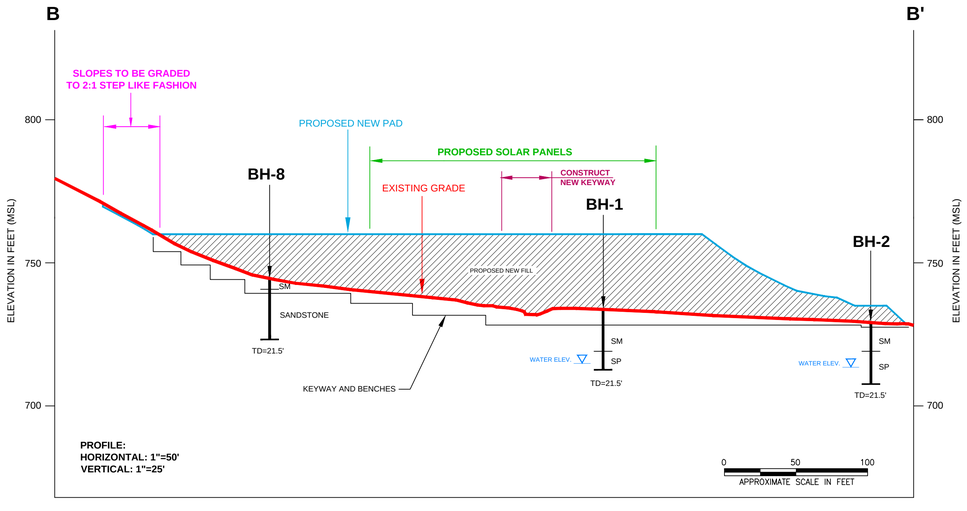

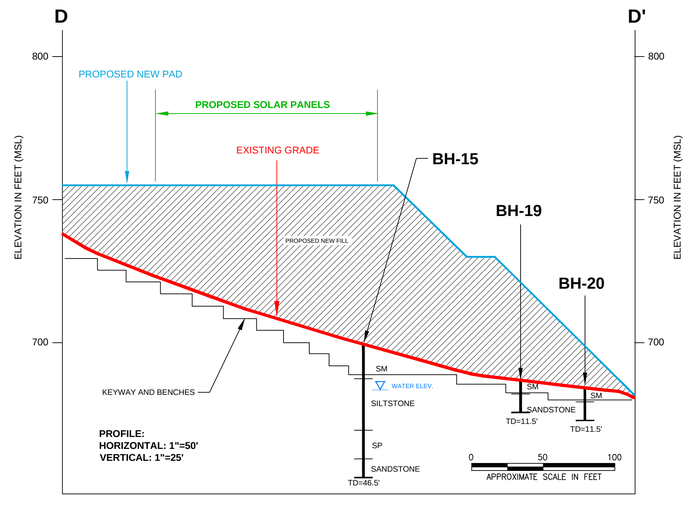

CROSS SECTION A-A', B-B', C-C', D-D'

MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01
Date JULY 2014
Drawing No. 4

Converse Consultants

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Appendix E

Treatment Control BMP Sizing Calculations and Design Details

DRAFT

Vegetated Swale Inspection and Maintenance Checklist

Property Address: 1100 N. Grand Ave., Walnut, CA 91789 Property Owner: Mt. SAC
Treatment Measure No.: _____ Date of Inspection: _____ Type of Inspection: □ Monthly □ Pre-Wet Season
□ After heavy runoff □ End of Wet Season
Inspector(s): _____ □ Other:_____

Defect	**Conditions When Maintenance Is Needed**	**Maintenance Needed? (Y/N)**	**Comments** (Describe maintenance completed and if needed maintenance was not conducted, note when it will be done)	**Results Expected When Maintenance Is Performed**
Sediment Accumulation on Vegetation	Sediment accumulating near culverts and/or in channels builds up to 75 millimeters (3 inches) at any spot, or it covers vegetation			When finished, swale should be level from side to side and drain freely toward outlet. There should be no areas of standing water once inflow has ceased and sediment is disposed of properly.
Standing Water	When water stands in the swale between storms and does not drain within 5 days after rainfall.			There should be no areas of standing water once inflow has ceased. Any of the following may apply: sediment or trash blockages removed, improved grade from head to foot of swale, removed clogged check dams, added underdrains or converted to a wet swale.
Flow spreader (if any)	Flow spreader uneven or clogged so that flows are not uniformly distributed through entire swale width.			Spreader leveled and cleaned so that flows are spread evenly over entire swale width.
Constant Baseflow	When small quantities of water continually flow through the swale, even when it has been dry for weeks, and an eroded, muddy channel has formed in the swale bottom.			No eroded, muddy channel on the bottom. A low-flow pea-gravel drain may be added the length of the swale.
Poor Vegetation Coverage	When planted vegetation is sparse or bare or eroded patches occur in more than 10% of the swale bottom.			Vegetation coverage in more than 90% of the swale bottom. Determine why growth of planted vegetation is poor and correct that condition. Re-plant with plugs of vegetation from the upper slope: plant in the swale bottom at 8-inch intervals, or re-seed into loosened, fertile soil.

Defect	**Conditions When Maintenance Is Needed**	**Maintenance Needed? (Y/N)**	**Comments** (Describe maintenance completed and if any needed maintenance was not conducted, note when it will be done.)	**Results Expected When Maintenance Is Performed**
Vegetation	When the planted vegetation becomes excessively tall; when nuisance weeds and other vegetation start to take over.			Vegetation mowed per specifications or maintenance plan, or nuisance vegetation removed so that flow is not impeded. Vegetation should never be mowed lower than the design flow depth. Remove clippings from the swale and dispose appropriately.
Excessive Shading	Growth of planted vegetation is poor because sunlight does not reach swale.			Healthy growth of planted vegetation. If possible, trim back over-hanging limbs and remove brushy vegetation on adjacent slopes.
Inlet/Outlet	Inlet/outlet areas clogged with sediment and/or debris.			Material removed so that there is no clogging or blockage in the inlet and outlet areas.
Trash and Debris Accumulation	Trash and debris accumulated in the swale.			Trash and debris removed from swale.
Erosion/ Scouring	Eroded or scoured swale bottom due to flow channelization, or higher flows.			No erosion or scouring in swale bottom. For ruts or bare areas less than 12 inches wide, repair the damaged area by filling with crushed gravel. If bare areas are large, generally greater than 12 inches wide, the swale should be re-graded and re-seeded. For smaller bare areas, overseed when bare spots are evident, or take plugs of grass from the upper slope and plant in the swale bottom at 8-inch intervals.
Miscellaneous	Any condition not covered above that needs attention in order for the vegetated swale to function as designed.			Meet the design specifications.

VEG-4: Vegetated Swales

Description

Vegetated swales are open, shallow channels with low-lying vegetation covering the side slopes and bottom that collect and slowly convey stormwater runoff to a downstream stormwater quality control measure, storm drain system, or receiving water. Vegetated swales also provide pollutant removal through settling and filtration in the vegetation (usually grasses) lining the channels, provide the opportunity for stormwater runoff volume reduction through infiltration and evapotranspiration, and reduce the flow velocity.

An effective vegetated swale achieves uniform sheet flow over and through a densely vegetated area for a period of several minutes. Vegetated swales that are integrated into a project may use turf or other more intensive landscaping while swales that are located on the project perimeter, within a park, or close to an open space area may be planted with native plants. Vegetated swales are typically used to provide pretreatment prior to bioretention, infiltration, and biofiltration devices.

A schematic of a typical vegetated swale is presented in Figure E-11.

LID Ordinance Requirements

Vegetated swales can be used as a stormwater quality control measure to treat stormwater runoff for the following alternative compliance measures:

- Off-site infiltration;
- Groundwater replenishment projects; and
- Off-site retrofit of existing development.

The project applicant must ensure that all pollutants of concern are addressed when using a vegetated swale (see Section 7.4). According to the Los Angeles Regional Water Quality Control Board (Regional Water Board) *Treatment Best Management Practices Performance*, vegetated swales do not treat pollutants of concern to the water quality benchmark (see Table 7-2 of the LID Standards Manual).

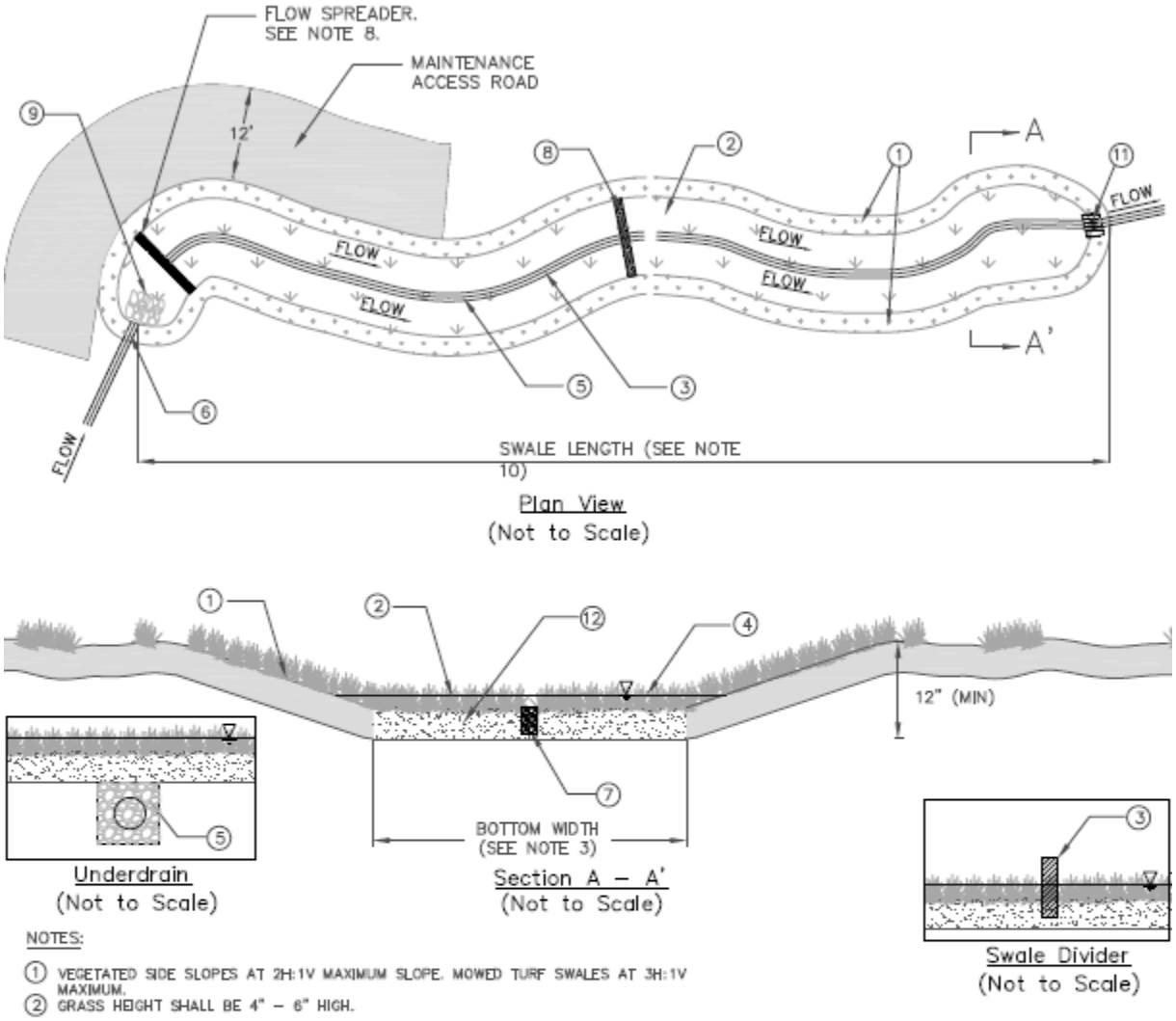
Advantages

- Has a low cost for installation when integrated into site landscaping

- Is suitable for parking lots and sites with limited open area available for stormwater runoff retention
- Reduces peak stormwater runoff flows during small storm events
- Enhances site aesthetics
- Requires little maintenance

Disadvantages

- May not be appropriate for industrial sites or locations with contaminated soils or where spills may occur because of the potential threat to groundwater contamination
- Is not suitable for areas with steep slopes
- May be restricted in use for areas that require curb and gutter systems
- May not be effective and may even erode when flow velocities are high if the grass cover is not properly maintained
- May be difficult to avoid channelization
- Requires irrigation, which may conflict with water conservation ordinances for landscape requirements, to maintain vegetation



NOTES:

1. VEGETATED SIDE SLOPES AT 2H:1V MAXIMUM SLOPE. MOWED TURF SWALES AT 3H:1V MAXIMUM.
2. GRASS HEIGHT SHALL BE 4" – 6" HIGH.
3. SWALE DIVIDER REQUIRED FOR BOTTOM WIDTHS > 10'. MINIMUM REQUIRED BOTTOM WIDTH IS 2' EXCLUDING WIDTH OF LOW FLOW CHANNEL. MAXIMUM BOTTOM WIDTH WITH DIVIDER IS 16'.
4. DEPTH OF FLOW FOR WATER QUALITY TREATMENT MUST NOT EXCEED TWO–THIRDS OF THE GRASS HEIGHT AND NOT GREATER THAN 4" (INFREQUENTLY MOWED) OR 2" (FREQUENTLY MOWED).
5. 6" PERFORATED UNDERDRAIN IN 9" DEEP COARSE AGGREGATE BED CONNECTED TO STORM DRAIN. REQUIRED FOR SLOPES < 1.5% OR AS NEEDED.
6. INLET PIPE WITH INLET PROTECTION.
7. IF NO UNDERDRAIN, LOW FLOW DRAIN SHALL EXTEND ENTIRE LENGTH OF SWALE AND SHALL HAVE A DEPTH OF 6" MINIMUM AND WIDTH NO MORE THAN 5% SWALE BOTTOM WIDTH. ANCHORED PLATE FLOW SPREADER IF USED, SHALL HAVE V–NOTCHES (MAX TOP WIDTH = 5% OF SWALE WIDTH) OR HOLES TO ALLOW PREFERENTIAL EXIT OF LOW FLOWS.
8. INSTALL CHECK DAMS OR GRADE CONTROL STRUCTURES FOR SLOPES > 6% AT 50' MAXIMUM SPACING TO ACHIEVE A MAXIMUM EFFECTIVE LONGITUDINAL SLOPE OF 6%. FLOW SPREADERS SHALL BE PROVIDED AT INLET AND AT THE BASE OF EACH CHECK DAM SEE FIGURE 3–2.
9. INSTALL ENERGY DISSIPATOR AT THE INLET OF VEGETATED SWALE.
10. SWALE LENGTH SHALL BE 100' OR LENGTH REQUIRED TO PROVIDE 10 MINUTES RESIDENCE TIME, WHICH EVER IS GREATER.
11. INSTALL APPROPRIATE OUTLET STRUCTURE. ACCOMODATE LOW FLOW CHANNEL AND/OR UNDERDRAIN (IF PRESENT).
12. AMEND SOILS WITH 2" OF COMPOST TILLED INTO 6" OF NATIVE SOIL UNLESS NATIVE SOIL ORGANIC CONTENT > 10%.

Figure E-11. Vegetated Swale Schematic

General Constraints and Implementation Considerations

- Vegetated swales can be integrated into roadside buffers or parking lot landscaping. For parking lots, if tire curbs are provided and parking stalls are shortened, cars may overhang the vegetated swale.
- Steep terrain and/or a large tributary area may cause erosive flows while limited site slope can cause ponding.
- Vegetated swales should be located in areas without excessive shade to avoid poor vegetation growth. For moderately shaded areas, shade-tolerant plants should be used.
- Vegetated swales should be located away from large trees that may drop leaves or needles. Excessive tree debris may smother the grass or impede the flow through the swale.
- The effectiveness of vegetated swales may be enhanced by adding check dams at approximately 50 foot increments along the length. The check dams maximize retention time within the vegetated swale, decrease flow velocity, and promote particulate settling. However, check dams may not be appropriate if prolonged ponding occurs.
- Vegetated swales need to be connected to downstream stormwater quality control measures. Vegetated swales may also be connected along its length to these features to allow discharge of high flows and stormwater runoff that does not infiltrate.
- Areas to be used for vegetated swales should be clearly marked before site work begins to avoid soil disturbance and compaction during construction. No vehicular traffic, except that specifically used to construct the vegetated swale, should be allowed within 10 feet of the swale areas.
- Stormwater runoff must be diverted around the vegetated swale during the period of vegetation establishment. If diversion is not feasible, the graded and seeded areas should be protected with suitable erosion controls (i.e., silt fences).
- Repair, seed, or re-plant damaged areas immediately.
- The general landscape irrigation system should incorporate the vegetated swale, as applicable.
- Access to the swale inlet and outlet should be safely provided, with ample room for maintenance and operational activities.

Design Specifications

The following sections describe the design specifications for vegetated swales.

Geotechnical

Due to the potential to contaminate groundwater, cause slope instability, and impact surrounding structures, an extensive geotechnical site investigation must be conducted

during the site planning process to verify site suitability for a vegetated swale. All geotechnical investigations must be performed according to the most recent GMED Policy GS 200.1. Soil infiltration rates and the groundwater table depth must be evaluated to ensure that conditions are satisfactory for proper operation of a vegetated swale. The project applicant must demonstrate through infiltration testing, soil logs, and the written opinion of a licensed civil engineer that sufficiently permeable soils exist on-site to allow the construction of a properly functioning vegetated swale.

Vegetated swales can be used wherever local climate and soils permit the establishment and maintenance of an appropriate vegetative cover. Vegetated swales should not be used at sites with a slope greater than 10 percent.

Geometry

- In general, trapezoidal channel shape is assumed for sizing calculations, but a more naturalistic channel cross-section is preferred.
- Vegetated swales designed for water quality treatment purposes only are anticipated to be fairly shallow, generally less than one foot. Therefore, a side slope of 2:1 (H:V) is acceptable. Milder slopes are necessary if turf is used (maximum 3:1 H:V).
- Overall depth from the top of the side walls to the swale bottom shall be at least 12 inches.
- Vegetated swale length can be increased by meandering the swale. Gradual meandering bends in the swale are desirable for aesthetic purposes and to promote slower flow.
- The minimum width of the vegetated swale bottom is two feet to allow for ease of mowing. The maximum width of the vegetated swale bottom is ten feet unless a dividing berm is provided. If a dividing berm is provided, the maximum width of the vegetated swale bottom can be 16 feet.
- The longitudinal slope (along the direction of flow) must be between one and six percent.
    - If the longitudinal slope is less than 1.5 percent and the soils are poorly drained (e.g., silts and clays), then an underdrain must be installed. A soils report to verify soils properties shall be provided for slopes that are less than 1.5 percent.
    - If the longitudinal slope is greater than 6 percent, check dams with vertical drops of 12 inches or less must be provided to achieve a bottom slope of 6 percent or less between the drop structures.
- The lateral slope (horizontal to the direction of flow) is zero (flat) to discourage channelization.

Sizing

The flow capacity of a vegetated swale is a function of the longitudinal slope (parallel to flow), the resistance to flow (e.g., Manning's roughness), and the cross-sectional area. The cross section is normally approximately trapezoidal and the area is a function of the bottom width and side slopes. The vegetated swale should be designed such that the flow does not exceed two-thirds of the height of the vegetation within the swale. Once design specifications have been determined, the resulting flow depth for the design flow is checked. If the depth restriction is exceeded, swale parameters (e.g., longitudinal slope, width) are adjusted to reduce the flow depth.

The following steps are used design a vegetated swale:

Step 1: Calculate the design flow

Vegetated swales must be designed to capture and retain the SWQDv (see Section 6 for SWQDv calculation procedures).

Step 2: Calculate vegetated swale bottom width

The width of the bottom of the vegetated swale is calculated using Manning's equation for open channel flow, as follows:

$$Q = \left(\frac{1.49}{n}\right) \times A \times R^{2/3} \times S^{0.5}$$

Where:

Q = Design flow rate [ft^3/s];
n = Manning's roughness coefficient;
A = Flow area [ft^2];
R = Hydraulic radius [ft] = area divided by the wetted perimeter; and
S = Channel slope [ft/ft].

For shallow flow depths in vegetated swales, channel side slopes are ignored in the calculation of bottom width. Use the following equation (a simplified form of Manning's formula) to estimate the vegetated swale bottom width:

$$b = \frac{Q \times n_s}{1.49 \times y^{1.67} \times s^{0.5}}$$

Where:

b = Bottom width of vegetated swale [ft]
Q = Design flow rate [ft^3/s];
n_s = Manning's roughness coefficient (use 0.2 for shallow conditions);
y = Design flow depth [ft]; and
s = Longitudinal slope (along direction of flow) [ft/ft].

Proceed to Step 3 if the calculated bottom width is between two and ten feet. A minimum two-foot bottom width is required. Therefore, if the calculated bottom width is less than two feet, increase the width to two feet, and recalculate the design flow depth, y, using the same Q and n_s, but with b equal to two feet.

The maximum allowable bottom width is ten feet; therefore if the calculated bottom width exceeds ten feet, then one of the following steps is necessary to reduce the design bottom width:

- Increase the longitudinal slope (*s*) to a maximum of 6 feet in 100 feet (0.06 feet per foot);
- Increase the design flow depth (*y*) to a maximum of four inches; or
- Place a divider lengthwise along the vegetated swale bottom (see Figure E-) at least three-quarters of the vegetated swale length (beginning at the inlet), without compromising the design flow depth and lateral slope requirements. The vegetated swale width can be increased to a maximum of 16 feet if a divider is provided.

Step 3: Determine the design flow velocity

To calculate the design flow velocity through the vegetated swale, use the flow continuity equation:

$$v = \frac{Q}{A}$$

Where:

v = Design flow velocity [ft/s];
Q = Design flow rate [ft^3/s]; and
A = by + Zy^2 = Cross-sectional area of flow at design depth [ft^2] where Z = side slope length per unit height (i.e., Z = 3 if side slope is 3:1 H:V) .

If the design flow velocity exceeds 1 ft/s, go back to Step 2 and modify one or more of the design parameters (longitudinal slope, bottom width, or flow depth) to reduce the design flow velocity to 1 ft/s or less. If the design flow velocity is calculated to be less than 1 ft/s, proceed to Step 4. It is ideal to have the design velocity as low as possible to improve treatment effectiveness and reduce vegetated swale length requirements.

Step 4: Calculate vegetated swale length

Use the following equation to determine the length of the vegetated swale to achieve a hydraulic residence time of at least 10 minutes (600 seconds):

$$L = 60 \times t_{hr} \times v$$

Where:

L = Minimum allowable swale length [ft];
t_{hr} = Hydraulic residence time [s]; and
v = Design flow velocity [ft/s].

The minimum length for a vegetated swale is 100 feet. If the calculated length for the vegetated swale is less than 100 feet, increase the length to a minimum of 100 feet and leaving the bottom width unchanged. If a larger vegetated swale can fit on the project site, consider using a greater length to increase the hydraulic residence time and improve pollutant removal. If the calculated length is too long for the project site or if it would cause layout problems, such as encroachment into shaded areas, proceed to Step 5 to further modify the layout. If the length of the vegetated swale can be accommodated on the project site, proceed to Step 6.

Step 5: Adjust vegetated swale layout to fit on-site

If the length of the vegetated swale calculated in Step 4 is too long for the project site, the length can be reduced (minimum of 100 feet) by increasing the bottom width up to a maximum of 16 feet, as long as the 10-minute retention time is maintained. However, the length cannot be increased in order to reduce the bottom width because Manning's depth-velocity-flow rate relationships would not be preserved. If the bottom width is increased to greater than ten feet, a low flow berm is needed to divide the vegetated swale cross-section in half to prevent channelization.

The length can be adjusted by calculating the top area of the vegetated swale and providing an equivalent top area with the adjusted dimensions.

Calculate the top area of the vegetated swale based on its length in Step 4:

$$A_{top} = \left(b_i + b_{slope}\right) \times L_i$$

Where:

A_{top} = Top area at the design depth [ft^2];
b_i = Bottom width calculated in Step 2 [ft];
b_{slope} = Additional top width above the side slope for the design depth (for 3:1 H:V side slope and a 4-inch water depth, b_{slope} = 2 ft) [ft]; and
L_i = Initial length calculated in Step 4 [ft].

Use the vegetated swale top area and a reduced swale length, L_f, to increase the bottom width using the following equation:

$$L_f = \frac{A_{top}}{\left(b_f + b_{slope}\right)}$$

Where:

L_f = Reduced vegetated swale length [ft];
A_{top} = Top area at the design depth [ft^2];
b_f = Increased bottom width [ft];
b_{slope} = Additional top width above the side slope for the design depth (for 3:1 H:V side slope and a 4-inch water depth, b_{slope} = 2 ft) [ft].

Recalculate the design flow velocity according to Step 3 using the revised cross-sectional area based on the increased bottom width. Revise the design as necessary if the design flow velocity exceeds 1 ft/s. If necessary, recalculate to ensure that the 10-minute hydraulic residence time is maintained.

Flow Entrance and Energy Dissipation

An anchored plate flow spreader must be provided at the inlet to the vegetated swale. Equivalent methods for spreading flows evenly throughout the width the swale are acceptable. The specifications for the flow spreader are listed below:

- The top surface of the flow spreader plate shall be level, projecting a minimum of two inches above the ground surface of the vegetated swale, or V-notched with notches six to ten inches on center and one to four inches deep (use shallower notches with closer spacing).
- The flow spreader plate must extend horizontally beyond the bottom width of the vegetated swale to prevent water from eroding the side slope. The horizontal extent should be such that the bank is protected for all flows up to the SWQDv that will enter the swale.
- Flow spreader plates must be securely fixed in place.
- Flow spreader plates may be made of either concrete, stainless steel, or other durable material.
- Anchor posts are constructed of four inches square of concrete, tubular stainless steel, or other material resistant to decay.

The flow spreader will quickly dissipate the entrance velocity and distribute flow uniformly across the whole vegetated swale. If check dams are used to reduce the longitudinal slope, a flow spreader must be installed at the toe of each vertical drop according to the specifications listed in the following section (Check Dams). If flow is to be introduced through LACDPW-approved curb cuts, the pavement should be placed slightly above the elevation of the vegetated areas. Curb cuts should be at least 12 inches wide to prevent clogging.

The maximum SWQDv flow velocity should not exceed 1.0 ft/s in order to promote settling, keep vegetation upright, and prevent scouring or resuspension of deposited sediment.

Check Dams

If check dams are required, they can be designed out of a number of different materials, including riprap, earthen berms, or removal stop logs. Check dams must be placed to achieve the desired slope (less than 6 percent) and desired velocity (less than 1 ft/s for the SWQDv) at a maximum of 50 feet apart. If riprap is used, the material should consist of well-graded stone consisting of a mixture of rock sizes. The following is an example of an acceptable gradation:

Particle Size	% Passing by Weight
24 in	100%
15 in	75%
9 in	50%
4 in	10%

Swale Divider

- If a swale divider is used, the divider should be constructed of a firm material that will resist weathering and not erode, such as concrete or compacted soil seeded with grass. Use of treated wood is prohibited. Selection of divider material must take into account maintenance activities, such as mowing.
- The divider must have a minimum height of one inch greater than the design depth.
- Earthen berms should be no steeper than 2:1(H:V).
- Material other than earth must be embedded to a depth sufficient to be stable.

Water Depth and Dry Weather Flow Drain

- The water depth in the vegetated swale should not exceed four inches (or two-thirds of the expected vegetation height) except for frequently mowed turf swales. For mowed turf swales, the water depth should not exceed two inches.
- A low flow drain must be provided for dry weather flows extending the entire length of the swale. The drain should have a minimum depth of six inches and a width no more than five percent of the calculated bottom swale width. The width of the drain is in addition to the required bottom width. If an anchored plate is used for flow spreading at the swale inlet, the plate wall must have V-notches (maximum top width = five percent of swale width) or holes to allow low flow into the drain. If an underdrain is installed, the vegetated swale does not require a low flow drain.

Underlying Base

Vegetated swale soils must be amended with two inches of well-rotted compost, unless the organic content is already greater than ten percent. The compost must be mixed into the native soils to a depth of six inches to prevent soil layering and washout of compost. The compost must contain no sawdust, green or under-composted material, or any other toxic or harmful substance. It should contain no unsterilized manure, which can result in high levels of pathogen indicators (coliform bacteria) in stormwater runoff.

Underdrain

An underdrain can be installed for a vegetated swale to collect and discharge stormwater runoff that has been filtered through the soil media, but not infiltrated, to another stormwater quality control measure, storm drain system, or receiving water. If an underdrain is provided, the underdrain shall have a mainline diameter of eight inches using slotted PVC SDR 26 or PVC C9000. Slotted PVC allows for pressure water cleaning and root cutting, if necessary. The slotted pipe should have two to four rows of slots cut perpendicular to the axis of the pipe or at right angles to the pitch of corrugations. Slots should be 0.04 to 0.1 inches wide with a length of 1 to 1.25 inches. Slots should be longitudinally-spaced such that the pipe has a minimum of one square inch opening per lineal foot and should face down.

The underdrain should be placed in a gravel envelope (Class 2 Permeable Material per Caltrans Spec. 68-1.025) that measures three feet wide and six inches deep. The underdrain is elevated from the bottom of the vegetated swale by six inches within the gravel envelope to create a fluctuating anaerobic/aerobic zone below the underdrain to facilitate denitrification within the anaerobic/anoxic zone and reduce nutrient concentrations. The top and sides of the underdrain pipe should be covered with gravel to a minimum depth of 12 inches. The underdrain and gravel envelope should be covered with a geomembrane liner to prevent clogging. The following aggregate should be used for the gravel envelope:

Particle Size (ASTM D422)	% Passing by Weight
¾ inch	100%
¼ inch	30-60%
#8	20-50%
#50	3-12%
#200	0-1%

Underdrains should be sloped at a minimum of 0.5 percent, and must drain freely to an acceptable discharge point.

Clean-out risers with diameters equal to the underdrain pipe must be placed at the terminal ends of the underdrain and can be incorporated into the flow spreader and outlet structure to minimize maintenance obstacles in the vegetated swale.

Intermediate clean-out risers may also be placed in the check dams or grade control structures. The clean-out risers shall be capped with a lockable screw cap.

Hydraulic Restriction Layer

A geomembrane liner must be used to wrap the drain rock. The geomembrane liner must meet the minimum requirements presented in Table E-20.

Table E-20. Geomembrane Liner Specifications for Vegetated Swales

Parameter	Test Method	Specification
Trapezoidal Tear	ASTM D4533	40 lbs (minimum)
Permeability	ASTM D4491	0.2 cm/sec (minimum)
AOS (sieve size)	ASTM D4751	#60 – #70 (minimum)
Ultraviolet Resistance	ASTM D4355	>70%

Vegetation

Swales must be vegetated to provide adequate treatment of stormwater runoff. It is important to maximize water contact with vegetation and the soil surface. The swale should be vegetated with a mix of erosion-resistant plant species that effectively bind the soil. A diverse selection of low growing plants that thrive under the specific site, climatic, and watering conditions should be specified. A mixture of dry-area and wet-area grass species that can continue to grow through silt deposits is most effective. Native or adapted grasses are preferred because they generally require less fertilizer and maintenance and are more drought-tolerant than exotic plants. Consult with a landscape or erosion control specialist for project-specific recommendations on grass seed, fertilizer, and mulching applications to ensure healthy grass growth. Suitable plant types can also be found by referring to various online sources such as:

- Calflora (http://calflora.org), which is a database of wild California plants that include plant characteristics and photos.
- California Invasive Plant Council (http://www.cal-ipc.org), which is a listing of invasive, non-native plants of California.
- Los Angeles River Master Plan Landscaping Guidelines and Plant Palettes (http://ladpw.org/wmd/watershed/LA/LAR_planting_guidelines_webversion.pdf), which is a guidance document providing a listing of native plant communities in the Los Angeles area.
- The Jepson Online Interchange California Floristics (http://ucjeps.berkeley.edu/interchange.html), which is a database that provides information on identification, taxonomy, distribution, ecology, relationships, and diversity of California vascular plants.

- VegSpec (http://catalog.data.gov/dataset/vegspec), which is a web-based decision support system that assists land managers in the planning and design with vegetative establishment practices.
- United States Department of Agriculture (http://plants.usda.gov/java), which is an extensive database of native and non-native plants of the United States with over 100 plant characteristics.

Vegetation should meet the following specifications:

- Above the design elevation, a typical lawn mix or landscape plants can be used provided they do not shade the vegetated swale.
- Drought-tolerant grasses should be specified to minimize irrigation requirements. Irrigation is required if seeds are planted in spring or summer. A permanent irrigation system may provide maximum water quality performance.
- Vegetative cover should be at least four inches in height, although six inches is preferred.

Irrigation System

Provide an irrigation system to maintain viability of vegetation, if applicable. The irrigation system must be designed to local code or ordinance specifications.

Restricted Construction Materials

Use of pressure-treated wood or galvanized metal at or around the vegetated swale is prohibited.

Maintenance Requirements

Maintenance and regular inspections are important for proper function of vegetated swales. The following are general maintenance requirements:

- Inspect vegetated swales for erosion or damage to vegetation after every storm greater than 0.75 inches. Vegetated swales should be checked for debris and litter and areas of sediment accumulation.
- Remove sediment, as needed, if vegetation growth is inhibited in more than ten percent of the swale or if sediment is blocking even distribution and entry of water. Re-plant and/or re-seed vegetation, as needed, following sediment removal activities to reestablish vegetation.
- Remove sediment and debris from the flow spreader if it is blocking flows. Repair splash pads, as needed, to prevent erosion. Check and re-level the flow spreader if necessary.
- Stabilize slopes with appropriate erosion control measures when native soil is exposed or erosion channels are forming.

- Check to ensure that vegetated swales drain within 96 hours following a storm event. If the swale does not drain within 96 hours, till the swale if compaction or clogging occurs and re-vegetate.
- Inspect, and clean if necessary, the underdrain pipe.
- Eliminate standing water to prevent vector breeding.
- Inspect vegetation for health and density to ensure that it is providing sufficient treatment and protecting the underlying soils from erosion. As needed, conduct the following maintenance activities for the vegetation:
    - Replenish mulch as needed to ensure survival of vegetation.
    - Prune vegetation, large shrubs, or trees that interfere with swale operation.
    - Remove fallen leaves and debris from deciduous plant foliage.
    - Mow grassy swales to maintain grass at a height of four to six inches and remove grass clippings.
    - Remove and replace invasive vegetation with native vegetation. For more information on invasive weeds, including biology and control of listed weeds, refer to the "encycloweedia" located at the California Department of Food and Agriculture website (http://www.cdfa.ca.gov/plant/ipc/encycloweedia/encycloweedia_hp.htm) or the California Invasive Plant Council website (www.cal-ipc.org).
    - Remove dead vegetation if greater than ten percent of area coverage or when swale function is impaired. Replace and establish vegetation before the wet season to maintain cover density and control erosion where soils are exposed.
- Inspect, and repair if necessary, check dams that are causing altered water flow and/or channelization. Remove obstructions as needed.
- Remove all trash and debris, sediment, visual contamination (i.e., oils), noxious or nuisance weeds.

A summary of potential problems that may need to be addressed by maintenance activities is presented in Table E-21.

The County requires execution of a maintenance agreement to be recorded by the property owner for the on-going maintenance of any privately-maintained stormwater quality control measures. The property owner is responsible for compliance with the maintenance agreement. A sample maintenance agreement is presented in Appendix H.

Table E-21. Vegetated Swale Troubleshooting Summary

Problem	Conditions When Maintenance Is Needed	Maintenance Required
Sediment Accumulation	Sediment depth exceeds two inches or covers vegetation	Remove sediment without disturbing vegetation. Ensure that the vegetated swale is level from side to side and drains freely to the outlet when sediment is removed.
Trash and Debris	Trash and debris > 5 ft^3/1,000 ft^2	Remove and dispose of trash and debris.
Standing Water	Standing water observed more than 96 hours after storm event	Inspect, and clean as needed, the underdrain to ensure proper function. Clear clogs as needed. Till surface and re-vegetate if necessary.
Flow Spreader	Flow spreader is uneven or flow is not evenly distributed into the vegetated swale	Remove obstructions. Clean and re-level flow spreader as needed.
Excessive Shading	Poor vegetation growth	Prune overhanging limbs and bushy vegetation
Erosion	Presence of erosion or channelization	Repair ruts or bare areas less than 12 inches wide with crushed gravel. Re-grade channel if necessary. Inspect flow spreader to ensure that flow is evenly distributed. Re-vegetated if necessary.
Contaminants and Pollution	Any evidence of oil, gasoline, contaminants, or other pollutants	Remove any evidence of visual contamination from floatables such as oil and grease.
Vegetation	Overgrown vegetation	Mow and prune vegetation as appropriate.
	Presence of invasive, poisonous, nuisance, or noxious vegetation or weeds	Remove this vegetation and plant native species as needed.
Inlet/Overflow	Inlet/overflow areas clogged with sediment and/or debris	Remove material.
	Overflow pipe blocked or broken	Repair as needed.

Appendix F

AGREEMENTS (WHEN AVAILABLE) – CC&RS, COVENANT AND AGREEMENTS AND/OR OTHER MECHANISMS FOR ENSURING ONGOING OPERATION, MAINTENANCE, FUNDING AND TRANSFER OF REQUIREMENTS FOR THIS PROJECT-SPECIFIC WQMP

DRAFT

PLANTING LEGEND: Venturan Coastal Sage Scrub Planting Palette

SYMBOL	NAME	WATER REQUIREMENT	SIZE	QTY	DETAIL
	Artemisia californica California Sagebrush	Low	1 gal. @ 8' O.C.	2787	A.8,G3.3.10
	Encelia californica California encelia	Low	1 gal. @ 8' O.C.	867	A.8,G3.3.10
	Ericameria palmeri var. pachylepis Palmer's rabbitbush	Low	1 gal. @ 8' O.C.	742	A.8,G3.3.10
	Eriogonum fasciculatum ssp. fasciculatum California buckwheat	Low	1 gal. @ 8' O.C.	2598	A.8,G3.3.10
	Heteromeles arbutifolia Toyon	Low	1 gal. @ 10' O.C.	152	A.8,G3.3.10
	Malosma laurina Laurel sumac	Low	1 gal. @ 10' O.C.	233	A.8,G3.3.10
	Rhus integrifolia Lemonadeberry	Low	1 gal. @ 8' O.C.	129	A.8,G3.3.10
	Salvia mellifera Black sage	Low	1 gal. @ 8' O.C.	807	A.8,G3.3.10
	Sambucus mexicana Blue elderberry	Low	1 gal. @ 10' O.C.	78	A.8,G3.3.10

PLANTING LEGEND: Venturan Coastal Sage Scrub Hydroseed Mixture

SYMBOL	NAME	PERCENT PURITY/ GERMINATION	SQS/ LBS PER ACRE	QTY	DETAIL
	Artemisia californica California Sagebrush	90/25	3	-	-
	Baccharis pilularis Coyote brush	2/40	0.5	-	-
	Corethrogyne filaginifolia var. filaginifolia California sandaster	NA	2	-	-
	Deinandra fasciculata Fascicled tarplant	20/80	3	-	-
	Encelia californica California encelia	40/60	2	-	-
	Eriogonum fasciculatum California buckwheat	50/20	3	-	-
	Eriophyllum confertiflorum Golden yarrow	30/70	2	-	-
	Pseudognaphalium biolettii Two-colored rabbit tobacco	5/40	1	-	-
	Heterotheca grandiflora Telegraph weed	95/80	1	-	-
	Isocoma menziesii Goldenbush	40/30	1	-	-
	Acmispon glaber Deer weed	95/80	1	-	-
	Lupinus succulentus Arroyo lupine	98/85	1	-	-
	Malacothrix saxatilis var. tenuifolia Cliff aster	NA	2	-	
	Mimulus aurantiacus Monkeyflower	2/60	2	-	-
	Stipa lepida Foothill needlegrass	90/80	5	-	-
	Plantago erecta Dot seed plantain	90/80	2	-	-
	Salvia columbariae Chia		2	-	-
	Salvia mellifera Black sage	70/50	2	-	-
	Sisyrinchium bellum Blue-eyed grass		2	-	-
	Stephanomeria virgata Virgate wreath plant		1	-	-

PLANTING LEGEND: Cacti Thickets

SYMBOL	NAME	WATER REQUIREMENT	SIZE	QTY	DETAIL
	Salvaged Cacti	Low	3' O.C.	-	A.8,G3.3.10

PLANTING NOTES

1. Contractor to refer to project mitigation report for all removal, salvage, and installation requirements and procedures.
2. Plant quantities are for REFERENCE ONLY. Contractor to provide and install all plant material shown on drawings.
3. Contractor to refer to mitigation report for proper soil preparation
4. All container plants to be installed in holes that are the same size as the planting container.
5. The unplanted ground within each cactus thickets shall be covered with 3 inches of forest floor bark mulch.
6. Seeding shall be conducted either by hand or as the first step in a two step hydroseed/mulch application.

REFER TO SHEET L3.10 FOR ALL PLANTING NOTES AND RESTORATION TASKS

NOTE:

A. ALL EXISTING PLANTING AREAS NOT SHOWN FOR DEMO OR TO BE PLANTED SHALL REMAIN AS IS AND SHOULD BE PROTECTED IN PLACE. CONTRACTOR SHALL TAKE ALL NECESSARY MEASURED TO PREVENT DAMAGE TO PLANTS OR SOIL COMPACTION, TYPICAL.

B. ALL EXISTING TREES TO REMAIN UNLESS STATED OTHERWISE CONTRACTOR TO PROTECT IN PLACE. ANY TREES TO BE DEMOLISHED SHALL BE VERIFIED AND APPROVED BY CLIENTS REPRESENTATIVE.

OVERALL PLANTING PLAN
1"=20'-0'

0 10 20 40 Feet

EPTDESIGN
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844 East Green Street, Ste. 201
Pasadena, CA 91101
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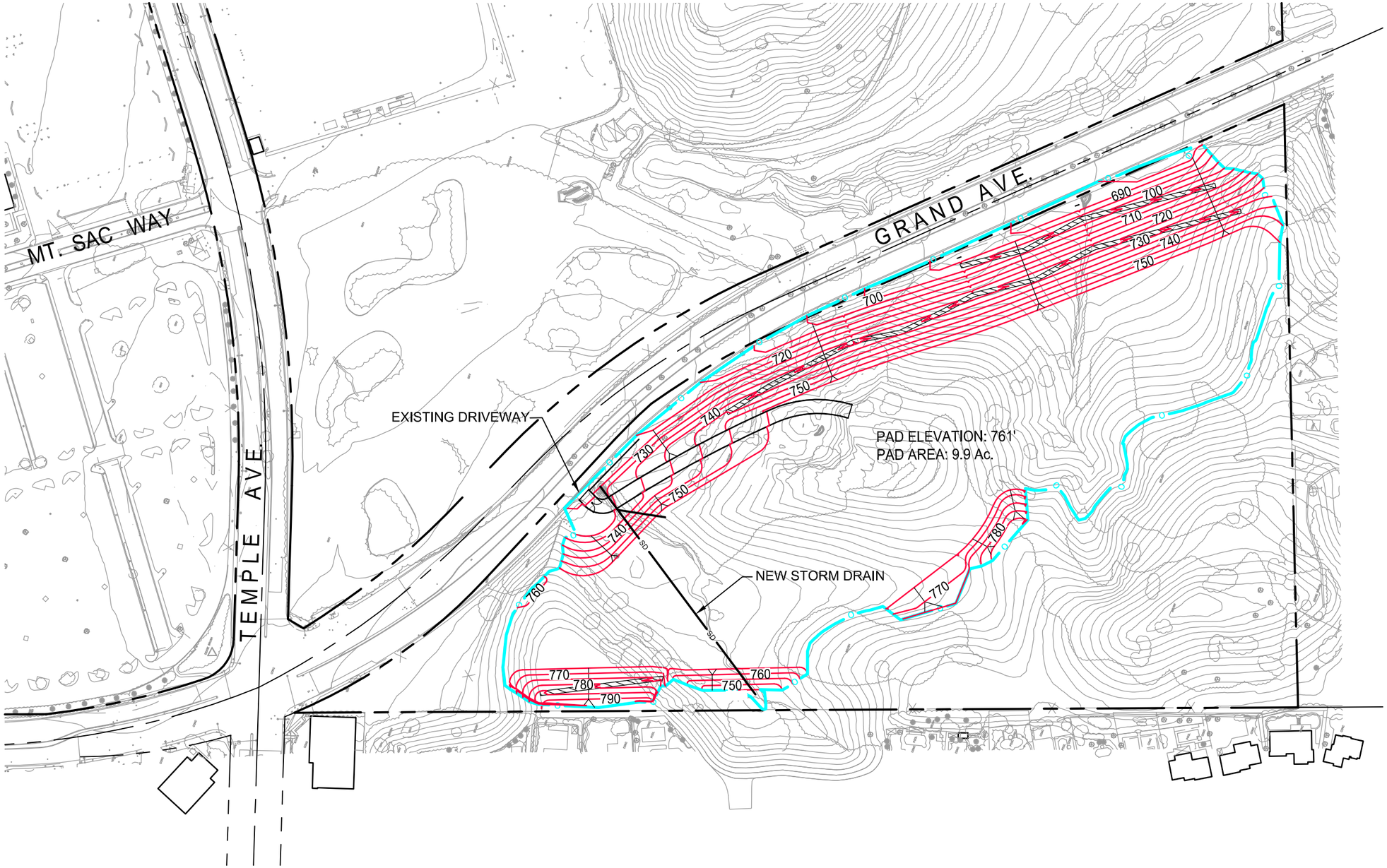


LEGEND

- 720 — NEW CONTOUR LINE
- DAYLIGHT LINE
- EXISTING BUILDING
- SD — NEW STORM DRAIN

OPTION "D-5"

Raw Earthwork Data - Southwest Parcel			
Site	Cut	Fill	Net
Grand Avenue Parcel	177,500 CY	316,500 CY	139,000 CY Import
Max Depth (Ft):	29'	61'	

DRAFT CONCEPT

SCALE: 1"=200'

Grand Avenue Parcel Earthwork Exhibit "D-5"

PSOMAS

DATE: 09-05-2013 REVISED ON: 04/07/2017
JOB No:1MTS010800

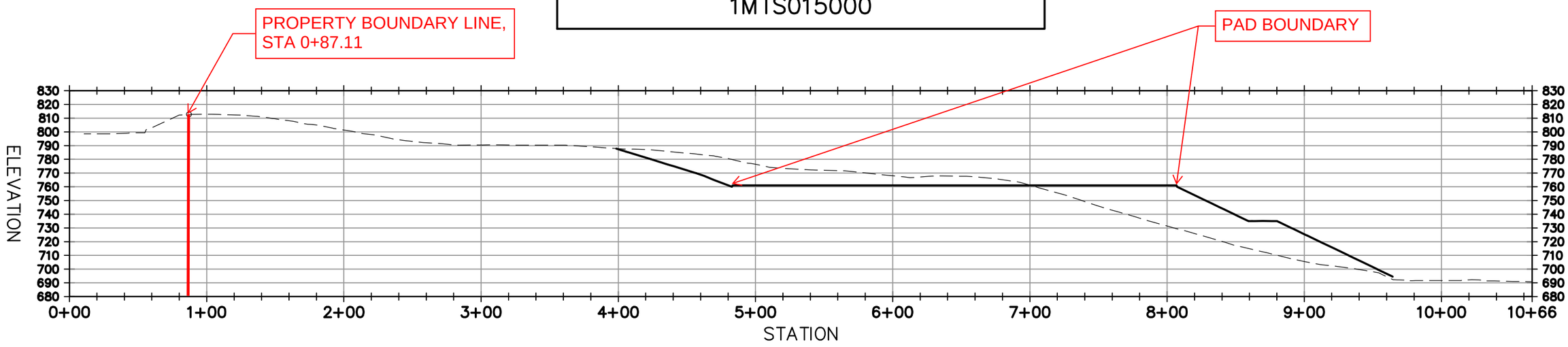
SHEET 1 OF 1

MTS800-D5_R2

Mt. San Antonio College

Plotted: 04/07/17 09:03:09 Y:\MT_SAC\1MTS010800\Engr\Exhibit\MTS800-D5_R2.dwg emma.harrison

PROFILE VIEW: WEST PARCEL GRADING
1MTS015000



HELIX
Environmental Planning

West Parcel Solar Project at Mt. San Antonio College

Biological Technical Report

May 29, 2015

Prepared for:
Mt. San Antonio College
1100 North Grand Ave.
Walnut, CA 91789

Prepared by:
HELIX Environmental Planning, Inc.
7578 El Cajon Blvd.
La Mesa, CA 91942

West Parcel Solar Project at Mt. San Antonio College
Biological Technical Report

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1.0 INTRODUCTION

Mt. San Antonio College (Mt. SAC) plans to construct a power generation station on the west parcel of their campus (referred to as West Parcel hereinafter). Impacts from this project will affect habitat occupied by the federally threatened coastal California gnatcatcher (*Polioptila californica californica*) and portions of two streambeds. These resources were initially mapped as part of the 2008 Master Plan Update (Lindmark 2008). The purpose of this report is to provide updated survey information and impact analysis for this part of the campus. The West Parcel comprises approximately 27.65 acres of the 420-acre campus.

1.1 PROJECT LOCATION

Mt. SAC is located in the San Gabriel Valley, in southeast Los Angeles County, California (Figure 1). The college is situated near the intersection of North Grand and Temple Avenues in the City of Walnut. It is within un-sectioned land, Township 2 South, Range 9 East on the U.S. Geological Survey (USGS) 7.5-minute San Dimas quadrangle map (Figure 2).

1.2 SITE DESCRIPTION

The study area is approximately 27.65 acres and is currently undeveloped (Figure 3). The West Parcel is roughly triangular with the hypotenuse on the east side of the triangle and along Grand Avenue. A small area (approximately 0.71 acre) at the northern tip of the property has been graded flat. The remainder of the site consists of rolling hills with intervening swales. Elevations within the study area range from approximately 690 to 875 feet above mean sea level.

Two streambeds occur on site. The northern streambed traverses the site from west to east. It enters the site from an unimproved streambed and exits the site via a culvert under North Grand Avenue. The culvert connects the drainage to Snow Creek, which flows north to south, just east of North Grand Avenue. The southeastern streambed originates on site and also drains to the east and flows into Snow Creek via a culvert under North Grand Avenue.

The National Wetland Inventory (NWI) maps show freshwater forested/shrub wetlands and a riverine, intermittent streambed, temporarily flooded (Figure 4) along the northern drainage. No forested/shrub wetlands, however, exist on site. There is a patch of southern willow scrub located in this drainage, just off site to the west. The eastern portion of the canopy for these trees overhangs the western boundary, but no willows are rooted on site. The streambed mapping from NWI reflects what exists on the West Parcel.

1.3 SURROUNDING LAND USE

Residential land uses exist on the south and west sides of the West Parcel. North Grand Avenue exists along the eastern boundary of the parcel. A small area of commercial land use exists west of the northern tip of the parcel.

2.0 SURVEYS AND METHODS

Prior to conducting biological field surveys, HELIX Environmental Planning, Inc. (HELIX) performed a review of existing literature, including searches of the California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB; 2011, 2012a and b) and the California Native Plant Society (CNPS; 2014) online database for information regarding sensitive species reported in the project vicinity. Results of previous analyses of the 2008 and 2012 Master Plan Updates (HELIX 2008a, b, and c; 2012) were also consulted.

Vegetation mapping, rare plant, general botanical, and zoological surveys, and a jurisdictional delineation of the site were conducted on February 17, 2014, by HELIX biologist W. Larry Sward. Vegetation communities and sensitive species observed or detected were mapped on a 1"=200' scale aerial photograph map.

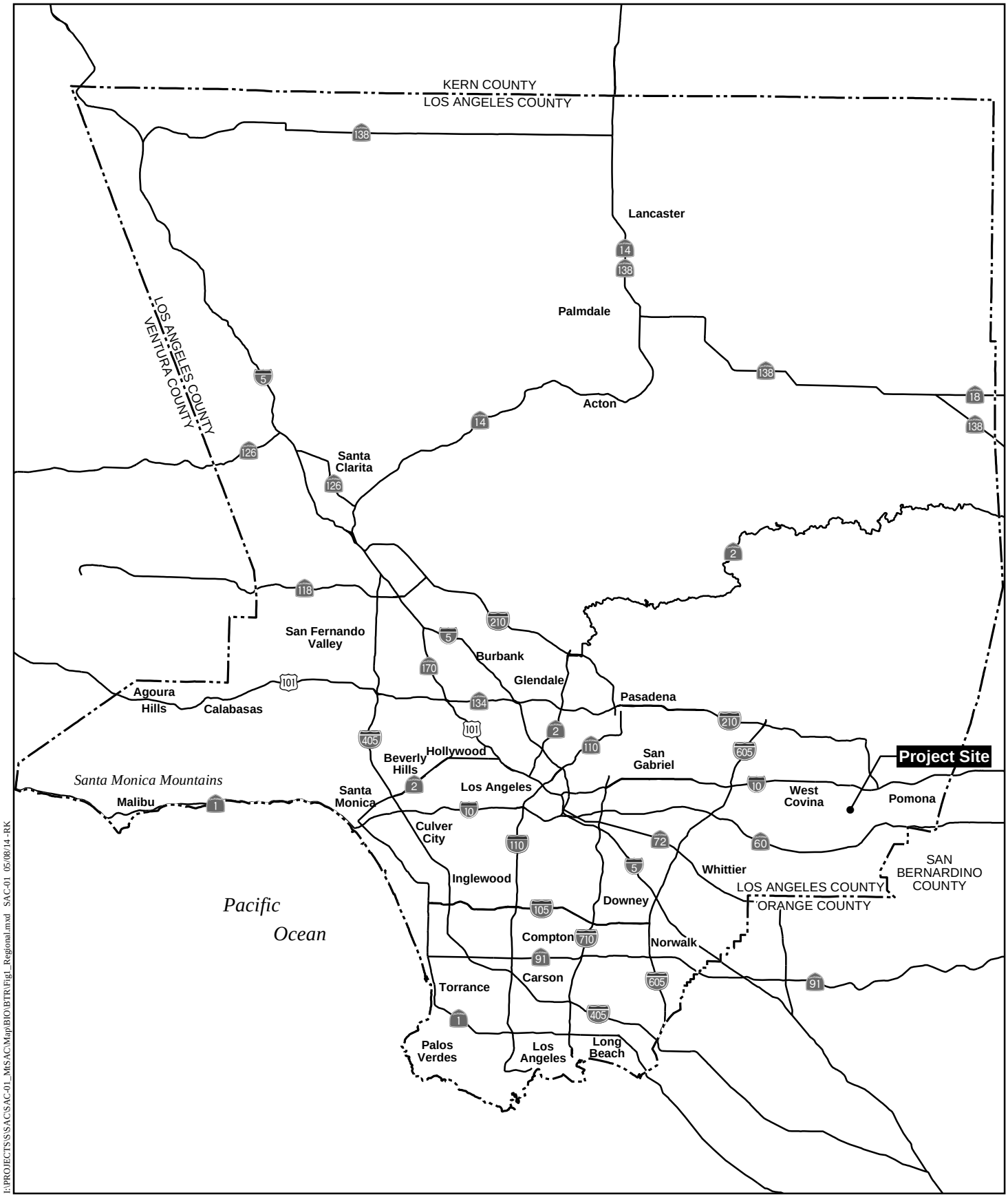
Vegetation community classifications follow Holland (1986). Plants were identified according to Baldwin, et. al. (2012), while common names are derived from either Baldwin, et. al., CNPS (2014), or Calflora (2014). Sensitive plant status follows the CNPS (2014) and CDFW CNDDB (2012a and b). Animal nomenclature used in this report is taken from Crother (2001) for amphibians and reptiles, American Ornithologists' Union (2007) for birds, and Baker et al. (2003) for mammals. Sensitive animal status follows the CDFW CNDDB (2011). Wetland affiliations of plant species follow The National Wetland Plant List (Lichvar, et. al. 2014).

Waters of the U.S. (WUS) wetland boundaries were determined using the three criteria (vegetation, hydrology, and soils) established for wetland delineations, as described within the Wetlands Delineation Manual (Environmental Laboratory 1987) and Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (USACE 2008).

The results presented here are also discussed in light of court decisions (i.e., Rapanos v. United States, Carabell v. United States, and Solid Waste Agency of Northern Cook County v. USACE), as outlined and applied by the U.S. Army Corps of Engineers (USACE; 2007; Grumbles and Woodley 2007), USACE and Environmental Protection Agency (EPA; 2007), and EPA and USACE (2007). These publications explain that the EPA and USACE will assert jurisdiction over traditional navigable waters (TNW) and tributaries to TNWs that are relatively permanent water bodies (RPWs), which have year-round or continuous seasonal flow. For water bodies that are not RPWs, a significant nexus evaluation must be conducted to determine whether the non-RPW is jurisdictional. An overview of USACE wetlands and jurisdictional WUS definitions is presented in Appendix A.

Soil samples were evaluated for hydric soil indicators (e.g., hydrogen sulfide [A4], sandy redox [S5], depleted matrix [F3], redox dark surface [F6], and depleted dark surface [F7]). Soil chromas were identified according to Munsell's Soil Color Charts (Kollmorgen 1994).

Sample points were inspected for primary wetland hydrology indicators (e.g., surface water [A1], saturation [A3], water marks [non-riverine, B1], sediment deposits [non-riverine, B2], drift deposits [non-riverine, B3], surface soil cracks [B6], inundation visible on aerial imagery [B7], salt crust [B11], aquatic invertebrates [B13], hydrogen sulfide odor [C1], and oxidized



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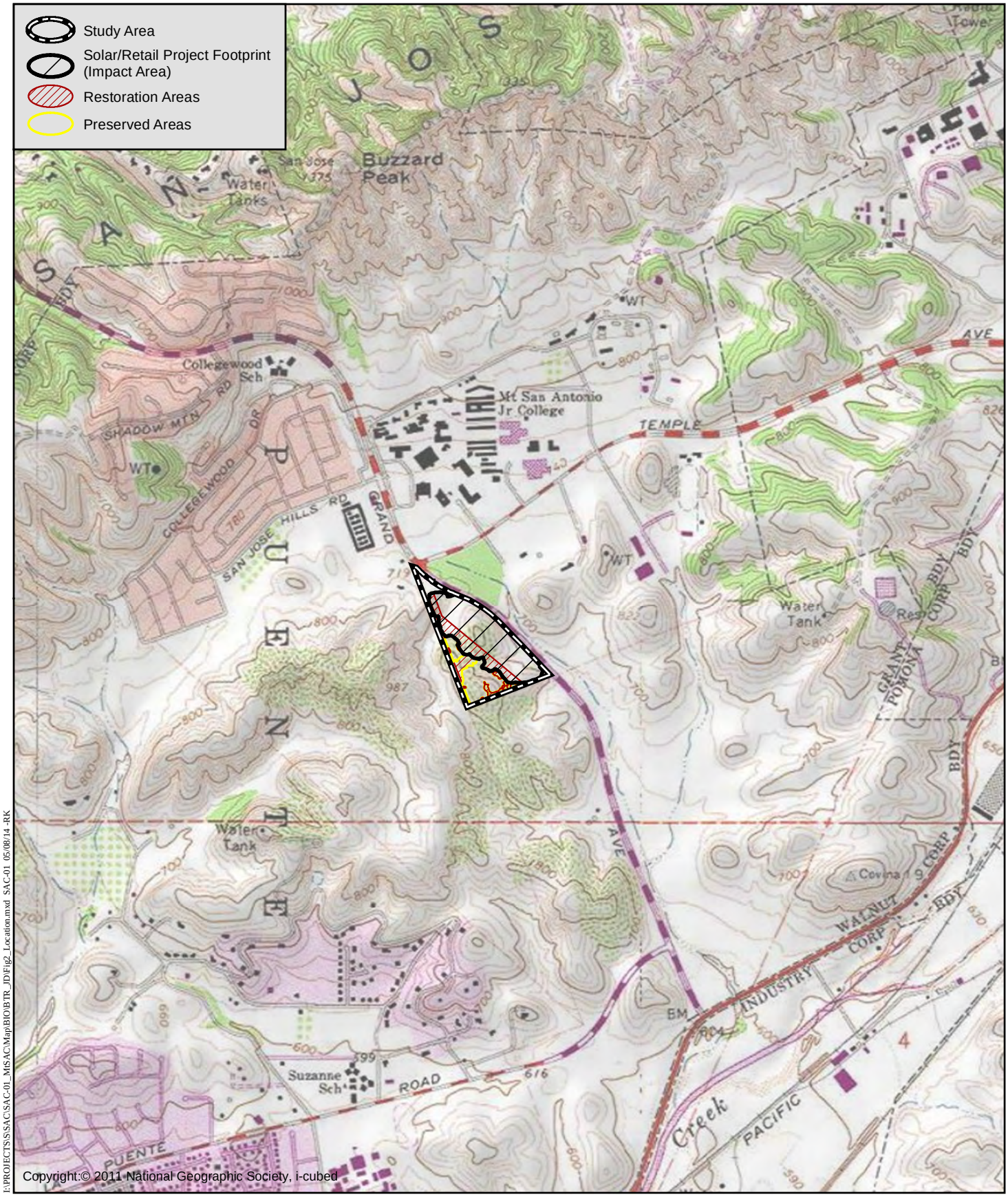
Regional Location Map

WEST PARCEL SOLAR PROJECT

HELIX Environmental Planning

N 0 10 Miles

Figure 1



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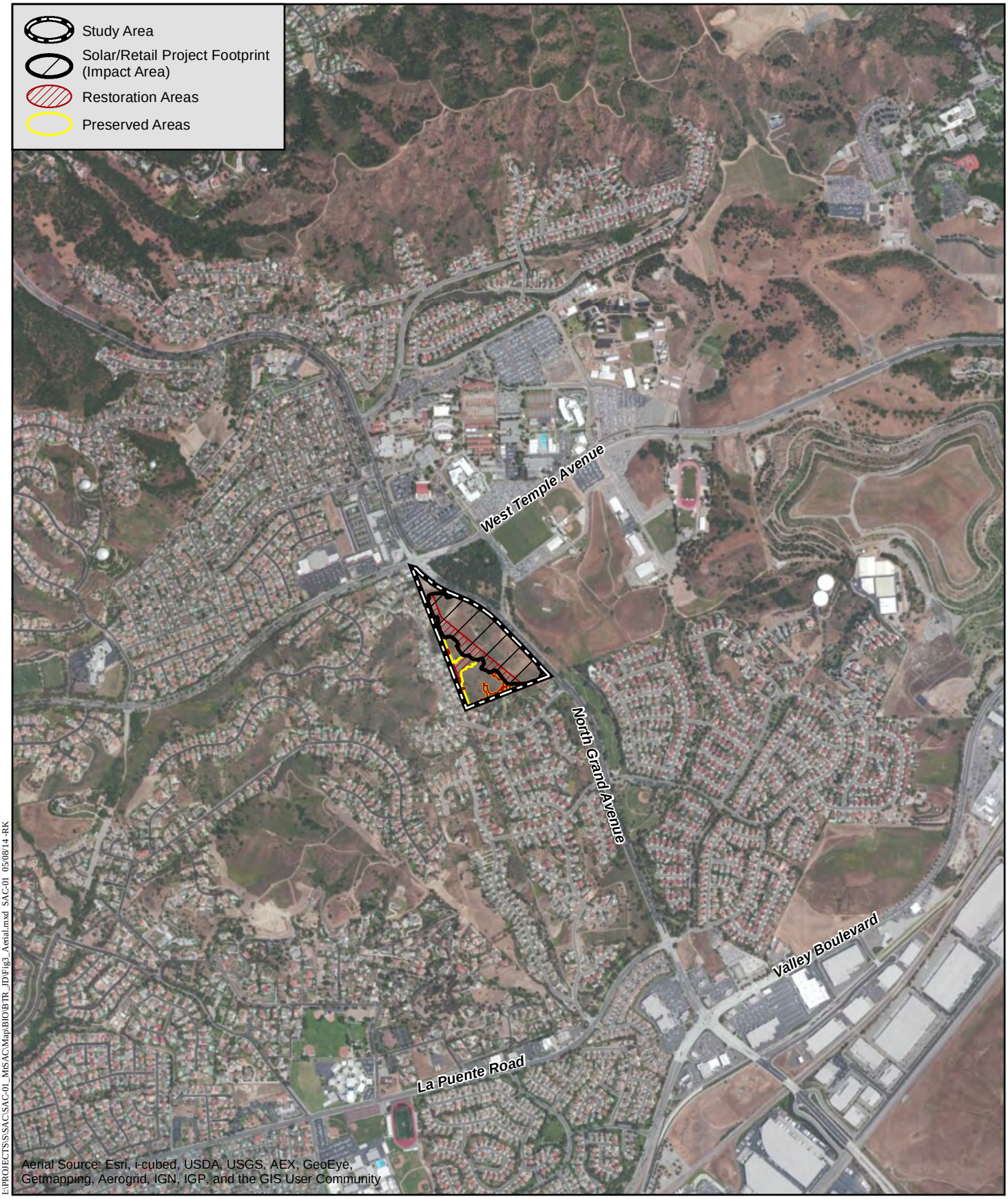
Project Location Map (USGS Topography)

WEST PARCEL SOLAR PROJECT

HELIX Environmental Planning

N 0 2,000 Feet

Figure 2



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Project Location Map (Aerial Photograph)

WEST PARCEL SOLAR PROJECT

HELIX Environmental Planning

N 0 2,000 Feet

Figure 3

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National Wetland Inventory

WEST PARCEL SOLAR PROJECT

HELIX Environmental Planning

N 0 350 Feet

Figure 4

rhizospheres along living roots [C3]) and secondary wetland hydrology indicators (e.g., water marks [riverine, B1], sediment deposits [riverine, B2], drift deposits [riverine, B3], drainage patterns in wetlands [B10], shallow aquitard [D3], and positive FAC neutral test [D5]).

Areas were determined to be non-wetland WUS if there was evidence of regular surface flow (e.g., bed and bank), but neither the vegetation nor soils criterion was met. Jurisdictional limits for these areas were defined by the ordinary high water mark (OHWM), which is defined in 33 CFR Section 329.11 as "that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank; shelving; changes in the character of the soil; destruction of terrestrial vegetation; the presence of litter or debris; or other appropriate means that consider the characteristics of the surrounding areas." The USACE has issued further guidance on the OHWM (Riley 2005; Lichvar and McColley 2008), which also has been used for this delineation. The OHWM widths were measured to the nearest foot at various locations along mapped drainages.

Waters of the state (WS) jurisdictional boundaries were determined based on the presence of riparian vegetation or regular surface flow. Streambeds within CDFW jurisdiction were delineated based on the definition of streambed as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supporting fish or other aquatic life. This includes watercourses having a "surface or subsurface flow that supports riparian vegetation" (Title 14, Section 1.72). This definition for CDFW jurisdictional habitat allows for a wide variety of habitat types to be jurisdictional, including some that do not include wetland species (e.g., oak woodland and alluvial fan sage scrub). Definitions of CDFW jurisdictional areas are presented in Appendix B. Streambed widths were measured to the nearest foot at various locations along the channel. The CDFW publication on dryland watersheds (Vyverberg 2010) was used as an aid to map streambeds.

One sample point was studied; a standard data form was completed in the field and is included in Appendix C. A photograph was taken of the sample point and is included in Appendix D. The WUS mapping was verified in the field on April 8, 2015, by Pamela K. Kostka, Regulatory Project Manager with USACE.

3.0 RESULTS OF RESEARCH, SURVEYS, AND MAPPING

3.1 VEGETATION COMMUNITIES

Two native vegetation communities occur within the study area (Table 1; Figure 5). The entire West Parcel is subjected to ongoing grazing, although the impact of grazing on this part of Mt. SAC is much less compared to other parts of the campus. These native vegetation communities retain significant native species cover. The areas that do not support a minimum amount of native vegetation have been mapped as extensive agricultural. The other non-vegetation types mapped on the West Parcel are disturbed habitat, which occurs at the northern end of the parcel, and developed.

Table 1 EXISTING VEGETATION COMMUNITIES	
NATIVE AND NATURALIZED VEGETATION	**ACREAGE**
Mule fat scrub	0.06
Venturan coastal sage scrub (including disturbed)	14.20
Subtotal	**14.26**
ACTIVE USE AND ALTERED AREAS	
Extensive agriculture	12.43
Disturbed habitat	0.71
Developed	0.25
Subtotal	**13.39**
TOTAL	**27.65**

3.1.1 Mule Fat Scrub

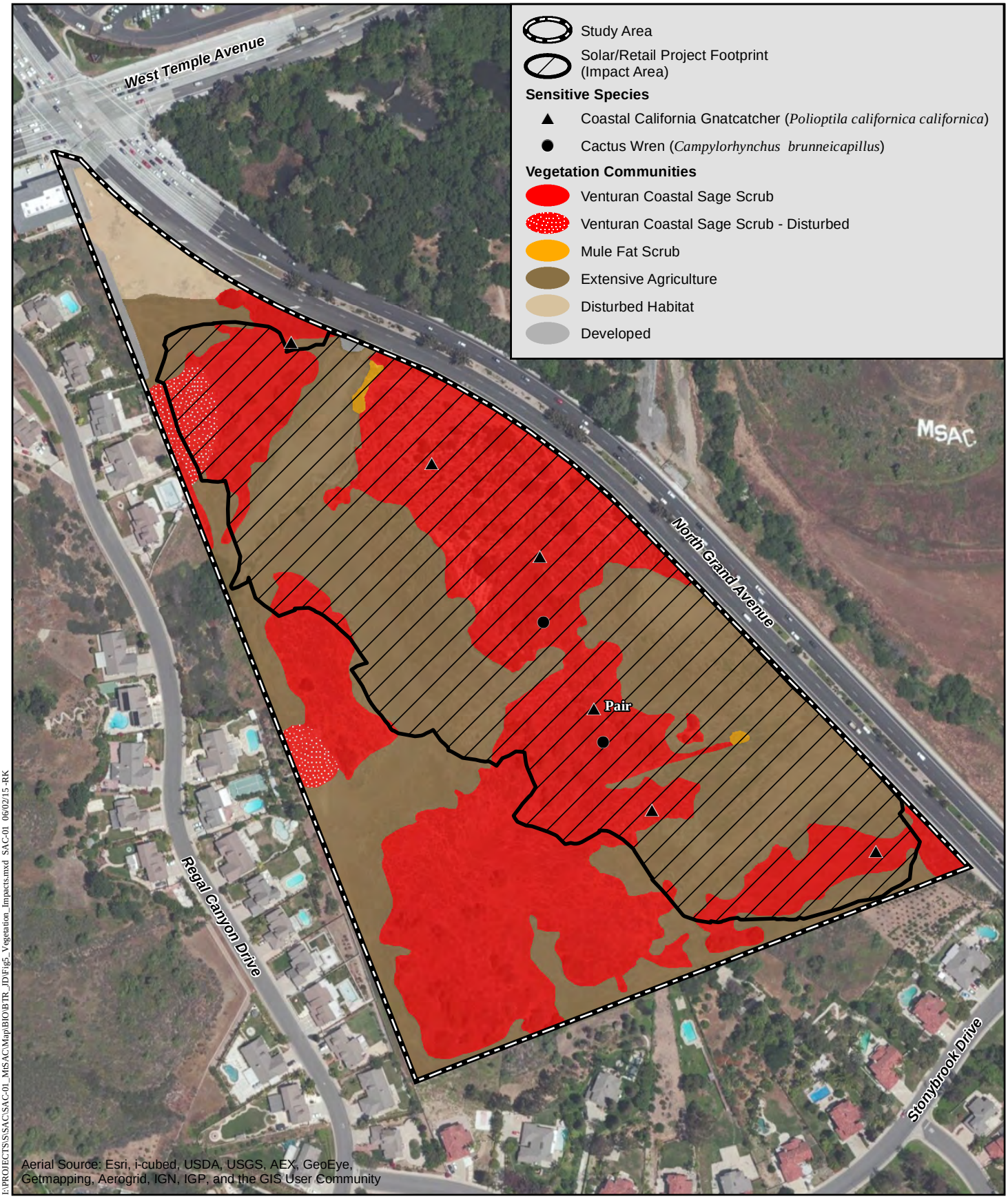
Mule fat scrub is a shrubby riparian scrub community dominated by mule fat and interspersed with shrubby willows (*Salix* spp.; Holland 1986). The mule fat scrub in the study area occurs along the northern drainage and is a potentially jurisdictional wetland. Approximately 0.06 acre of mule fat scrub occurs within the West Parcel.

3.1.2 Venturan Coastal Sage Scrub

Coastal sage scrub is one of the two major shrub types that occur in cismontane southern California, with the other shrub type being chaparral. Sage scrub occupies relatively xeric sites characterized by shallow soils. Significant portions of sage scrub habitat in southern California have been destroyed or modified, primarily as a result of urban expansion. Venturan coastal sage scrub is dominated by low, soft-woody shrubs with crowns usually touching (and typically with bare ground beneath and between them). Growth occurs in late winter and early spring, following the onset of the winter rains. Characteristic species of Venturan coastal sage scrub include California sagebrush (*Artemisia californica*), various buckwheats (*Eriogonum fasciculatum, E. cinereum,* and *E. parvifolium*), white sage (*Salvia apiana*), black sage (*S. mellifera*), and lemonade berry (*Rhus integrifolia*). This habitat type also occurs as a sparse, low-growing disturbed phase. Approximately 14.2 acres of Venturan coastal sage scrub (including the disturbed phase) occur within the West Parcel. This habitat occurs within the study area as a disturbed phase. These stands have a lower density of shrubs, which may also be smaller than the undisturbed stands, and a greater cover of weedy herbaceous species.

3.1.3 Extensive Agriculture

Extensive agriculture includes those parts of the study area that are actively grazed and currently support an herbaceous dominated community, including forbs (e.g., white-top [*Lepidium appelianum*], mustards [*Brassica* spp., *Hirschfeldia incana,* and *Sisymbrium* spp.], Italian thistle [*Carduus pycnocephalus*], bur clover [*Medicago polymorpha*], and tumbleweed [*Salsola tragus*])



Habitat and Sensitive Species Map/Project Footprint

WEST PARCEL SOLAR PROJECT

HELIX Environmental Planning

N 0 250 Feet

Figure 5

and non-native grasses (e.g., oats [*Avena* sp.] and bromes [*Bromus* sp.]). Approximately 12.43 acres of extensive agriculture occur within the West Parcel.

3.1.4 Disturbed Habitat

Disturbed habitat includes land cleared of vegetation (e.g., dirt roads) and land containing a preponderance of non-native ruderal species that colonize disturbed or previously cleared areas. Disturbed habitat totals approximately 0.71 acre within the study area.

3.1.5 Developed Land

Developed land was mapped where permanent structures, pavement, and/or maintained landscaping have been placed. Most of the developed land occurs along the western boundary, near the northern tip of the parcel. This area consists of landscaping. Also included in this category is a small stand of riparian trees along North Grand Avenue, just north of the northern gate. These trees exist near a leaky cattle watering station and are included in developed because they are sustained by artificial hydrology. Developed land within the West Parcel comprises approximately 0.25 acre.

3.2 SENSITIVE RESOURCES

3.2.1 Sensitive Vegetation Communities

Two vegetation communities found on the project site are considered sensitive by the resource agencies: mule fat scrub and Venturan coastal sage scrub.

3.2.2 Sensitive Plant Species

No sensitive plant species were observed during the current or previous surveys.

Sensitive Plant Species with Potential to Occur

A database search revealed that 33 sensitive plant species are known from the vicinity of Mt. SAC. Four of these are not expected to occur within the study area because they are only known from places with a higher elevation (Greata's aster [*Symphyotrichum greatae*], lemon lily [*Lilium parryi*], San Bernardino grass-of-Parnassus [*Parnassia cirrata* var. *cirrata*], and San Gabriel bedstraw [*Galium grande*]). Nine others are not expected in the study area because their appropriate habitat is absent:

- alkaline soils near hot springs (hot-springs fimbristylis [*Fimbristylis thermalis*]);
- granitic cliffs and canyon walls (San Gabriel Mountains dudleya [*Dudleya densiflora*]);
- alkaline soils (chaparral ragwort [*Senecio aphanactis*]; smooth tarplant [*Centromadia pungens* spp. *laevis*]; Davidson's saltscale [*Atriplex serenana* var. *davidsonii*]; and salt spring checkerbloom [*Sidalcea neomexicana*]);
- chaparral with granitic soil (San Gabriel River dudleya [*Dudleya cymosa* ssp. *crebrifolia*]);

- recently burned or disturbed areas with sandstone soils with carbonate layers (Braunton's milk-vetch [*Astragalus brauntonii*,]);
- coastal salt marshes and swamps, playas, and vernal pools (Coulter's goldfields [*Lasthenia glabrata* ssp. *coulteri*]);
- freshwater marsh (California sawgrass [*Cladum californicum*]); and
- streams and springs, and meadows and seeps (San Bernardino aster [*Symphyotrichum defoliatum*], Sonoran maiden fern [*Thelypteris puberula* var. *sonorensis*]).

Eighteen other sensitive species potentially occur in the study area (Table 2). Surveys were done at the appropriate time of year to detect these species and none were observed. Differences in the climate from year-to-year can influence the size of certain herbaceous species. This is why the potential to occur for certain herbaceous species is rated low to moderate instead of simply just low, even though they were surveyed for at the time of year when they were best observed.

Table 2
POTENTIALLY OCCURRING SENSITIVE PLANT SPECIES

SPECIES	STATUS*	POTENTIAL TO OCCUR	NOTES
Chaparral sand-verbena (*Abronia villosa* var. *aurita*)	--/-- CRPR List 1B.1	Presumed Absent	Flowers from June to September. Coastal sage scrub, chaparral. Annual. Would have been observed if present.
Coulter's saltbush (*Atriplex coulteri*)	--/-- CRPR List 1B.2	Low	Flowers from May to October. Coastal sage scrub in clay soils. Perennial herb.
Nevin's barberry (*Berberis nevinii*)	FE/SE CRPR List 1B.1	Presumed Absent	Flowers March to June. Chaparral, woodland, coastal and riparian scrubs. Would have been observed if present.
Thread-leaved brodiaea (*Brodiaea filifolia*)	FT/SE CRPR List 1B.1	Low to Moderate	Flowers from March to June. Clay soils in woodlands, coastal sage scrub, and grasslands. Perennial herb.
Round-leaved filaree (*California macrophylla*)	--/-- CRPR List 1B.1	Low	Flowers from March to May. Clay soils in woodland and grassland. Annual.
Slender mariposa lily (*Calochortus clavatus* var. *gracilis*)	--/-- CRPR List 1B.2	Low to Moderate	Flowers from March to June. Coastal sage scrub and grassland. Perennial herb.
Plummer's mariposa lily (*Calochortus plummerae*)	--/-- CRPR List 1B.2	Low to Moderate	Flowers from May to July. Granitic, rocky soil in coastal sage scrub and grassland. Perennial herb.

Table 2 (cont.)
POTENTIALLY OCCURRING SENSITIVE PLANT SPECIES

SPECIES	STATUS*	POTENTIAL TO OCCUR	NOTES
Intermediate mariposa lily (*Calochortus weedii* var. *intermedius*)	--/-- CRPR List 1B.2	Low to Moderate	Flowers May to July. Coastal sage scrub and grassland. Perennial herb.
Southern tarplant (*Centromadia parryi* ssp. *australis*)	--/-- CRPR List 1B.1	Low to Moderate	Flowers from May to November. Margins of freshwater marsh and vernally mesic grasslands. Annual.
Parry's spineflower (*Chorizanthe parryi* var. *parryi*)	--/-- CRPR List 1B.1	Low	Flowers from May to July. Sandy or rocky soil in coastal sage scrub. Annual.
Slender-horned spineflower (*Dodecahema leptoceras*)	FE/SE CRPR List 1B.1	Low	Flowers from April to June. Sandy areas in woodlands. Annual.
Many-stemmed dudleya (*Dudleya multicaulis*)	--/-- CRPR List 1B.2	Low to Moderate	Flowers from April to July. Coastal sage scrub and grassland. Perennial herb.
Mesa horkelia (*Horkelia cuneata* ssp. *puberula*)	--/-- CRPR List 1B.1	Low	Flowers from February to September. Sandy or gravelly soils in coastal sage scrub. Perennial herb.
California satintail (*Imperata brevifolia*)	--/-- CRPR List 2B.1	Presumed Absent	Flowers from September to May. Riparian scrub along Snow Creek. Perennial herb. Would have been observed if present.
California muhly **(***Muhlenbergia californica***)**	--/-- CRPR List 4.3	Low	Flowers from July to September. Mesic areas in chaparral, coastal scrub, coniferous forests, meadows and seeps. Perennial rhizomatous herb.
prostrate navarretia (*Navarretia prostrata*)	--/-- CRPR 1B.1	Low	Flowers from April to June. Mesic coastal sage scrub and grasslands. Annual.
Brand's star phacelia (*Phacelia stellaris*)	FC/-- CRPR List 1B.1	Low	Flowers from March to June. Coastal sage scrub. Annual
White rabbit-tobacco (*Pseudognaphalium leucocephalum*)	--/-- CRPR List 2B.2	Low to Moderate	Flowers from July to December. Sandy and rocky soils in woodlands, coastal sage scrub, and grasslands. Perennial herb.

*A listing and explanation of status and sensitivity codes can be found in Appendix E.

3.2.3 Sensitive Animal Species

Two sensitive animal species have been observed on the West Parcel: the federally listed threatened coastal California gnatcatcher and the California Species of Special Concern coastal cactus wren (Figure 5). Least Bell's vireo (*Vireo pusillus bellii*), which is federally and state listed as endangered and a species of concern, was previously observed nearby on the Mt. SAC campus. An analysis of the Primary Constituent Elements (PCEs) for these species shows that the West Parcel is well suited to support the gnatcatcher but not the vireo (Appendix F).

Coastal California gnatcatcher (*Polioptila californica californica*)
Listing: FT/SSC
Distribution: Occurs throughout coastal lowlands.
Habitat(s): Coastal sage scrub and open chaparral.
Status on site: A minimum of one pair and one individual were observed in the coastal sage scrub on the West Parcel in 2008 (Figure 5). Protocol surveys are currently underway for this species at this time. Preliminary results are a pair and three juveniles currently inhabit the West Parcel.

Coastal cactus wren (*Campylorhynchus Brunneicapillus sandiegensis*)
Listing: --/SSC
Distribution: Subspecies occurs throughout desert and coastal areas of southern California.
Habitat(s): Restricted to clumps of native prickly pear (*Opuntia littoralis* and *O. oricola*) or cholla (*Cylindropuntia prolifera*) growing in coastal sage scrub or along washes.
Status on site: Individuals were heard vocalizing in the coastal sage scrub located on the West Parcel in 2008,2013, 2014, and 2015.

Eleven other sensitive animal species potentially occur on the West Parcel (Table 3). All of these are listed as Species of Special concern by CDFW: three species have a moderate potential to occur; two species have low to moderate potential to occur; five species have low potential to occur; and one is not expected.

Table 3
LISTED OR SENSITIVE ANIMAL SPECIES WITH POTENTIAL TO OCCUR

SPECIES	STATUS*	POTENTIAL TO OCCUR
Reptiles		
Red-diamond rattlesnake (*Crotalus exsul*)	--/SSC	Low to moderate. Favors rocky outcrops (limited on site) in coastal sage scrub, chaparral, creosote bush scrub, and areas dominated by cactus.
San Diego horned lizard (*Phrynosoma coronatum blainvillei*)	--/SSC	Low. Occurs in chaparral, open sage scrub, and away from development, in areas containing loose soil.

Table 3 (cont.)
LISTED OR SENSITIVE ANIMAL SPECIES WITH POTENTIAL TO OCCUR

SPECIES	STATUS*	POTENTIAL TO OCCUR
Reptiles (cont.)		
Western patch-nosed snake (*Salvadora hexalepis virgultea*)	--/SSC	Low. Occurs primarily in chaparral and occasionally in coastal sage scrub.
Birds		
Burrowing owl (*Athene cunicularia hypugea*)	--/SSC	Low. Prefers flat grassland, open sage scrub, and desert habitats. Could be found in the flatter disturbed sage scrub, grassland, and parts of areas mapped as extensive agriculture.
Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*)	--/SSC	Moderate. Occurs in coastal sage scrub on rocky hillsides and in open chaparral. Open areas of sage scrub occur on site.
California horned lark (*Eremophila alpestris actia*)	--/SSC	Moderate. Common in agricultural fields and disturbed grasslands throughout southern California. Small flock observed in 2008 elsewhere at Mt. SAC. Not observed on West Parcel.
Mammals		
American badger (*Taxidea taxus*)	--/SSC	Not expected. Upland grasslands, meadows, and fields. Not enough suitable habitat present to support this species.
Northwestern San Diego pocket mouse (*Chaetodipus fallax fallax*)	--/SSC	Moderate. The northwestern San Diego pocket mouse inhabits coastal sage scrub, sage scrub/grassland ecotones, and chaparral communities. Inhabits open, sandy areas of both the Upper and Lower Sonoran life-zones of southwestern California and northern Baja California, Mexico.
Pallid bat (*Antrozous pallidus*)	--/SSC	Low to roost on site. Roosts in caves, mines, crevices, and abandoned buildings. Could forage on site.
San Diego black-tailed jackrabbit (*Lepus californicus bennettii*)	--/SSC	Low. Occurs primarily in open habitats, including coastal sage scrub, chaparral, grasslands, croplands, and open, disturbed areas if there is at least some shrub cover present.

Table 3 (cont.) **LISTED OR SENSITIVE ANIMAL SPECIES WITH POTENTIAL TO OCCUR**		
SPECIES	**STATUS***	**POTENTIAL TO OCCUR**
Mammals (cont.)		
San Diego desert woodrat (*Neotoma lepida intermedia*)	--/SSC	Low to Moderate. Occurs in open chaparral and coastal sage scrub, often building large stick nests in rock outcrops or around clumps of cactus or yucca.

*A listing and explanation of status codes for plant and animal species can be found in Appendix E

3.3 JURISDICTIONAL AREAS

A single wetland delineation point was sampled within the West Parcel (Figures 6 and 7). Only one point was necessary because the location sampled was the most mesic location on the West Parcel and it proved to not be a wetland. Sampling Point 1 was located in the northern streambed in mule fat scrub. Only one wetland plant was dominant at this location, mule fat[1] (*Baccharis salicifolia*), thus meeting the Dominance Test for wetland vegetation. A soil pit was excavated to a depth of 18 inches revealed three layers of sandy loam, with chromas of: 7.5 YR 2.5/2 (0 to 2 inches), 10YR 3/2 ((2 to 9 inches), and 10YR 2.5/3 (9 to 18 inches). No hydric soil indicators were present. One secondary indicator of wetland hydrology was present, drift deposits (B3, riverine), which is insufficient for the wetland hydrology criterion.

The Arid West Supplement notes that sandy soils such as the ones at this location may be problematic. However, given the lack of wetland soil indicators, strong wetland vegetation and wetland hydrology must be present to conclude this sampling point is in a wetland. Vegetation dominated by a FAC plant and only one secondary wetland hydrology indicator is insufficient to make that conclusion. This location is considered a non-wetland WUS and WS (mule fat scrub).

The WUS at the West Parcel consist of 0.08 acre of non-wetland WUS, along a total of 999 linear feet of streambed (Figure 6). The WUS exist as ephemeral streams. The northern stream comprises 0.05 acre and 585 linear feet of the on-site WUS. The southern stream comprises 0.02 acre and 414 linear feet of the on-site WUS.

The WS at the West Parcel total 0.20 acre and 999 linear feet (Figure 7). Of this total, 0.06 acre and 133 linear feet consist of mule fat scrub and 0.14 acre and 866 linear feet consist of streambed.

[1] Mule fat is FAC, or has a 50 percent probability of occurring in a wetland.

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Waters of the U.S.

WEST PARCEL SOLAR PROJECT

HELIX Environmental Planning

N 0 300 Feet

Figure 6

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Waters of the State

WEST PARCEL SOLAR PROJECT

HELIX Environmental Planning

N 0 300 Feet

Figure 7

4.0 REGIONAL AND REGULATORY CONTEXT

Biological resources are subject to regulatory review by the federal government and State of California. The federal government administers non-marine plant- and wildlife-related issues through the U.S. Fish and Wildlife Service (USFWS), while WUS issues are administered by the USACE. California law relating to wetland, water-related, and wildlife issues is administered by the CDFW. The State Water Resources Control Board (SWRCB) also has a role in permitting impacts to WUS.

4.1 FEDERAL GOVERNMENT

Administered by the USFWS, the federal Endangered Species Act (ESA) provides the legal framework for the listing and protection of species (and their habitats) that are identified as being endangered or threatened with extinction. Actions that jeopardize endangered or threatened species and the habitats upon which they rely are considered a "take" under the ESA. Section 9(a) of the ESA defines take as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." "Harm" and "harass" are further defined in federal regulations and case law to include actions that adversely impair or disrupt a listed species' behavioral patterns.

Sections 4(d), 7 and 10(a) of the federal ESA regulate actions that could jeopardize endangered or threatened species. A special rule under Section 4(d) was finalized, which authorizes incidental take of certain protected species within subregions that are actively preparing a Natural Communities Conservation Programs (NCCP) plan or under approved NCCPs, which are administered by the states. Section 7 describes a process of federal interagency consultation for use when federal actions may adversely affect listed species. Federal actions by private, state, or local entities typically consist of activities that involve federal approvals/permits or federal funding. A biological assessment is required for any major construction activity if it may affect listed species. In this case, take can be authorized via a letter of biological opinion issued by the USFWS for non-marine related listed species issues. A Section 7 consultation (formal or informal) is required when there is a nexus between endangered species' impacts and issuance of a Clean Water Act (CWA) permit by the USACE for work in jurisdictional areas or other federal actions. Section 10(a) allows issuance of permits for "incidental" take of endangered or threatened species with preparation of a habitat conservation plan (HCP). The term "incidental" applies if the taking of a listed species is incidental to (and not the purpose of) an otherwise lawful activity. An HCP demonstrating how the taking would be minimized and how steps taken would ensure the species' survival must be submitted for issuance of Section 10(a) permits.

All migratory bird species that are native to the United States or its territories are protected under the federal Migratory Bird Treaty Act (MBTA), as amended under the Migratory Bird Treaty Reform Act of 2004 (FR Doc. 05-5127; USFWS 2004). The MBTA is generally protective of migratory birds but does not actually stipulate the type of protection required. In common practice, the USFWS places restrictions on disturbances allowed near active raptor nests.

Federal wetland regulation (non-marine issues) is guided by the Rivers and Harbors Act of 1899 and the Clean Water Act (CWA). The Rivers and Harbors Act deals primarily with discharges

into navigable waters, while the purpose of the CWA is to restore and maintain the chemical, physical, and biological integrity of all WUS. Permitting for projects filling WUS (including wetlands) is overseen by the USACE under Section 404 of the CWA. Projects are permitted on an individual basis or by a general or nationwide permit. Individual permits are assessed individually based on the type of action, amount of fill, etc., and typically require substantial time (often longer than 6 months) to review and approve. Nationwide permits, on the other hand, are pre-approved if a project meets certain conditions and maximum areas of affect. A Section 401 certification or waiver under the federal CWA would also be required from the SWRCB in conjunction with any Section 404 permit that is required.

4.2 STATE OF CALIFORNIA

The California ESA is similar to the federal ESA in that it contains a process for listing of species and regulating potential impacts to listed species. Section 2081 of the California ESA authorizes the CDFW to enter into a memorandum of agreement for take of listed species for scientific, educational, or management purposes.

The Native Plant Protection Act (NPPA) enacted a process by which plants are listed as rare or endangered. The NPPA regulates the collection, transport, and commerce in plants that are listed. The California ESA follows the NPPA and covers both plants and animals that are determined to be endangered or threatened with extinction. Plants listed as rare under the NPPA are also designated as rare under the California ESA.

The California Fish and Game Code (Sections 1600 et seq.) requires an agreement with the CDFW for projects affecting riparian and wetland habitats through issuance of a Streambed Alteration Agreement (SAA).

The California Environmental Quality Act (CEQA) and its implementing guidelines (CEQA Guidelines) require discretionary projects with potentially significant effects (or impacts) on the environment to be submitted for environmental review. Mitigation for significant impacts to the environment is determined through the environmental review process, in accordance with existing laws and regulations.

Mt. SAC is the Lead Agency for this project's CEQA review process. As Lead Agency, Mt. SAC will be responsible for certifying the CEQA document and making a decision on the West Solar Project.

Mt. SAC is not a participant in the NCCP, nor is it within an HCP planning area. The California NCCP Act (Section 2835) allows the CDFW to authorize take of species covered by plans in agreement with NCCP guidelines (CDFW 1997). An NCCP initiated by the State of California under Section 4(d) of the federal ESA focuses on conserving coastal sage scrub in order to avoid the need for future federal and state listing of coastal sage scrub- dependent species. The coastal California gnatcatcher is presently listed as threatened under the federal ESA, while several additional species inhabiting coastal sage scrub are candidates for federal listing. Because Mt. SAC is not enrolled as a participant in the NCCP, the proposed 2012 Master Plan cannot rely on a habitat loss permit under Section 4(d) of the federal ESA. Since there is not an existing HCP

for the study area, any projects that would cause "take" of a listed species would require an application to the USFWS for issuance of a Section 10(a) permit for "incidental" take of endangered or threatened species (with preparation of an HCP.).

4.3 WILDLIFE CORRIDORS

Wildlife corridors can be local or regional in scale and may function in different ways, depending on species and time of year. They represent areas where wildlife movement is concentrated due to natural or manmade constraints. Local corridors provide access to resources such as food, water, and shelter. Animals can use these corridors (such as hillsides and tributary drainages to main drainages) to travel among different habitats (i.e., riparian and upland habitats). Some animals require riparian habitat for breeding and upland habitat for burrowing. Regional corridors provide these functions and also link two or more large areas of open space. They provide avenues for wildlife dispersal, migration, and contact between otherwise distinct populations.

The 4-lane roadway to the east and residential development to the south and west create a barrier to reptiles, amphibians, and small mammals. Extant native habitat exists within a short distance of the West Parcel that is potentially available to medium-sized mammals (e.g., coyotes and raccoons) and birds.

5.0 IMPACTS

Impacts addressed in this section are considered either direct or indirect. A direct impact occurs when the primary effects of the project replace existing habitat with graded or developed areas. All of the project area is considered impacted for the purposes of this report. An indirect impact consists of secondary effects of a project such as exotic species invasion, increased lighting, noise, and increased human intrusion. The magnitude of an indirect impact can be the same as a direct impact; however, the effect usually takes a longer time to become apparent. This impact analysis is based on the footprint for the grading and solar array on the West Parcel.

5.1 THRESHOLDS OF SIGNIFICANCE

Significance thresholds identified for biological resource issues include effects to rare, threatened, or endangered species or their associated habitats, and interference with the movements of resident or migratory fish or wildlife species. For purposes of this report, significance thresholds are summarized as follows: (1) a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS; (2) a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the CDFW or USFWS; (3) a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA through direct removal, filling, hydrological interruption, or other means; (4) a substantial interference with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native

wildlife nursery sites; (5) a conflict with any applicable policies protecting biological resources; and (6) a conflict with the provisions of an adopted HCP, NCCP, or other applicable habitat conservation plan. In response to the sixth threshold, it should be noted that there are no adopted plans applicable to the Mt. SAC study site.

5.2 DIRECT IMPACTS

5.2.1 Vegetation Communities and Developed Land

The solar power project on the West Parcel would directly impact two vegetation types, as well as extensive agriculture, disturbed habitat, non-native vegetation, and developed land (Table 4; Figure 5). A total of 17.22 acres would be impacted by the project.

Table 4
EXISTING VEGETATION COMMUNITIES

NATIVE AND NATURALIZED VEGETATION	AREA		
	Existing	**Impacted**	**Preserved**
Mule fat scrub	0.06	0.06	0
Venturan coastal sage scrub (including disturbed)	14.20	8.36	5.84
Subtotal	**14.26**	**8.42**	**5.84**[1]
ACTIVE USE AND ALTERED AREAS			
Extensive agriculture	12.43	8.78	3.65
Disturbed habitat	0.71	0.00	.71
Developed	0.25	0.02	0.23
Subtotal	**13.39**	**8.80**	**4.59**
TOTAL	**27.65**	**17.22**	**10.43**

[1] This total includes area within the fuel modification zone adjacent to the residential area to the west. The fuel zone areas will not be included as preserved for the purposes of calculating available mitigation on the West Parcel. The resulting amount of preservation available on the West Parcel is 5.07 acres.

5.2.2 Sensitive Vegetation Communities

Direct impacts will occur to 0.06 acre of mule fat scrub and 8.42 acres of Venturan coastal sage scrub (included the disturbed phase); these impacts are considered significant. The impacts to mule fat scrub are significant because it is a wetland habitat. The impacts to the sage scrub are considered significant because of the regional sensitivity of the sage scrub and the presence of a federally listed species, the coastal California gnatcatcher, and state sensitive species, the coastal cactus wren. The impacts to the remaining habitats or areas are not significant because the habitat is not regarded as sensitive habitat (extensive agriculture, disturbed habitat, and developed areas).

5.2.3 WUS and WS Jurisdictional Wetlands

All of the southern streambed and most of the northern streambed would be impacted by the project (Table 5). All of the mule fat scrub would be impacted. While the streambed impacts are not significant under CEQA they will require permitting by the USACE, CDFW, and SWRCB. The impact to mule fat scrub is significant under CEQA and would require a permit from CDFW.

Table 5
JURISDICTIONAL IMPACTS (acres/linear feet)

	EXISTING	IMPACTED	REMAINING
Waters of the U.S.			
Non wetland	0.08/999	0.08/976	0*/23
Waters of the State			
Mule fat scrub	0.06/133	0.06/133	
Streambed	0.14/999	0.14/843	0*/23
State Total	0.20/999	0.20/976	0*/23

* The small segment (i.e., 34 feet) of the southern drainage at the western boundary will remain; however, the area is too small to be reflected in these calculations, which are rounded to the second decimal place.

5.2.4 Sensitive Plants

No impacts to sensitive plant species are expected from the implementation of the West Parcel Solar Project.

5.2.5 Sensitive Animals

Construction of the various project elements would impact habitat on site that supports two sensitive animal species, the coastal California gnatcatcher and coastal cactus wren. Potential impacts to the non-federally listed species (i.e., cactus wren and horned lark) and their habitats would not be considered significant. Potential impacts to the gnatcatcher are regarded as significant.

A limited amount of potentially suitable habitat for burrowing owl (*Athene cunicularia hypugea*) exists in two places in the study area. Both areas are relatively flat. One occurs primarily north of the northern drainage. The other occurs adjacent to North Grand Avenue in the southeastern part of the parcel. Revised survey protocol (CDFW 2012c) could not be met for this report due to the seasonally timing requirements of the survey protocol, and so a definitive conclusion about the presence of burrowing owls cannot be made. The probability of this species inhabiting Mt. SAC appears low. No owls or evidence of their burrows were observed during the focused sensitive bird surveys, general biological survey, and rare plant surveys (HELIX 2008b). Furthermore, most of the West Parcel, with the exception of the two areas cited above, is too steep for these owls. The CNDDB records show that the nearest burrowing owl record is

approximately 9 miles southwest of Mt. SAC, in the City of Chino Hills (Danbury Park). Protocol surveys for burrowing owl are underway and thus far have been negative. While it seems unlikely owls are present, potential impacts to this species remain unresolved in the absence of protocol surveys.

Raptors

Construction of the proposed project would potentially directly impact raptor foraging and nesting habitat through construction activity. Impacts to raptor foraging habitats would be adverse but not significant. Direct impacts to active raptor nests are prohibited under the federal MBTA, although raptor nesting habitat is extremely limited on the West Parcel and no nests were observed during the other surveys. There remains, however, a potential to impacts to raptors from nest disruption during project construction.

5.3 INDIRECT IMPACTS

Potential indirect impacts from project construction could include decreased water quality (i.e., through sedimentation, contaminants, or fuel release), fugitive dust, colonization of non-native plant species in previously undisturbed areas, edge effects, animal behavioral changes, roadkill, night lighting, errant construction impacts, and noise. The proposed project will be subject to the restrictions and requirements that address erosion and runoff, including the federal CWA. Best management practices also should be used throughout construction to further reduce impacts. A discussion of potential indirect impacts follows.

5.3.1 Water Quality

Water quality can be adversely affected by potential surface runoff and sedimentation. The use of petroleum products (i.e., fuels, oils, and lubricants) could potentially contaminate surface water and affect biological resources. Decreased water quality may adversely affect vegetation, aquatic animals, and terrestrial wildlife that depend on these resources. However, Mt. SAC must comply with control requirements of the National Pollutant Discharge Elimination System (enforced by the SWRCB) during the construction and operation of the proposed facilities. Compliance with the water quality regulations would mean that the potential impacts to downstream biological resources would be less than significant.

5.3.2 Fugitive Dust

Fugitive dust can disperse onto sensitive vegetation, and a continual cover of dust may reduce the overall vigor of individual plants by reducing their photosynthetic capabilities and increasing their susceptibility to pests or disease. In turn, this could affect animals that are dependent on these plants. Construction activities (including clearing and grading) occurring within or adjacent to the West Parcel could result in the deposition of significant amounts of dust on plants and trees, which could cause a significant impact. Implementation of dust control measures during clearing, grading, and construction (as required for air quality impacts) would reduce potential dust impacts on biological resources to less than significant levels.

5.3.3 Non-native Plant Species

Non-native plants can colonize disturbed areas and could potentially spread into adjacent native habitats. Many of these non-native plants are highly invasive and can displace native vegetation, reducing native species diversity. An abundance of non-native species could potentially increase flammability and fire frequency, change ground and surface water levels, or adversely affect native wildlife that are dependent on native plant species. Revegetation for erosion control and the use of landscaping could increase colonization by non-native plant species in non-impact areas that contain native vegetation. This impact could potentially occur to the native Venturan coastal sage scrub habitat if invasive landscaping plants are planted as part of the landscaping plans. Potential impacts by non-native plant species and the resulting degradation of habitat used by native species could be considered a significant impact.

5.3.4 Human Activity/Edge Effects

Urbanization and increases in human activity can result in degradation to sensitive vegetation by fragmenting the land and forming edges between developed areas and habitat. These edges make it easier for non-native plant species to invade native habitats and for native and non-native predators to access prey that may have otherwise been protected within large, contiguous blocks of habitat. In addition, secondary extinctions through disruption of predator-prey, parasite-host, and plant-pollinator relations can also occur (Soulé 1986). Edge effects can be particularly significant. For example, when a nest parasite such as the brown-headed cowbird (*Molothrus ater*) has easy access to other birds' nests, brood parasitism in that area will increase. Illegal dumping of trash may also increase in these areas.

Human activity and edge effects resulting from the proposed solar site are not considered significant. Once constructed, the solar site will not increase the level of human related activities over what currently exists there today.

5.3.5 Roadkill

This project is not expected to significantly increase the amount of traffic in area following construction; therefore, effects due to roadkill are not expected to be significant.

5.3.6 Night Lighting

Night lighting exposes wildlife species to an unnatural light regime and may alter their behavior patterns, which could result in a loss of species diversity. Night lighting on native habitats also can provide nocturnal predators with an unnatural advantage over their prey. This could cause an increased loss in native wildlife. This impact would only be significant if the facility is illuminated at night. Unless appropriate measures are taken during the building design phase to prevent release of light into adjacent habitat, night lighting could result in a significant impact.

5.3.7 Errant Construction Impacts

Another potentially significant indirect impact of project construction is errant construction impacts outside the limits of construction (i.e., construction vehicles encroaching beyond the limits of work and entering native habitat). Any such activities occurring outside the construction limits within sensitive habitat would be considered a significant indirect impact.

5.3.8 Noise

Noise can cause animals to flee, which could be especially significant to birds that may abandon active nests. Additionally, birds may be susceptible to disturbances other than noise from construction activity. For example, construction activity within 500 feet of an active raptor nest may cause the nest to be abandoned and that impact would be considered significant. Although no active raptor nests were observed on site during the general survey, it is possible that they may occur on or adjacent to the study site near areas where construction activity is planned.

6.0 MITIGATION

This section lists each of the significant impacts anticipated from construction of the proposed project. Following each impact is the corresponding mitigation measure(s) (MM) to reduce each impact to less than significant.

6.1 DIRECT IMPACTS

6.1.1 Sensitive Vegetation Communities

Impact 6.1.1 Impacts to two sensitive vegetation types were documented on site: mule fat scrub and Venturan coastal sage scrub (including the disturbed phase). Impacts to both of these habitats area regarded as significant. The impact to streambed was not regarded as significant due to small area affected. The impact to streambed will nonetheless be mitigated for as part of the CWA 404 Permit and 1602 SAA.

MM 6.1.1 The amount and type of mitigation required for these impacts varies on the habitat (Table 6). A 3:1 mitigation ratio, with no net loss of acreage is generally required for wetland impacts. For the impacts to mule fat scrub this means creation of 0.06 acre of mule fat scrub and enhancement of 0.12 acre of wetland habitat on site or nearby. The mitigation ratio for coastal sage scrub (including disturbed phases) is 2:1. For each acre of sage scrub impacted, 2 acres must be preserved or created.

Table 6 VEGETATION MITIGATION ANALYSIS			
VEGETATION COMMUNITY	**IMPACT ACREAGE**	**MINIMUM MITIGATION RATIO**	**MITIGATION ACREAGE**
Mule fat scrub	0.06	3:1[‡]	0.18
Coastal sage scrub (all phases)	8.36	2:1[§]	16.72
TOTAL	**8.42**	**--**	**16.90**

[‡]1:1 creation and 2:1 enhancement
[§]Preservation or restoration

6.1.2 Sensitive Animals

Impact 6.1.2.1 Construction of the proposed solar power generating station would directly impact occupied coastal California gnatcatcher habitat.

MM 6.1.2.1 Because Mt. SAC is not enrolled as a participant in the NCCP, the proposed Master Plan cannot rely on a habitat loss permit under Section 4(d) of the federal ESA. Since there is not an existing HCP for the study area, any projects that would cause "take" of a listed species would require an application to the USFWS for issuance of a Section 10(a) permit for "incidental" take of endangered or threatened species (with preparation of an HCP).

Impact 6.1.2.3 Construction generated noise may adversely affect nesting coastal California gnatcatchers.

MM 6.1.2.3 Construction activities known to generate noise levels capable of disrupting breeding birds will be restricted to their non-breeding season (September 1 to February 14).

Impact 6.1.2.4 Construction of the proposed solar power generating station would directly impact coastal cactus wren habitat.

MM 6.1.2.4 Impacts to coastal cactus wren habitat should be mitigated at 2:1 ratio. That is, for each acre of coastal sage scrub impacted, 2 acres should be created and/or preserved.

Impact 6.1.2.4 Construction of the proposed solar generating station poses unresolved impacts to burrowing owls.

MM 6.1.2.4 A phase one burrowing owl assessment will be conducted in the spring of 2015, if warranted protocol surveys will be done. If the protocol surveys reveal the presence of owls, a relocation plan will be developed in cooperation with CDFW.

Impact 6.1.2.5 Construction activities may cause nest abandonment by raptors.

MM 6.1.2.5 A preconstruction raptor survey will be conducted within 30 days of the start of construction. If a raptor active nest is found within 500 feet and it has a direct line of sight to the project area, construction activities will be modified to avoid disrupting the nest as long as it is active. An exception to this would be any raptor nests east of North Grand Avenue. North Grand Avenue is a four-lane road with a landscaped median. Any nests east of the road would likely be habituated to activity from this busy road and unaffected by construction on the West Parcel.

6.2 INDIRECT IMPACTS

Indirect impacts due to the following causes are less than significant due to compliance with state law or with project design features:

- Dust related to construction shall be controlled through implementation of measures required per dust control mandates, including the application of water on unvegetated, unpaved surfaces during construction.

- Degraded surface water quality will be prevented by implementation of Best Management Practices in accordance with SWRCB guidelines.

The following measures are required to avoid significant effects associated with human activities.

6.2.1 Non-native Plant Species

Impact 6.2.1 Non-native plant species have the potential to colonize non-impact areas and would result in degradation of habitat used by native species, which could be considered a significant impact.

MM 6.2.1 Erosion control seed mixes and landscape plans for the projects should be reviewed by a qualified biologist prior to final approval to ensure that no species on the California Invasive Plant Council (Cal-IPC) list of problem species would be incorporated into the plan(s).

6.2.2 Night Lighting

Impact 6.2.2 Night lighting on native habitats may result in altered behavioral patterns of wildlife species, and possibly a decrease in native species diversity of the site.

MM 6.2.2 All construction lighting and new campus lighting that is adjacent to undeveloped areas should be of low illumination and be shielded and directed downwards and away from adjacent native habitat.

6.2.3 Errant Construction Activities

Impact 6.2.3 Construction activities occurring outside the construction limits may significantly impact adjacent sensitive habitats.

MM 6.2.3 The limits of construction for projects adjacent to sensitive habitats should be delineated with silt fencing/fiber rolls and orange construction fencing. A qualified biologist should attend a pre-construction meeting to inform construction crews about the sensitivity of any adjacent habitat. A qualified biologist should also inspect the fencing upon installation and monitor clearing and grading of (and near) native habitat to prevent unauthorized impacts.)

7.0 WETLAND PERMITTING

7.1 FEDERAL PERMITTING

Temporary and permanent fills and discharges (impacts) to WUS are regulated by the USACE under Section 404 of the CWA (33 USC 401 et seq.; 33 USC 1344; USC 1413; and Department of Defense, Department of the Army, Corps of Engineers 33 CFR Part 323). Impacts would require a Clean Water Act Section 404 permit from the Los Angeles District USACE. Based on the existing acreage of potential USACE jurisdiction, impacts would be covered under Nationwide Permit (NWP) 39 for Institutional Developments or NWP 51 for Land-based Renewable Energy Generation Facilities, although a waiver would be required from the USACE because the impacts exceed 300 linear feet. Notification to the USACE through the preparation of a Pre-Construction Notification (PCN) requesting authorization under either of these NWP's would be required.

7.2 STATE PERMITTING

A Clean Water Act Section 401 Water Quality Certification administered by the SWRCB or Regional Water Quality Control Board (RWQCB) also must be issued prior to any 404 Permit. Submittal of Request for Water Quality Certification to the Los Angeles RWQCB is expected to be required prior to project activities. Applicants are allowed to submit this request prior to certification of the CEQA document; however, the RWQCB will not issue a 401 Certification until a certified CEQA document is provided. There are no isolated waters or wetlands under

RWQCB jurisdiction within the study area that would be subject to the State Porter-Cologne Water Quality Control Act only.

The CDFW regulates temporary and permanent alterations or impacts to streambeds or lakes under California Fish and Game Code 1602. The CDFW requires a SAA for projects that will divert or obstruct the natural flow of water; change the bed, channel, or bank of any stream; or use any material from a streambed. The SAA is a contract between the applicant and CDFW stating what activities can occur in the riparian zone and stream course (California Association of Resource Conservation Districts 2002). Notification of Lake or Streambed Alteration is expected to be required to the South Coast Region CDFW. Applicants are allowed to submit a SAA application prior to certification of the CEQA document; however, CDFW will not issue a 1602 permit until a certified CEQA document is provided.

8.0 SIGNIFIGANCE AFTER MITIGATION

With implementation of the mitigation measures for significant impacts to sensitive resources (listed in Section 6.0), impacts from implementation of the proposed Master Plan to sensitive biological resources would be less than significant.

9.0 CERTIFICATION/QUALIFICATION

The following individuals contributed to the fieldwork and/or preparation of this report.

Rebecca Kress	B.A., Geography, State University of New York, Geneseo, 1999
Justin Palmer	B.A., Geography, San Diego State University, 2001
Aleksandra Richards	M.A., International Relations, University of San Diego, 2010 B.A., Communications, Emphasis in Print Journalism, California State University Fullerton, 2008
W. Larry Sward	M.S., Biology, San Diego State University, 1979 B.S., Biology, San Diego State University, 1975

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Appendix A

FEDERAL JURISDICTIONAL INFORMATION

Appendix A
FEDERAL JURISDICTIONAL INFORMATION

Wetlands and "Waters of the U.S." Definitions

Wetlands. The U.S. Army Corps of Engineers (USACE; Federal Register 1982) and the Environmental Protection Agency (Federal Register 1980) jointly define wetlands as "[t]hose areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (Environmental Laboratory 1987).

Waters of the U.S. The official definition of "Waters of the U.S." and their limits of jurisdiction (as they may apply) are defined by the USACE' Regulatory Program Regulations (Section 328.3, paragraphs [a] 1-3 and [e], and Section 328.4, paragraphs [c] 1 and 2) as follows:

1. All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
2. all interstate waters including interstate wetlands;
3. all other waters such as intrastate lakes, rivers, streams (including intermittent streams) , mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters,
    i. which are or could be used by interstate or foreign travelers for recreation or other purposes; or
    ii. from which fish or shellfish are or could be taken and sold in interstate commerce; or
    iii. which are used or could be used for industrial purpose by industries in interstate commerce;
4. All impoundments of waters otherwise defined as waters of the United States under the definition;
5. Tributaries of waters …;
6. The territorial seas;
7. Wetlands adjacent to waters (other than waters that are themselves wetlands)…

Non-tidal Waters of the U.S. The limits of jurisdiction in non-tidal waters: In the absence of adjacent wetlands, the jurisdiction extends to the ordinary high water mark, or when adjacent wetlands are present, the jurisdiction extends to the limit of the adjacent wetlands.

The term ordinary high water mark (OHWM) means that line on the shore established by the fluctuation of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation (scouring), the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

Waters of the U.S. must exhibit an OHWM or other evidence of surface flow created by hydrologic physical changes. These physical changes include (Riley 2005):

- Natural line impressed on the bank
- Shelving
- Changes in the character of soil
- Destruction of terrestrial vegetation
- Presence of litter and debris
- Wracking
- Vegetation matted down, bent, or absent
- Sediment sorting
- Leaf litter disturbed or washed away
- Scour
- Deposition
- Multiple observed flow events
- Bed and banks
- Water staining
- Change in plant community

Further guidance on identifying the OHWM in the Arid Southwest (Lichvar and McColley 2008). This publication provided geomorphic and vegetation OHWM indicators specific to the Arid Southwest.

.Jurisdictional areas also must be connected to Waters of the U.S. (Guzy and Anderson 2001; U.S. Supreme Court 2001).

As a consequence of the U.S. Supreme Court decision in Rapanos v. United States, a memorandum was developed regarding Clean Water Act jurisdiction (Grumbles and Woodley 2007). The memorandum states that the EPA and the USACE will assert jurisdiction over traditional navigable waters (TNW), wetlands adjacent to TNW, tributaries to TNWs that are a relatively permanent water body (RPW), and wetlands adjacent to TNW. An RPW has year round flow or continuous seasonal flow (i.e., typically for three months or longer). Jurisdiction over other waters (i.e., non TNW and RPW) will be based on a fact specific analysis to determine if they have a significant nexus to a TNW.

Pursuant to the USACE Instructional Guidebook (USACE and EPA 2007), the significant nexus evaluation will cover the subject reach of the stream (upstream and downstream) as well as its adjacent wetlands (Illustrations 2 through 6, USACE and EPA 2007). The evaluation will include the flow characteristics, annual precipitation, ability to provide habitat for aquatic species, ability to retain floodwaters and filter pollutants, proximity of the subject reach to a TNW, drainage area, and the watershed.

Wetland Criteria

Wetland boundaries are determined using three mandatory criteria (hydrophytic vegetation, wetland hydrology, and hydric soil) established for wetland delineations and described within the Wetlands Delineation Manual (Environmental Laboratory 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (USACE 2008). Following is a brief discussion of the three criteria and how they are evaluated.

Vegetation

"Hydrophytic vegetation is defined herein as the sum total of macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present" (Environmental Laboratory 1987).

The wetland indicator status (obligate upland, facultative upland, facultative, facultative wetland, obligate wetland, or no indicator status) of the dominant plant species of all vegetative layers is determined. Species considered to be hydrophytic include the classifications of facultative, facultative wetland, and obligate wetland as defined in the current list of wetland plants of the Arid Southwest (Lichvar, et. al. 2014; Table A-1). The percent of dominant wetland plant species is calculated. The hydrophytic vegetation criterion is considered to be met if it meets the "Dominance Test," "Prevalence Index," or the vegetation has morphological adaptations for prolonged inundation.

Table A-1
DEFINITIONS OF PLANT INDICATOR CATEGORIES

INDICATOR CATEGORIES	ABBREVIATION	QUALITATIVE DESCRIPTION
Obligate	OBL	Almost always occur in wetlands
Facultative Wetland	FACW	Usually occur in wetlands but may occur in non-wetlands
Facultative	FAC	Occur in wetlands and non-wetlands
Facultative Upland	FACU	Usually occur in non-wetlands but may occur in wetlands
Upland	UPL	Almost never occur in wetlands

Hydrology

"The term 'wetland hydrology' encompasses all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface at some time during the growing season. Areas with evident characteristics of wetland hydrology are those where the presence of water has an overriding influence on characteristics of vegetation and soils due to anaerobic reducing conditions, respectively" (Environmental Laboratory 1987).

Hydrologic characteristics must indicate that the ground is saturated to within 12 inches of the surface for at least 5 percent of the growing season during a normal rainfall year (approximately 18 days for most of low-lying southern California). Hydrology criteria are evaluated based on the characteristics listed below (USACE 2008). Where positive indicators of wetland hydrology are present, the limit of the OHWM (or the limit of adjacent wetlands) is noted and mapped. Evidence of wetland hydrology is met by the presence of a single primary indicator or two secondary indicators.

Primary

- surface water (A1)
- high water table (A2)
- saturation (A3)
- water marks (B1; non-riverine)
- sediment deposits (B2; non-riverine)
- drift deposits (B3; non-riverine
- surface soil cracks (B6)
- inundation visible on aerial imagery (B7)
- water-stained leaves (B9)
- salt crust (B11)
- biotic crust (B12)
- aquatic invertebrates (B13)
- hydrogen sulfide odor (C1)
- oxidized rhizospheres along living roots (C3)
- presence of reduced iron (C4)
- recent iron reduction in tilled soils (C6)
- thin muck surface (C7)

Secondary

- watermarks (B1; riverine)
- sediment deposits (B2; riverine)
- drift deposits (B3; riverine)
- drainage patterns (B10)
- dry-season water table (C2)
- crayfish burrows (C8)
- saturation visible on aerial imagery (C9)
- shallow aquitard (D3)
- FAC-neutral test (D5)

In the absence of all other hydrologic indicators and in the absence of significant modifications of an area's hydrologic function, positive hydric soil characteristics are assumed to indicate positive wetland hydrology. This assumption applies unless the site visit was done during the wet season of a normal or wetter-than-normal year. Under those circumstances, wetland hydrology would not be present.

Soils

The USACE and Environmental Protection Agency, in their administration of Section 404 of the Clean Water Act, rely on the National Technical Committee for Hydric Soils (NTCHS) for a definition of hydric soils. According to the NTCHS "A hydric soil is a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part." (Federal Register 1994)

Soils must exhibit physical and/or chemical characteristics indicative of permanent or periodic saturation. Soil matrix and mottle colors are identified at each sampling plot using a Munsell soil color chart (Kollmorgen 1994). Generally, an 18-inch or deeper pit is excavated with a shovel at each sampling plot unless refusal occurs above 18 inches.

Soils in each area are closely examined for hydric soil indicators, including the characteristics listed below. Hydric soil indicators are presented in three groups. Indicators for "All Soils" (A) are used in any soil regardless of texture, indicators for "Sandy Soils" (S) area used in soil layers with USDA textures of loamy fine sand or coarser, and indicators for "Loamy and Clayey Soils" (F) are used with soil layers of loamy very fine sand and finer (USACE 2008).

- histosols (A1)
- histic epipedons (A2)
- black histic (A3)
- hydrogen sulfide (A4)
- stratified layers (A5)
- 1 cm muck (A9)
- depleted below dark surface (A11)
- thick dark surface (A12)
- sandy mucky mineral (S1)
- sandy gleyed matrix (S4)
- sandy redox (S5)
- stripped matrix (S6)
- loamy mucky mineral (F1)
- loamy gleyed matrix (F2)
- depleted matrix (F3)
- redox dark surface (F6)
- depleted dark surface (F7)
- redox depressions (F8)
- vernal pools (F9)
- 2 cm muck (A10)
- reduced vertic (F18)
- red parent material (TF2)

Hydric soils may be assumed to be present in plant communities that have complete dominance of obligate or facultative wetland species. In some cases, there is only inundation during the growing season and determination must be made by direct observation during that season, recorded hydrologic data, testimony of reliable persons, and/or indication on aerial photographs.

Non-wetland Waters of the U.S.

The non-wetland Waters of the U.S. designation is met when an area has periodic surface flows but lacks sufficient indicators to meet the hydrophytic vegetation and/or hydric soils criteria. For purposes of delineation and jurisdictional designation, the non-wetland Waters of the U.S. boundary in non-tidal areas is the OHWM as described in the Section 404 regulations (33 CFR Part 328).

USGS Mapping

The USGS Quad maps are one of the resources used to aid in the identification and mapping of jurisdictional areas. Their primary uses include understanding the subregional landscape position of a site, major topographical features, and a project's position in the watershed.

In our experience the designation of watercourse as a blue-line stream (intermittent or perennial) on USGS maps has been unreliable and typically overstates the hydrology of most streams. This has also been the experience of others, including the late Luna Leopold. Leopold was a hydrologist with USGS from 1952 to 1972, Professor in the Department of Geology and Geophysics, and Department of Landscape Architecture, University of California, Berkeley from 1972 to 1986, and Professor Emeritus from 1987 until his death in 2006. In regard to USGS maps, Dr. Leopold wrote "I tried to devise a way of defining hydrologic criteria for the channels shown on topographic maps and developed some promising procedures. None were acceptable to the topographers, however. I learned that the blue lines on a map are drawn by nonprofessional, low-salaried personnel. In actual fact, they are drawn to fit a rather personalized aesthetic." (1994)

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Appendix B

STATE JURISDICTIONAL INFORMATION

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STATE JURISDICTIONAL INFORMATION

California Department of Fish and Wildlife Regulations

The California Department of Fish and Wildlife (CDFW; Department) regulates alterations or impacts to streambeds or lakes (wetlands) under Fish and Game Code Sections 1600 through 1616 for any private, state, or local government or public utility-initiated projects. The Fish and Game Code Section 1602 requires any entity to notify the Department before beginning any activity that will do one or more of the following: (1) substantially obstruct or divert the natural flow of a river, stream, or lake; (2) substantially change or use any material from the bed, channel, or bank of a river, stream, or lake; or (3) deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into a river, stream, or lake. Fish and Game Code Section 1602 applies to all perennial, intermittent, and ephemeral rivers and streams as well as lakes in the state.

In order to notify the Department, a person, state, or local governmental agency or public utility must submit a complete notification package and fee to the Department regional office that serves the county where the activity will take place. A fee schedule is included in the notification package materials. Under the Permit Streamlining Act (Government Code Sections 65920 et seq.), the Department has 30 days to determine whether the package is complete. If the requestor is not notified within 30 days, the application is automatically deemed to be complete.

Once the notification package is deemed to be complete, the Department will determine whether the applicant will need a Lake or Streambed Alteration Agreement (SAA) for the activity, which will be required if the activity could substantially adversely affect an existing fish and wildlife resource. If an SAA is required, the Department will conduct an on-site inspection, if necessary, and submit a draft SAA that will include measures to protect fish and wildlife resources while conducting the project. If the applicant is applying for a regular SAA (less than five years), the Department will submit a draft SAA within 60 calendar days after notification is deemed complete. The 60-day time period does not apply to notifications for long-term SAAs (greater than 5 years).

After the applicant receives the SAA, the applicant has 30 calendar days to notify the Department whether the measures in the draft SAA are acceptable. If the applicant agrees with the measures included in the draft SAA, the applicant will need to sign the SAA and submit it to the Department. If the applicant disagrees with any measures in the draft SAA, the applicant must notify the Department in writing and specify the measures that are not acceptable. Upon written request, the Department will meet with the applicant within 14 calendar days of receiving the request to resolve the disagreement. If the applicant fails to respond in writing within 90 calendar days of receiving the draft SAA, the Department may withdraw that SAA. The time periods described above may be extended at any time by mutual agreement.

After the Department receives the signed draft SAA, the Department will make it final by signing the SAA; however, the Department will not sign the SAA until it both receives the notification fee and ensures that the SAA complies with the California Environmental Quality

Act (Public Resources Code Section 21000 et seq.). After the applicant receives the final agreement, the applicant may begin the project the agreement covers, provided that the applicant has obtained any other necessary federal, state and/or local authorizations.

Water Resource Control Board Regulations

Section 401 Water Quality Certification

Whenever a project requires a federal Clean Water Act (CWA) Section 404 permit or a Rivers and Harbors Act Section 10 permit, it must first obtain a CWA Section 401 Water Quality Certification. The Regional Water Quality Control Board (RWQCB) administers the 401 Certification program. Federal CWA Section 401 requires that every applicant for a Section 404 permit must request a Water Quality Certification that the proposed activity will not violate state and federal water quality standards.

Porter-Cologne Water Quality Control Act

The State Water Resource Control Board (SWRCB) and the RWQCB regulate the discharge of waste to waters of the State via the 1969 Porter-Cologne Water Quality Control Act (Porter-Cologne) as described in the California Water Code (SWRCB 2008). The California Water Code is the State's version of the Federal CWA. Waste, according to the California Water Code, includes sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing, or processing operation, including waste placed within containers of whatever nature prior to, and for purposes of, disposal. State waters that are not federal waters may be regulated under Porter-Cologne. A Report of Waste Discharge must be filed with the RWQCB for projects that result in discharge of waste into waters of the State. The RWQCB will issue Waste Discharge Requirements (WDRs) or a waiver. The WDRs are the Porter-Cologne version of a CWA 401 Water Quality Certification.

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Date unknown. Streambed/Lake Alteration Notification Guidelines.

Appendix C

DATA FORM

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: West Parcel Solar Project City/County: Walnut/Los Angeles Sampling Date: 17 Feb 2014

Applicant/Owner: Mt. SAC; SAC-02 State: CA Sampling Point: 1

Investigator(s): W. L. Sward Section, Township, Range: Unsectioned land, T 2 South, R 9 East

Landform (hillslope, terrace, etc.): streambed Local relief (concave, convex, none): none Slope (%): 3-5%

Subregion (LRR): C: Mediterranean California Lat: 34°02'29.47"N Long: 117°50'45.36"W Datum: NAD 83 (20

Soil Map Unit Name: -- NWI classification: R4SBA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔ No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____ No ✔	
Wetland Hydrology Present?	Yes _____ No ✔	

Remarks:

SP is located in the lower part of the northern drainage.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 12'X60')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0% = Total Cover		
Sapling/Shrub Stratum (Plot size: 12'X30')			
1. Baccharis salicifolia	70%	yes	FAC
2.			
3.			
4.			
5.			
	70% = Total Cover		
Herb Stratum (Plot size: r=5')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	0% = Total Cover		
Woody Vine Stratum (Plot size: 12'X20')			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 85% % Cover of Biotic Crust 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✔ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No _____

Remarks:

Mule fat scrub. Habitat grazed by cattle. Grazing and low rain fall may have resulted in lack of herb layer. Inconsequential as vegetation meets dominant test.

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-2"	7.5YR 2.5/2	100%					SaL	
2"-9"	10YR 3/2	100%					SaL	
9"-18"	10YR 2.5/3	100%					SaL	Very rocky-no soil peds; color based on loose soil

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ **No** ✔

Remarks:

No hydric soil indicators present. Bottom 2 layers rocky; layer 3 more so than 2.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ✔ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✔ Depth (inches): _____

Water Table Present? Yes _____ No ✔ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): _____

Wetland Hydrology Present? Yes _____ **No** ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

FAC-neutral Test; w:u = 0:0

Appendix D

REPRESENTATIVE SITE PHOTOS

Sampling point 1.
Sampling point located in mule fat scrub.

Northern drainage culvert inlet at North Grand Avenue.

Northern drainage at western property boundary.

Southern drainage culvert inlet at North Grand Avenue.

Leaky infrastructure near North Grand Avenue.

Appendix E

EXPLANATION OF STATUS CODES FOR PLANT AND ANIMAL SPECIES

Appendix E
EXPLANATION OF STATUS CODES FOR PLANT AND ANIMAL SPECIES

FEDERAL, STATE, AND LOCAL CODES

U.S. Fish and Wildlife Service (USFWS)

FE Federally listed endangered
FT Federally listed threatened

California Department of Fish and Game (CDFW)

SE State listed endangered
ST State listed threatened
SSC State species of special concern
Fully Protected May not be taken or possessed at any time, except for recovery activities for state-listed species.

CALIFORNIA RARE PLANT RANKS

Lists

1A = Presumed extinct.

1B = Rare, threatened, or endangered in California and elsewhere. Eligible for state listing.

2A = Plants presumed extinct in California, but more common elsewhere.

2B = Rare, threatened, or endangered in California, but more common elsewhere. Eligible for state listing.

3 = Distribution, endangerment, ecology, and/or taxonomic information needed. Some eligible for state listing.

4 = A watch list for species of limited distribution. Needs monitoring for changes in population status. Few (if any) eligible for state listing.

Threat Code Extensions

.1 = Seriously endangered in California (over 80 percent of occurrences threatened/high degree and immediacy of threat)

.2 = Fairly endangered in California (20 to –80 percent occurrences threatened)

.3 = Not very endangered in California (less than 20 percent of occurrences threatened or no current threats known)

Note that all List 1A (presumed extinct in California) and some List 3 (need more information- a review list) plants lacking any threat information receive no threat code extension. Also, these Threat Code guidelines represent a starting point in the assessment of threat level. Other factors, such as habitat vulnerability and specificity, distribution, and condition of occurrences, are also considered in setting the Threat Code.

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Appendix F

WEST PARCEL COASTAL CALIFORNIA GNATCATCHER AND LEAST BELL'S VIREO ANALYSIS

Appendix F
WEST PARCEL COASTAL CALIFORNIA GNATCATCHER AND LEAST BELL'S VIREO ANALYSIS

The West Parcel is known to provide occupied habitat for the coastal California gnatcatcher (*Polioptila californica californica*) (Figure 1). This species is federally listed as threatened, and is a State Species of Special Concern.

Least Bell's vireo (*Vireo pusillus bellii*) has been observed in the project vicinity (HELIX 2008). This species is federally listed as Endangered and a bird of special concern, and is State listed as endangered and is a State Species of Concern.

This appendix provides a brief analysis of these species' status on the West Parcel and its associated habitat.

Coastal California Gnatcatcher

Species Description: The coastal California gnatcatcher is a small, non-migratory songbird with a long tail that is mostly black above and below. Its plumage is dark blue-gray above and grayish-white below. Both sexes have a white eye ring, and the male has a black cap during the breeding season. Vocalizations of the subspecies include a call of a kitten-like mew (National Geographic Society 1983 *in* USFWS 1991).

Critical Habitat Description: There are 11 designated critical habitat units for the coastal California gnatcatcher that include 197,303 acres of federal, state, local, and private land in Ventura, Los Angeles, Orange, Riverside, San Bernardino, and San Diego counties (72 FR 72010). Designated critical habitat includes habitat throughout the species' range in a variety of climatic zones and vegetation types to preserve the genetic and behavioral diversity that currently exists within the species. The individual units contain essential habitat for the coastal California gnatcatcher and help to identify special management considerations for the species.

Designated Critical Habitat does not occur on site. Unit 12 of the Designated Critical Habitat for this species does occur within a few miles to the north and west (72 FR 72010).

Primary Constituent Elements (PCEs) for the coastal California gnatcatcher are those habitat components that are essential for the primary biological needs of foraging, nesting, rearing of young, intra-specific communication, roosting, dispersal, genetic exchange, or sheltering (72 FR 72010). These include: 1) dynamic and successional sage scrub habitats (i.e., Venturan coastal sage scrub, Diegan coastal sage scrub, Riversidean sage scrub, maritime succulent scrub, Riversidean alluvial fan scrub, southern coastal bluff scrub, and coastal sage-chaparral scrub) that provide space for individual and population growth, normal behavior, breeding, reproduction, nesting, dispersal, and foraging; and 2) non-sage scrub habitats such as chaparral, grassland, and riparian areas, in proximity to sage scrub habitats that provide space for dispersal, foraging, and nesting.

Many of the plant species that comprise the sage scrub on the West Parcel are also listed as constituents of gnatcatcher habitat in the PCEs section of the revised gnatcatcher critical habitat designation (72 FR 72010). Those species, California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), black sage (*Salvia mellifera*), white sage (*Salvia apiana*), California encelia (*Encelia californica*), coyote brush (*Baccharis pilularis*), monkey flower (*Mimulus aurantiacus*) laurel sumac (*Malosma laurina*), lemonade berry (*Rhus integrifolia*), deerweed (*Acmispon glaber*), and coast prickly-pear (*Opuntia littoralis*).

Habitat Characteristics/Use: The coastal California gnatcatcher is closely associated with coastal sage scrub vegetation and it utilizes this community for foraging and nesting. The coastal California gnatcatcher occurs most commonly in coastal sage scrub with high proportions of coastal sagebrush (*Artemisia californica*) and California buckwheat, and less commonly in sub-associations dominated by black sage (*Salvia mellifera*) or lemonadeberry (*Rhus integrifolia*; Atwood 1980, 1990; Mock et al. 1990; Bontrager 1991; Weaver 1998; USFWS 2010b). The birds remain on their territory throughout the year and expand their home range during non-breeding season. They will forage with neighboring individuals in habitats not defended (Preston et al. 1998, Grishaver et al. 1998 *in* Mock 2004).

Studies suggest that coastal California gnatcatchers avoid nesting on steep slopes, or those over 40 percent (72 FR 72010). Steep slopes may still be suitable for dispersal and foraging.

For purposes of this analysis, it is assumed that all Venturan coastal sage scrub (including disturbed) on the West Parcel is suitable habitat for the coastal California gnatcatcher. Therefore, potentially suitable habitat on the West Parcel totals approximately 14.2 acres.

Distribution: The northern and eastern limits of the coastal sage scrub used by the coastal California gnatcatcher are largely bound by mountains; the southern limit is defined by the transition to the Vizcaíno desert about 30 degrees north latitude in Baja California, Mexico (USFWS 2010).

Coastal California gnatcatchers are restricted to relatively low elevations. Ninety-four percent of sample of coastal California gnatcatcher localities in coastal southern California were at or below elevations of 820 feet amsl, and 80 percent of inland localities in Riverside County occurred at elevations of 400 to 820 feet amsl (Atwood 1990). This restriction appears to be due to an inability for the subspecies to tolerate areas where the January mean minimum temperature is less than 36 degrees Fahrenheit (Mock 1998). This constraint also appears to affect the eastern limit of the subspecies' distribution (Mock 1998).

Occurrences within the Project Area: One pair and at least one individual of coastal California gnatcatchers were observed on the West Parcel (Kurnow 2008). Given the amount of sage scrub on site and nearby, it is possible that up to two pairs of gnatcatchers may occupy the site. These observations encompassed the sage scrub from the southern property boundary to the northern limit of sage scrub, including the sage scrub that overlaps or occurs immediately adjacent to waters of the U.S. in the northern and southern drainages (Figure 1).

Least Bell's Vireo

Species Description: The least Bell's vireo is a small, migratory songbird. It is a rather non-descript vireo with one or two faint pale wing bars on otherwise dark wings, dark tail, indistinct spectacles, overall grayish color, with some olive-gray on the rump and upper tail coverts in fresh plumage, underparts nearly pure white, with the sides and flanks washed with pale olive-gray or grayish olive (NatureServe 2015). Diagnostic Characteristics: Differs from other subspecies primarily by being grayer above and whiter below.

Critical Habitat Description: There are 10 designated critical habitat units for the least Bell's vireo that include 38,000 acres of federal, state, local, and private land in Santa Barbara, Ventura, Los Angeles, Riverside, Riverside/San Bernardino, and San Diego counties (59 FR 4845, Feb. 2, 1994). Designated critical habitat includes habitat throughout the species' range in a variety of climatic zones and vegetation types to preserve the genetic and behavioral diversity that currently exists within the species. The individual units contain essential habitat for the least Bell's vireo and help to identify special management considerations for the species. Designated Critical Habitat does not occur on-site. The nearest Critical Habitat for the vireo is the Santa Ana River unit and it is approximately 13 miles to the southeast.

Primary Constituent Elements (PCEs) for the least Bell's vireo are those habitat components that are essential for the primary biological needs of foraging, nesting, rearing of young, inter-specific communication, roosting, dispersal, genetic exchange, or sheltering (72 FR 72010). Vireos are an obligate riparian species during the breeding season, and prefer diverse early successional riparian habitat, including southern willow scrubs and forests. Vireos use a number of riparian habitat types, including cottonwood-willow woodlands/forests, oak woodlands, and mule fat scrub. Occupied breeding habitats include dense cover within 3 to 6 ft of the ground, where nests are typically placed, and a dense, stratified canopy for foraging. Plant species composition does not appear as important a determinant in nesting site selection as habitat structure. For more information on habitat requirements during breeding and migration, please see the draft recovery plan (Service 1998).

Least Bell's vireo nest primarily is willows (*Salix* spp.) but also use a variety of other shrub and tree species for nest placement. Least Bell's vireo forage in riparian and adjoining upland habitats. They usually return to the same nesting territory.

Habitat Characteristics/Use: The least Bell's vireo is closely associated with dense riparian habitat, and it uses this community for foraging and nesting. Foraging may also occur in adjacent uplands. The bird winter in southern Baja California, Mexico, although a very small number of individuals have been known to over winter southern California in the past.

For purposes of this analysis, it is assumed that the least Bell's vireo does not occur on site due to a lack of dense riparian habitat in the project area. A single vireo was observed across Temple Avenue during surveys of the Mt. SAC campus in 2008 (Kahancza). It was observed in the campus' Wildlife Sanctuary. The Wildlife Sanctuary is located at the southeast corner of North Grand Avenue and Temple Avenue. This is a botanic garden with several manmade water features. Snow Creek and its associated riparian vegetation extend south from Temple Avenue

through the Wildlife Sanctuary, and then continue south along North Grand Avenue. Vireo surveys conducted as part of the recent Master Plan Update (Sward and Greene 2012) were done along Snow Creek. The survey area, which included all riparian habitat within 500 feet of any of the recent master plan elements, did not include all of the Wildlife sanctuary. No vireos were observed. Mule fat scrub, which can be habitat for the vireo occurs on the West Parcel. However, the canopy of this habitat is considered too sparse and patchy for vireos: potentially suitable habitat does not occur on the West Parcel.

Distribution: This subspecies formerly was a widespread and abundant breeder throughout Central Valley of California and other low-elevation river valleys; it also occurred in the Sierra Nevada foothills and the Coast Ranges; the range extended from Red Bluff (Tehama County) to northwestern Baja California, including populations in the Owens Valley, Death Valley, and the Mohave Desert. Now it is essentially extirpated from the Central Valley (rare recent nesting in the San Joaquin Valley), and most nesting occurs in southwestern California, from Santa Barbara County southward (mainly in San Diego and Riverside counties), and from northwestern Baja California south to at least Cataviña (USFWS 2006).

Occurrences within the Project Area: Habitat for this species does not occur on the West Parcel and it is not expected in the project area. It was previously observed east of North Grand Avenue, in the college's Wildlife Sanctuary. North Grand Avenue at this location is a 4-lane road, with a landscaped median. The improved roadway is approximately 100 feet wide.

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HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard
La Mesa, CA 91942
619.462.1515 tel
619.462.0552 fax
www.**helixepi**.com

July 17, 2017

Ms. Colleen Draguesku
Carlsbad Fish and Wildlife Office
2177 Salk Ave., Suite 250
Carlsbad, CA 92008

Ms. Pamela K. Kostka
U.S. Army Corps of Engineers
Los Angeles District
Regulatory Division
915 Wilshire Blvd., Suite 930
Los Angeles, CA 90017

Ms. Victoria Chau and Mr. Andrew Valand
California Department of Fish and Wildlife
4665 Lampson Ave.
Los Alamitos, CA 90720

Subject: Geologic Testing at the West Parcel, Mount San Antonio College

Dear Ms. Draguesku, Ms. Kostka, Ms. Chau, and Mr. Valand:

HELIX Environmental Planning, Inc. (HELIX) has been retained by Mount San Antonio College (Mt. SAC) to document an after-the-fact assessment of geologic testing that was undertaken for their West Parcel Solar Project (project). The area that was impacted by the geologic testing occurred within the project footprint that was analyzed and covered by the permits issued by your agencies, which include:

- 404 Nationwide Permit: File No. SPL-2015-00113-PKK
- FWS-LA-14B0243-15F0556
- Streambed Alteration Agreement Notification No. 1600-2015-0022-R5

Specifically, some brush removal occurred in the coastal California gnatcatcher habitat that was not permitted during the breeding season. This letter provides an analysis of what was done and proposed remedial actions.

GEOLOGIC TESTING

On June 12, 2017, four test pits were excavated on the West Parcel at Mt. SAC to investigate a landslide area in preparation for future grading (Figure 1). The test pits were dug using an excavator.

HABITAT IMPACTS

HELIX Senior Biologist Rob Hogenauer inspected the area impacted by the geologic testing on June 30, 2017. Mr. Hogenauer had been to the site previously as part of previous biological surveys. He mapped the footprint of the disturbance using a Trimble GeoXH global positioning system with sub-meter accuracy and took representative photographs (Attachment A).

The footprint from the geologic testing was overlaid on a vegetation map previously prepared by HELIX (Figure 1). This is the same mapping that was used in the acquisition of project permits. The vegetation affected included 0.243 acre of Venturan coastal sage scrub, 0.004 acre of mule fat scrub, and 0.019 acre of extensive agriculture (Table 1). The total impacts were just over one-quarter acre, or 0.266 acre.

Table 1
GEOLOGIC TESTING ANALYSIS
VEGETATION (acre[s])

Habitat	Access Road	Test Pits	Spoil Piles	Total
Venturan coastal sage scrub	0.101	0.022	0.120	0.243
Mule fat scrub	0.004[1]	0	0	0.004[1]
Extensive agriculture	0.018	0	0.001	0.019
TOTAL	**0.123**	**0.022**	**0.121**	**0.266**

[1] Non-wetland waters of the U.S. occur within this habitat type. The impact to waters of the U.S. is approximately 70 square feet, or 0.002 acre.

The mule fat scrub impacts were associated with a new streambed crossing. The streambed was dry at the time and has remained so since. The banks of the streambed were graded to a lower angle and some of the spoils are currently in the streambed. It appears that a small number of shrubs were affected.

REMEDIAL ACTIONS

No activity has occurred on the West Parcel since June 12. Additional work will only occur as permitted.

Mt. SAC has initiated coastal sage scrub restoration at the expanded Wildlife Sanctuary. Due to the presence of coastal California gnatcatchers at this site, the initiation is confined to executing a contract to a qualified restoration contractor, with work scheduled to begin in September 2017. Included in this contract will be the cost of procuring container stock and seeds, as well as their installation.

Mt. SAC proposes to remove the spoils from the streambed with manual labor (e.g., shovels and wheel barrows), and install straw wattles at the outer edge of the streambed. Jute matting, or similar, will also be installed on the disturbed banks of the streambed.

CONCLUSIONS

Mt. SAC mistakenly authorized this work under the incorrect assumption that since the geologic testing was proposed for an area that was to be impacted by the solar project it would be allowed under the permits issued for the project. The college now knows this work was not authorized due to the timing of the work. The college is committed to working with you to avoid future problems with the development

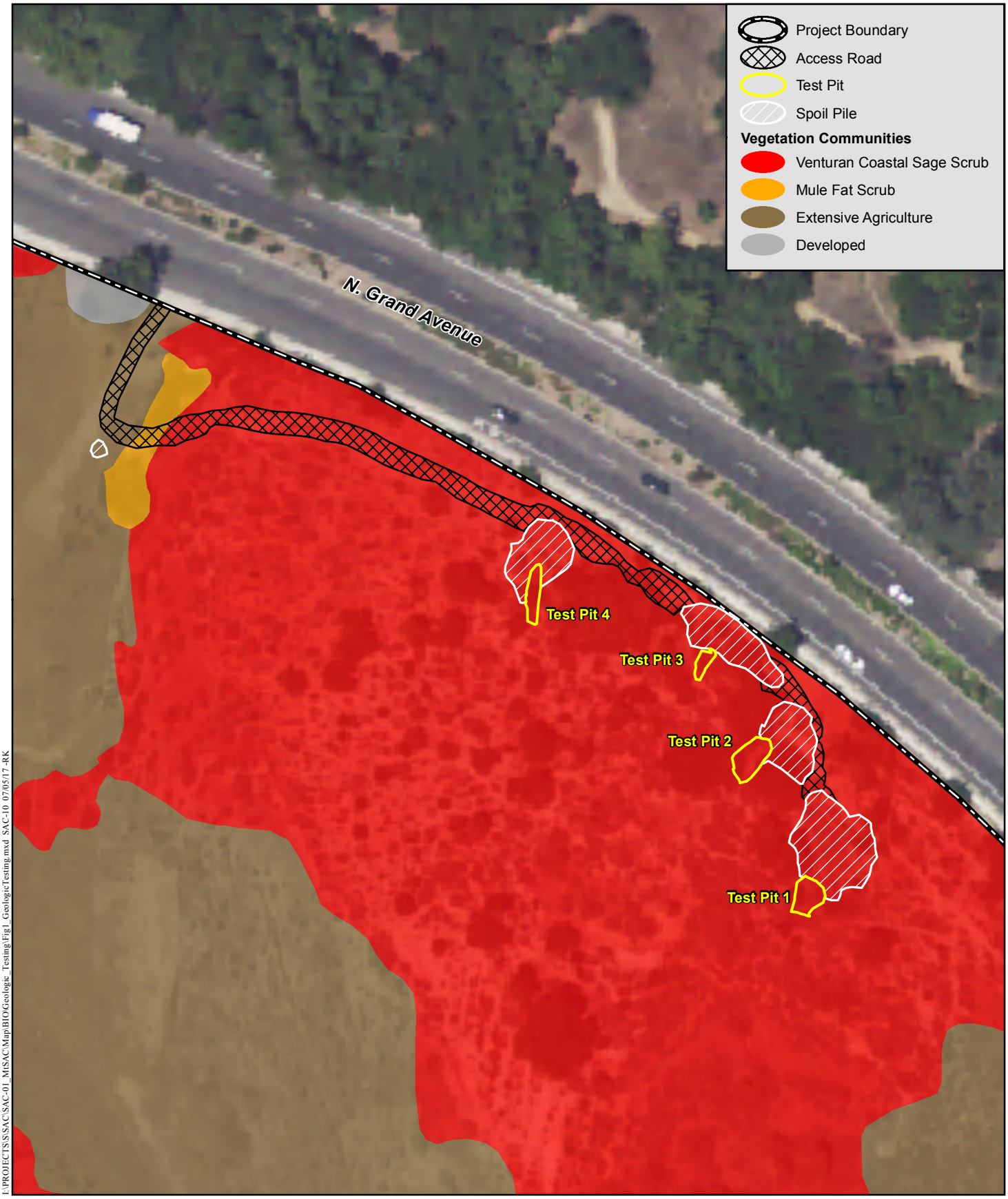
of this site. The college is also moving forward to implement measures to ameliorate the present impacts noted above.

Sincerely,

W. Larry Sward
Principal Biologist

Attachments:
Figure 1: Geologic Testing
Attachment A: Representative Site Photos

cc: Gary Nellesen, Mt. SAC
Gary Gidcumb, Mt. SAC
Sean Absher, Stradling, Attorneys at Law



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Geologic Testing

WEST PARCEL SOLAR PROJECT

HELIX Environmental Planning

N 0 75 Feet

Figure 1

Streambed Crossing
Mule fat scrub removed and minor earthwork done at this location.

Looking south across streambed.

Looking north across streambed.

Streambed Crossing

Mule fat scrub removed and minor earthwork done at this location.

Looking east along north side of streambed.

Looking west along north side of streambed.

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Test Pits

Test Pit 1

Test Pit 2

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Test Pits

Test Pit 3

Test Pit 4

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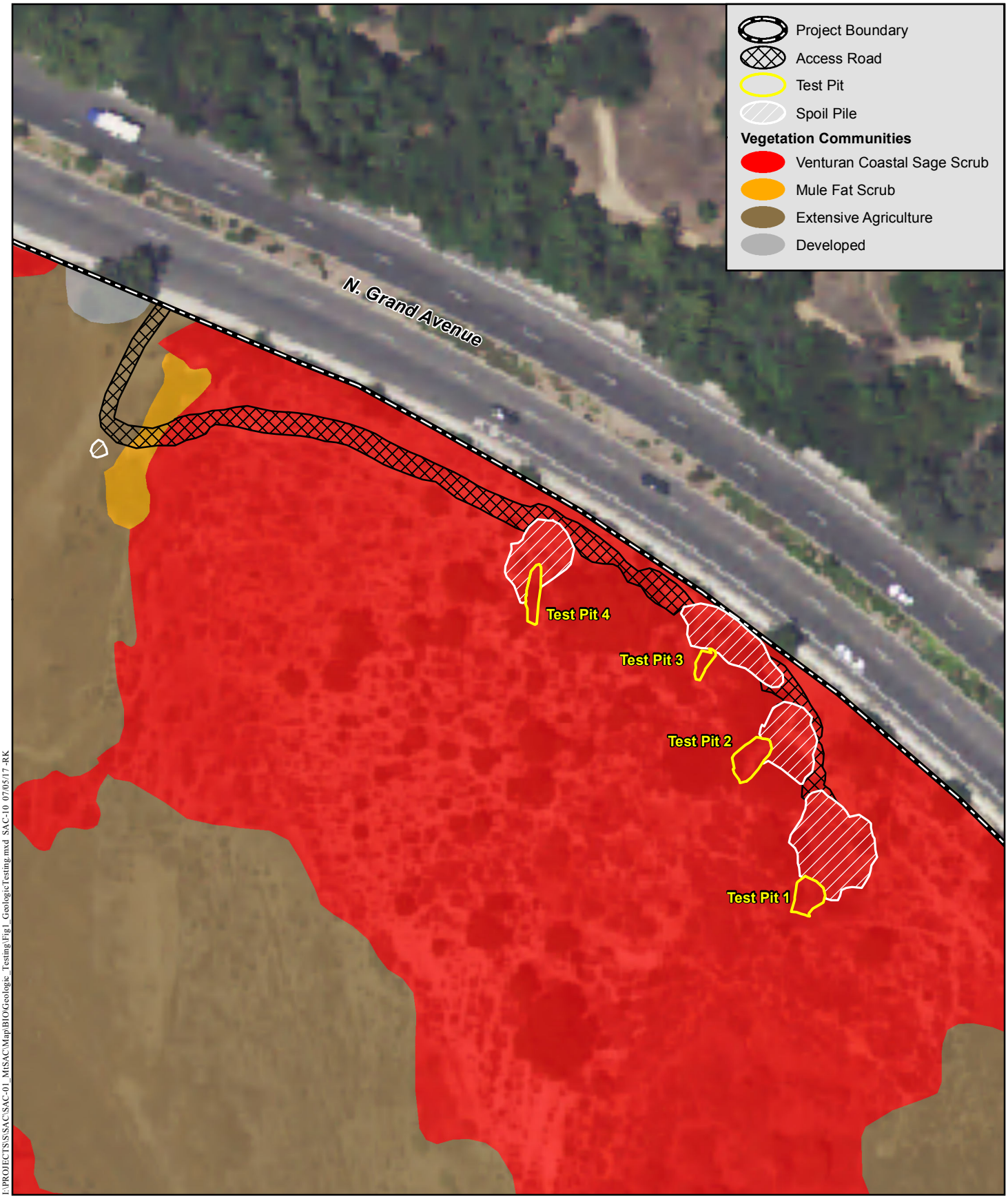

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Geologic Testing

WEST PARCEL SOLAR PROJECT

HELIX Environmental Planning

N 0 75 Feet

Figure 1

Streambed Crossing
Mule fat scrub removed and minor earthwork done at this location.

Looking south across streambed.

Looking north across streambed.

Streambed Crossing

Mule fat scrub removed and minor earthwork done at this location.

Looking east along north side of streambed.

Looking west along north side of streambed.

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Test Pits

Test Pit 1

Test Pit 2

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Test Pits

Test Pit 3

Test Pit 4

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
Carlsbad Fish and Wildlife Office
2177 Salk Avenue, Suite 250
Carlsbad, California 92008

In Reply Refer To:
FWS-LA-14B0243-15F0556

October 4, 2016
Sent by Email

Pamela Kostka
Regulatory Project Manager
U.S. Army Corps of Engineers – Los Angeles District
915 Wilshire Boulevard, Suite 930
Los Angeles, California 90017-3409

Attention: Corps File No. SPL-2015-00113-PKK

Subject: Section 7 Consultation for the Mount San Antonio College West Parcel Solar Project, Los Angeles County, California

Dear Ms. Kostka:

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion based on our review of the Mount San Antonio College (Mt. SAC) West Parcel Solar project (project) in the City of Walnut, Los Angeles County, California, and its effects on the federally threatened coastal California gnatcatcher (*Polioptila californica californica*; gnatcatcher), in accordance with section 7(a)(2) of the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 *et seq.*).

We have reviewed information contained in our office files and information provided to us, including the: 1) U.S. Army Corps (Corps) request for consultation, dated June 16, 2015; 2) *Habitat Mitigation Plan* (HMP), dated August 2016 [HELIX Environmental Planning, Inc. (Helix) 2016]; and 3) other sources of information. The complete project file for this consultation is maintained at the Carlsbad Fish and Wildlife Office (CFWO).

CONSULTATION HISTORY

On June 16, 2015, we received your request to initiate consultation based on your determination that the project may adversely affect the gnatcatcher. On July 20, 2015, we acknowledged your request for consultation and identified additional information needed to assist us in determining the full extent of the direct and indirect effects of the project.

Between July 2015 and April 2016, we communicated by telephone, email, and in person to clarify details of the project, including proposed avoidance and minimization measures. In particular, we requested information on September 16, 2015, regarding Mt. SAC's proposed approach for conserving and managing onsite habitat for the gnatcatcher. Mt. SAC provided

some information but did not provide all of the information, and on April 26, 2016, the Corps withdrew Mt. SAC's application due to inactivity.

On June 23, 2016, Mt. SAC provided us with the information requested in September 2015, and the Corps reinitiated consultation. Between June 2016 and September 2016, we communicated by telephone, email, and in person to finalize information regarding project details and conservation measures.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The Corps proposes to issue a permit to Mt. SAC, under section 404 of the Clean Water Act, to place fill into two ephemeral streams during the construction of the 2-megawatt photovoltaic West Parcel Solar project. The project will be developed on the 27.65-acre West Parcel located west of Grand Avenue and south of Temple Avenue. The property is undeveloped and adjacent to single-family residences to the west and south. Habitat on site primarily consists of Venturan coastal sage scrub (CSS) and non-native grassland. An approximately 10.6-acre pad will be graded, on which an 8.9-acre solar array will be installed (Lindmark 2015) (Figure 1).

The project will impact 0.06 acre of mulefat scrub, 8.36 acres of CSS, 8.78 acres of non-native grassland, and 0.02 acre of developed land (i.e., 17.22 total acres of impact). To offset the loss of gnatcatcher habitat resulting from the project, Mt. SAC will restore and preserve[1] 2 acres of CSS for every 1 acre of impact. Thus, Mt. SAC will conserve a total of 16.72 acres of CSS (Table 1). CSS will be conserved in two areas: 1) the West Parcel and 2) in an expanded area of the existing wildlife sanctuary on the Mt. SAC campus (conservation lands) (Figure 2). On the West Parcel, 5.07 acres of existing CSS will be preserved, and 3.03 acres will be restored. In the expanded wildlife sanctuary, 3.51 acres of CSS will be preserved, and 8.14 acres will be restored. The conservation lands will be set aside in perpetuity by a restrictive covenant and managed by a Service-approved Habitat Management Plan (Helix 2016).

Table 1. CSS Conservation. Helix 2016

Conservation Type	**Acre(s)**
Preservation	
West Parcel	5.07
Expanded Wildlife Sanctuary	3.51
subtotal	8.58
Restoration	
West Parcel	3.03
Expanded Wildlife Sanctuary	5.11
subtotal	8.14
TOTAL	**16.72**

[1] Areas that are "restored" will be restored with CSS and conserved; areas that are "preserved" consist of existing CSS that will be conserved.

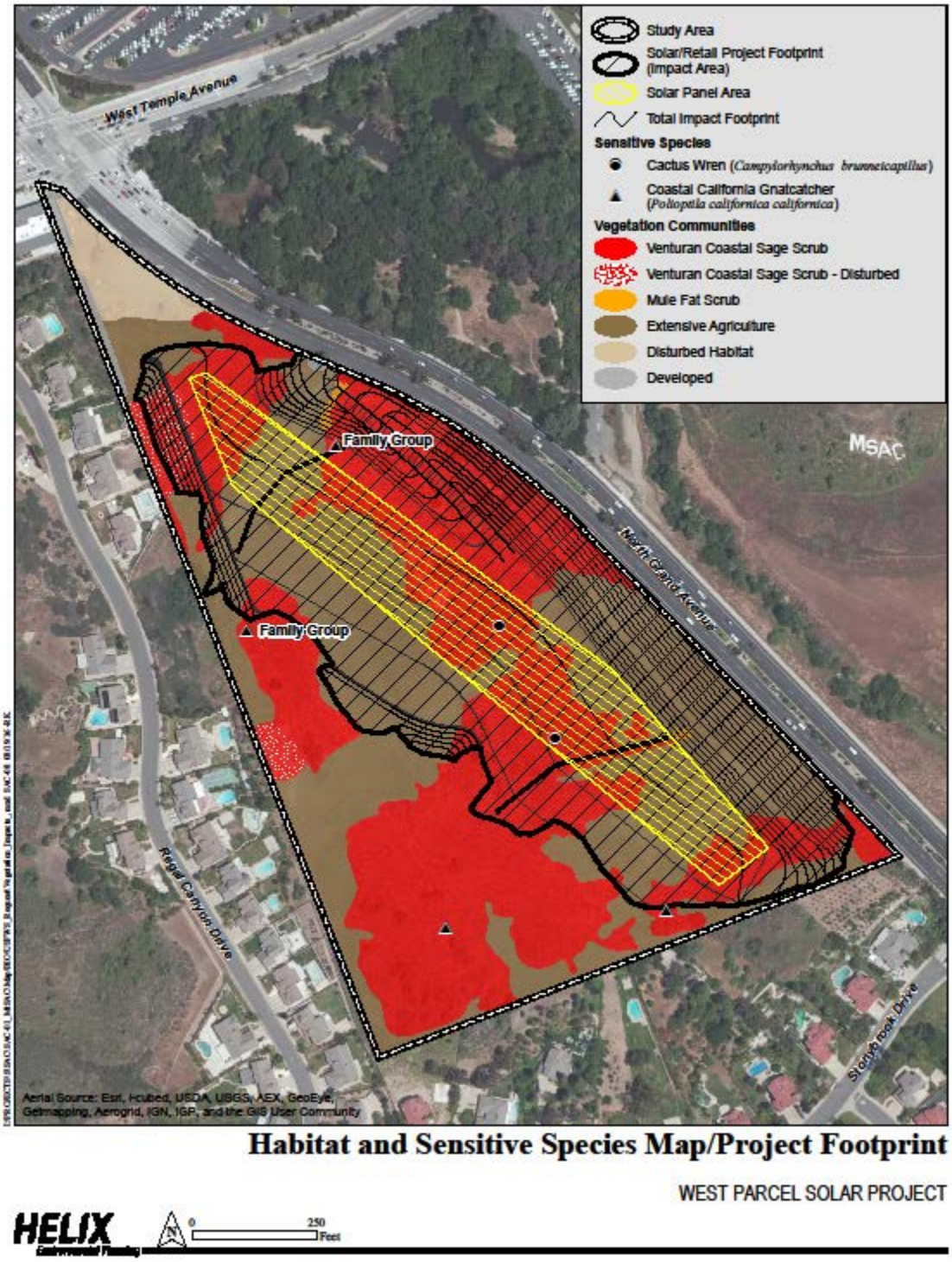

Figure 1. Project Description. Source: Helix 2016. Map depicts project footprint overlay on vegetation communities and gnatcatcher observations in 2015 (Kidd Biological Consulting 2015).

Figure 2. Restoration and Preservation Areas. Source: Helix 2016. Map depicts restoration and preservation areas, as an overlay on vegetation communities and gnatcatcher observations from 2015 (Kidd Biological Consulting 2015).

Conservation Measures

Mt. SAC will implement the following conservation measures (CM) to avoid, minimize, and offset project-related adverse effects to the gnatcatcher (Osmundson 2016, pers. comm.):

CM 1. To offset impacts to a total of 8.36 acres of CSS occupied by gnatcatchers, Mt. SAC will implement the following:

a. Preserve 8.58 acres and restore 8.14 acres on the West Parcel and expanded wildlife sanctuary;

b. Manage the areas identified in 1(a) according to the HMP in perpetuity:

i. Mt. SAC will submit to the Service, for review and approval, the HMP and construction documents; modifications to the implementation, monitoring, and maintenance of the HMP; and annual reports. Habitat restoration activities will begin prior to construction and are expected to take about 10 months, from September 2016 through June 2017. This will be followed by a 120-day plant establishment period through December 2017;

ii. Mt. SAC will be responsible for all costs associated with the restoration, preservation, and long-term management of the habitat identified in CM 1(a), as described in the HMP. Financial assurances for the restoration and short-term maintenance (e.g., through the first 5 years of the HMP) will be provided through a surety bond prior to project construction. The long-term management plan will be funded with a dedicated line item in Mt. SAC's general fund prior to construction. The amount of funding in the line item will be based on the estimated cost in the HMP and will increase 3 percent per year to account for inflation. The annual funding amount may be decreased only after a financial review and with approval from the Service; and

iii. Mt. SAC will designate a campus preserve management team, as approved by the Service, to oversee the implementation of the HMP.

c. Protect the areas identified in CM 1(a) according to a Declaration of Restrictive Covenants in perpetuity. The Declaration of Restrictive Covenants will be recorded no later than April 1, 2017, unless the Service agrees in writing to an extension.

i. Mt. SAC will install permanent fencing and signs around the perimeter of the conservation lands where they interface with areas that are readily viewed and accessible by the public. Signs will be posted every 100

feet in these areas identifying the sensitivity of the habitat and restricted activities.

CM 2. Vegetation removal will occur outside the gnatcatcher breeding season (i.e., outside the period of February 15 through September 1).

CM 3. A biologist approved by the Service will be on site during: (1) initial vegetation clearing; and (2) project construction within 500 feet of gnatcatcher habitat to be avoided to ensure compliance with all CMs. The contract of the project biologist will allow direct communication with the Service at any time regarding the proposed project. The project biologist will be provided with a copy of this biological opinion. The project biologist will be available during pre-construction and construction phases to review grading plans, address protection of sensitive biological resources, monitor ongoing work, and maintain communications with the resident engineer to ensure that issues relating to biological resources are appropriately and lawfully managed. The project biologist will perform the following duties:

a. For construction outside the gnatcatcher breeding season, perform pre-construction surveys immediately prior to the initiation of vegetation clearing. If any gnatcatchers are found in the project impact footprint, the project biologist will direct workers to begin initial vegetation clearing in an area away from the gnatcatchers. In addition, the project biologist will passively flush birds toward areas of appropriate vegetation that will be avoided. It will be the responsibility of the project biologist to ensure gnatcatchers will not be injured or killed by initial vegetation clearing/grubbing. The project biologist will record the number and map the location of gnatcatchers disturbed by initial vegetation clearing/grubbing or construction and report these numbers and locations to the Service within 24 hours;

b. For construction during gnatcatcher breeding season, perform a minimum of three focused surveys, on separate days, to determine the presence of gnatcatcher nest building activities, egg incubation activities, or brood rearing activities within 500 feet of construction. The surveys will begin a maximum of 7 days prior to project construction, and one survey will be conducted the day immediately prior to the initiation of work. Mt. SAC will notify the Service at least 7 days prior to the initiation of the breeding season surveys. The project biologist will record the number and map the location of gnatcatchers observed during the breeding season surveys and report these numbers and locations to the Service within 24 hours. Thereafter, surveys will be done once a week during project construction in the gnatcatcher breeding season. These weekly surveys may be suspended as approved by the Service;

c. Construction activities will not occur within 500 feet of an active gnatcatcher nest unless they are conducted consistent with a Service-approved plan to avoid disturbing nesting gnatcatchers (e.g., constructing sound walls, monitoring noise levels to ensure that they are less than 60 dBA, and nest monitoring);

d. Oversee installation of and inspect temporary fencing and erosion control measures within or up-slope of avoided and/or preserved areas a minimum of once per week during installation and daily during all rain events until established to ensure that any breaks in the fence or erosion control measures are repaired immediately;

e. Train all contractors and construction personnel a maximum of 14 days prior to project construction on the biological resources associated with the projects and ensure that training is implemented by construction personnel. At a minimum, training will include: (1) the purpose for resource protection; (2) a description of the gnatcatcher and its habitat; (3) the CMs given in the biological opinion that should be implemented during project construction to conserve the sensitive resource, including strictly limiting activities, vehicles, equipment, and construction materials to the fenced project footprint to avoid sensitive resource areas in the field; (4) the protocol to resolve conflicts that may arise at any time during the construction process; and (5) the general provisions of the Act, the need to adhere to the provisions of the Act, and the penalties associated with noncompliance with the Act;

f. Halt work, if necessary, and confer with the Service to ensure the proper implementation of species and habitat protection measures. The project biologist will report any noncompliance issue to the Service within 24 hours of its occurrence;

g. Submit monthly reports (including photographs of impact areas) via regular mail or email to the Service during initial clearing of gnatcatcher habitat. In addition, the project biologist will submit monthly reports during construction within the breeding season. The monthly reports will document that authorized impacts were not exceeded and general compliance with all conditions. The reports will also outline the duration of gnatcatcher monitoring, the location of construction activities, and the type of construction that occurred. These reports will specify numbers, locations, and sex of gnatcatchers (if present), observed gnatcatcher behavior (especially in relation to construction activities), and remedial measures employed to avoid, minimize, and mitigate impacts to gnatcatchers. Raw field notes should be available upon request by the Service; and

h. Submit a final report to the Service within 60 days of project completion that includes: (1) as-built construction drawings with an overlay of habitat that was impacted and avoided; (2) photographs of habitat areas that were to be avoided; and (3) other relevant summary information documenting that authorized impacts were not exceeded and that general compliance with all conditions of this biological opinion was achieved.

CM 4. Mt. SAC will temporarily fence (including downslope silt barriers) the limits of project impacts (including construction staging areas and access routes) and install other appropriate sediment trapping devices to prevent additional impacts to gnatcatcher habitat and the spread of silt from the construction zone into habitat to be avoided. Fencing and sediment trapping devices will be installed in a manner that does not impact habitat to be avoided. Temporary construction fencing and sediment trapping devices will be removed upon project completion.

CM 5. There will be no night lighting on site during the construction or operation of the project.

CM 6. Any planting stock to be brought onto the project site for habitat restoration will be first inspected by a Service-approved biologist to ensure the stock is free of pest species that could invade natural areas, including but not limited to, Argentine ants (*Linepithema humile*), fire ants (*Solenopsis invicta*), and other insect pests. Any planting stock found to be infested with such pests will not be allowed on the project site or within 300 feet of natural habitats unless documentation is provided to the Service that these pests already occur in natural areas around the project site. The stock will be quarantined, treated, or disposed of according to best management practices by experts in a manner that precludes invasions into natural habitats. Mt. SAC will ensure that all temporary irrigation will be for the shortest duration possible and that no permanent irrigation will be used for habitat restoration/enhancement.

CM 7. Mt. SAC will ensure that the following best management practices are implemented during project construction in order to minimize potential impacts to the gnatcatcher:

a. Employees will strictly limit their activities, vehicles, equipment, and construction materials to the fenced project footprint;

b. To avoid attracting predators of the gnatcatcher, the project site will be kept as clean of debris as possible. All food related trash items will be enclosed in sealed containers and regularly removed from the site;

c. Pets of project personnel will not be allowed on the project site;

d. Disposal or temporary placement of excess fill, brush or other debris will not be allowed in waters of the United States or their banks;

e. All equipment maintenance, staging, and dispensing of fuel, oil, coolant, or any other such activities will occur in designated areas outside of waters of the United States within the fenced project impact limits. These designated areas will be located in previously compacted and disturbed areas to the maximum extent practicable in such a manner as to prevent any runoff from entering waters of the United States and will be shown on the construction plans. Fueling of equipment will take place within areas greater than 100 feet from waters of the United States. Contractor equipment will be checked for leaks prior to operation and repaired as necessary. "No-fueling zones" will be designated on construction plans; and

f. Impacts from fugitive dust will be avoided and minimized through watering and other appropriate measures.

Action Area

According to 50 CFR § 402.02 pursuant to section 7 of the Act, the "action area" means all areas to be affected directly or indirectly by the Federal action. Areas directly impacted include all areas within the project footprint, including construction vehicle access routes, staging areas, and grading areas. Because habitat within the conservation lands may be impacted by construction or restoration activities, the conservation lands are included in the action area. The project site and conservation lands are almost completely surrounded by existing development. Therefore, we do not anticipate any appreciable impacts to extend beyond the project footprint and conservation lands.

Thus, the action area includes the 27.65-acre West Parcel and 10.14-acre expansion of the existing wildlife sanctuary. The action area includes all areas that will be directly impacted by vegetation clearing and grading, and construction activities; areas where habitat restoration, maintenance and monitoring activities will occur; and areas within the West Parcel and conservation lands that will exposed to indirect effects such increased noise, dust levels and human activity during and after project construction. Subsequent analyses of the environmental baseline, effects of the action, and levels of incidental take are based upon the action area.

STATUS OF THE SPECIES

The status of the gnatcatcher was described at listing and has been updated in the 5-year review for this species (Service 1993, 2010). Please refer to these documents for detailed information on the gnatcatcher's biology and ecology and the threats and conservation needs of the species. For convenience, we have included a brief summary of the status and distribution of the gnatcatcher.

Status and Distribution

Gnatcatchers occur in coastal sage scrub and associated habitats from southern Ventura County to Baja California, Mexico. Gnatcatchers are non-migratory and exhibit strong site tenacity (Atwood 1990). In 1993, the Service estimated that about 2,562 gnatcatcher pairs remained in the United States, with the highest densities occurring in Orange and San Diego counties (Service 1993). In a study using more rigorous sampling techniques, Winchell and Doherty (2008) estimated there were 1,324 (95 percent confidence interval: 976–1,673) gnatcatcher pairs over an 111,006-acre area on public and quasi-public lands in Orange and San Diego counties. Their sampling frame covered only a portion of the United States range, focusing on the coast, and was limited to 1 year. Winchell and Doherty (2008) estimated nearly as many gnatcatchers in the portion of the United States range sampled in their study as was originally estimated for the entire United States range. Although it is not valid to extrapolate beyond the sampling frame, especially in light of known differences in population densities across the range of the gnatcatcher (Atwood 1992), and based on Winchell and Doherty (2008), it is likely there are more gnatcatchers in the United States portion of the range than was suggested by earlier estimates. We are not aware of any recent estimates of gnatcatcher populations in Baja California.

Gnatcatcher home range size varies seasonally and geographically, with winter season home range being larger than breeding season ranges (Bontrager 1991), and inland populations having larger home ranges than coastal populations (Atwood and Bontrager 2001). However, on average, gnatcatcher breeding season territories range in size from less than 2.5 acres to greater than 25 acres depending on their distance from the coast (Atwood *et al.* 1998; Preston *et al.* 1998a).

Threats

Although declines in numbers and distribution of the gnatcatcher have resulted from numerous factors, the current significant threats to the gnatcatcher include habitat fragmentation and degradation, which can lead to type conversion (Service 2010). Several stressors, including livestock grazing, anthropogenic atmospheric pollutants, and wildland fire, can lead to type conversion of gnatcatcher habitat. Refer to the 5-year review (Service 2010) and recent 12-month finding on a petition to delist the coastal California gnatcatcher (Service 2016; 12-month finding) for detailed information on the current threats to the gnatcatcher.

The threat of wildland fire was most recently discussed in the Service's 12-month finding. Wildland fire can result in the direct loss of the coastal sage scrub plants that the gnatcatcher uses for foraging, breeding, and sheltering. In our 2010 5-year review, we noted that, absent other disturbances, CSS can re-grow in some post-wildland fire areas in as little as approximately 3 to 5 years (Service 2010). However, new information suggests that the process needed for CSS vegetation to recover sufficiently to provide suitable habitat for the gnatcatcher is more complex. Winchell and Doherty (2014) examined gnatcatcher recolonization rates after the wildland fires of 2003 in San Diego County; they found that gnatcatchers will recolonize burned areas, but it can take more than 5 years post-burn for populations to reach pre-burn occupancy levels, even in

higher-quality habitat areas. In total, from 2003 to 2015, approximately 289,822 acres or about 45 percent of modeled gnatcatcher habitat burned (Service 2016).

The frequency of wildland fire has risen due to an increase in rates of ignition along the urban-wildland interface and controlled burning practices in Mexico (Service 2010). The greater number of fires, many of which have burned large areas of CSS, has resulted in more areas of young growth CSS vegetation that do not provide suitable gnatcatcher habitat.

Wildland fire, and how often it reoccurs in an area, is a major contributor to vegetation type conversion from CSS to annual grassland, a vegetation type that does not support the breeding, feeding, or sheltering needs of the gnatcatcher. In conjunction with several other stressors, wildland fires promote the growth of nonnative plant species, which can outcompete and displace native plant species. This occurrence results in the modification and, ultimately, the loss of CSS habitat. Furthermore, the senescence of these annual nonnative annual plants creates higher fuel loads than are found in native coastal scrub habitat, accelerating the effects of the wildland fire-type conversion feedback loop.

ENVIRONMENTAL BASELINE

Regulations implementing the Act (50 CFR § 402.02) define the environmental baseline as the past and present impacts of all Federal, State, or private actions and other human activities in the action area. Also included in the environmental baseline are the anticipated impacts of all proposed Federal projects in the action area that have undergone section 7 consultation and the impacts of State and private actions that are contemporaneous with the consultation in progress.

Site Characteristics and Surrounding Land Uses

The 27.65-acre West Parcel is currently undeveloped and is surrounded by residential development to the south and west and by roadways to the north and east. The wildlife sanctuary and proposed conservation land occurs 100 feet across Grand Avenue to the northeast of the West Parcel. The action area was previously used for cattle grazing, and the habitat is now characterized by rolling hills and intervening swales, with CSS and non-native grassland vegetation.

The CSS community within the action area is dominated by California sagebrush (*Artemisia californica*) and interspersed with large patches of prickly pear (*Opuntia littoralis*). Other native species within this habitat include deerweed (*Acmispon glaber*), laurel sumac (*Malosma laurina*), coyote bush (*Baccharis pilularis*), California buckwheat (*Eriogonum fasciculatum*), our Lords' candle (*Hesperoyucca whipplei*), and Mexican elderberry (*Sambucus mexicana*). The understory species found within the CSS vegetation are primarily non-native. The non-native grassland community within the action area is heavily disturbed due to cattle grazing. As a result, the majority of this plant community contains bare ground within sparse vegetation. The non-native grassland is dominated by non-native species such as short-podded mustard (*Hirschfeldia incana*), cheeseweed (*Malva parviflora*), bindweed (*Convolvulus arvensis*), red stemmed filaree

(*Erodium cicutarium*), slender oats (*Avena barbata*), red brome (*Bromus rubens*), rig-gut brome (*Bromus diandrus*), tree tobacco (*Nicotiana glauca*) and fennel (*Foeniculum vulgare*).

Overall, the West Parcel contains high quality gnatcatcher habitat. No brown-headed cowbirds (*Molothrus ater*), considered to be nest parasites for gnatcatchers, were observed or otherwise detected during gnatcatcher surveys in 2015 (Kidd Biological Consulting 2015).

Status of the Gnatcatcher within the Action Area

During the 2015 breeding season, one gnatcatcher pair was observed on West Parcel with three juveniles (Kidd Biological Consulting 2015). After June 10, 2015, the pair continued to be observed during the breeding season while the juveniles were presumed to have dispersed. A single male was also observed in the southern portion of the West Parcel. Although this male appeared to be unpaired during the 2015 season, the site likely supports sufficient habitat to support a second breeding pair. The results of the 2015 breeding season surveys were consistent with surveys conducted in 2008, when a pair and a single male were observed (Helix 2008). In the expanded wildlife sanctuary, a single pair of gnatcatchers was detected in 2012 (Helix 2012).

The project occurs in an area informally known as the Covina Hills-South metapopulation (including Walnut Hills and the former BKK Landfill). This metapopulation connects to the Covina Hills-North metapopulation to the northeast (including Forest Lawn Memorial Park and Bonelli Park) and to isolated occurrences in the cities of Diamond Bar and Industry Hills. The nearest suitable gnatcatcher habitat to the action area is located about 1 mile to the north on the California State Polytechnic University, Pomona campus, City of Pomona, California.

To understand the size of the gnatcatcher population within the action area within the context of the larger metapopulation, we estimated a combined total of 21 gnatcatcher pairs within the Covina Hills-South and Covina Hills-North metapopulations in 2002 (Service 2002). While residential and commercial development has removed some occupied CSS habitat within these metapopulations since 2002, we believe numbers remain about the same as our 2002 estimate. Thus, the gnatcatcher individuals within the action area represent about 10 to 15 percent of the overall Covina Hills metapopulations.

Looking more broadly, approximately 170 pairs of gnatcatchers are known to occur in the nearby Puente/Chino Hills metapopulation, which includes the Montebello Hills (NRC 2008), Puente and Chino Hills (derived from Service 2007; PCR 2002), West Coyote Hills (Bonterra Consulting 2005; PCR 2005) and East Coyote Hills (Center for Natural Lands Management 2008) (Figure 3). In addition, ongoing coastal sage scrub restoration projects in Chino Hills State Park and the Puente Hills Native Habitat Authority property are anticipated to support additional pairs of gnatcatchers within the Puente/Chino Hills metapopulation in the future. The gnatcatcher individuals within the action area do not represent a substantial portion (i.e., about 1 to 2 percent) of populations occurring in southeast Los Angeles County, including the Covina Hills and Puente/Chino Hills metapopulations. However, the action area is located between these metapopulations and may serve as a connection between the metapopulations.

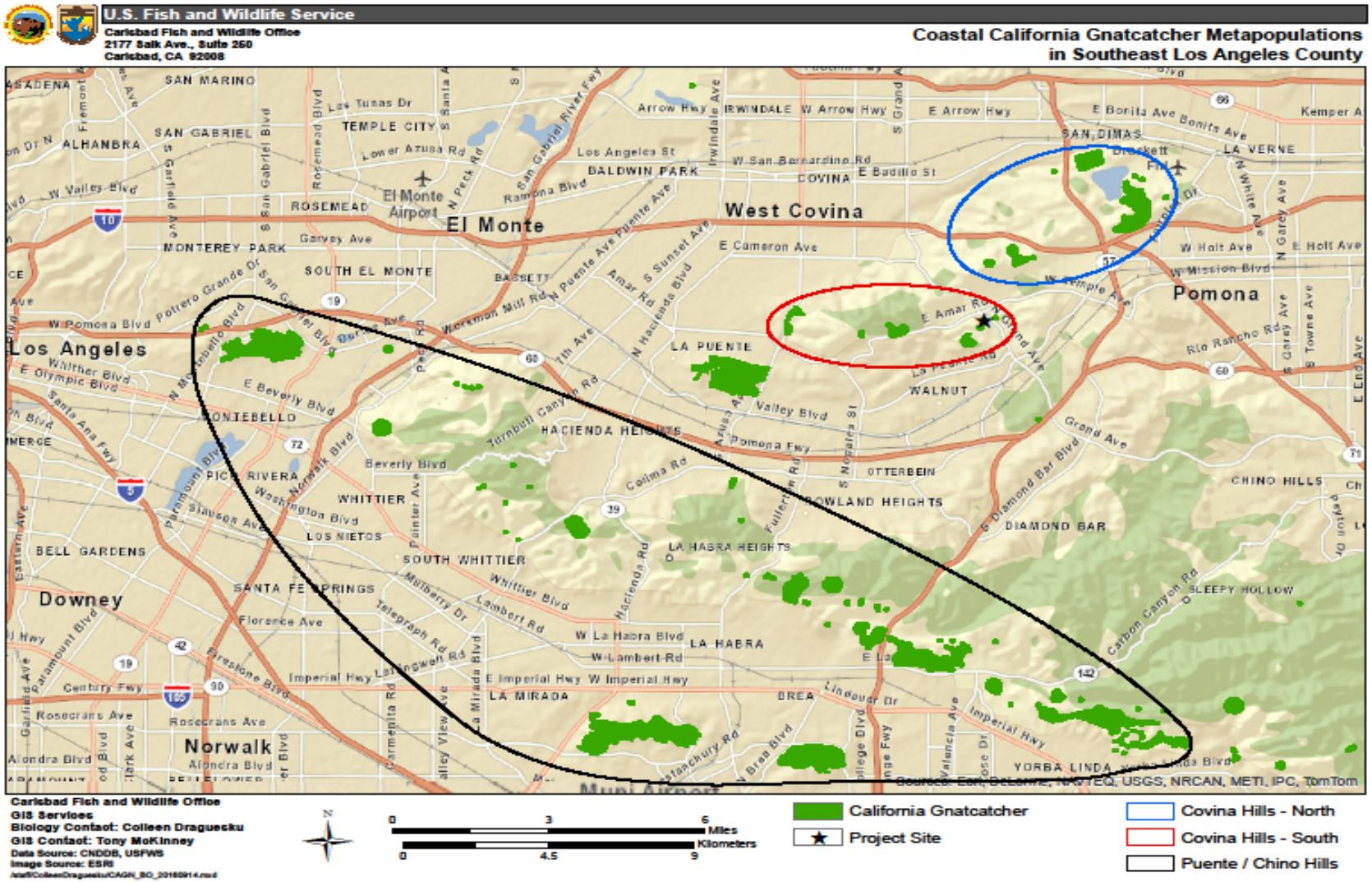

Figure 3. Coastal California gnatcatcher metapopulations in southeast Los Angeles County

Populations in southeastern Los Angeles County and Northwestern Orange County provide the closest connection to the southern slope of the San Gabriel Mountains, which is thought to connect gnatcatcher populations of Ventura, western Los Angeles, San Bernardino and Riverside counties. Surveys in this area suggest that gnatcatchers are sparsely distributed in this portion of their range. As such, the action area is within a potential stepping stone of habitats for the ongoing dispersal and genetic exchange of gnatcatchers throughout the northern extent of their known distribution.

EFFECTS OF THE ACTION

Effects of the action refer to the direct and indirect effects of an action on the species, together with the effects of other activities that are interrelated and interdependent with that action, which will be added to the environmental baseline. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration. Indirect effects are those that are caused by the proposed action and are later in time, but are still reasonably certain to occur. Insignificant effects relate to the size of the impact and should never reach the scale where take occurs. Discountable effects are those extremely unlikely to occur. Based on best judgment, a person would not: (1) be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur.

Habitat Loss

On the West Parcel, the project will impact 8.36 acres and restore 3.03 acres of CSS (Table 1). Therefore, the project will result in a net loss of 5.33 acres of CSS on the West Parcel. Gnatcatchers are non-migratory territorial birds, and removal of a substantial portion of a gnatcatcher pair's breeding territory will force the pair to adjust their existing territory or establish a new territory, particularly during the breeding season, when territorial boundaries are better defined (Preston *et al.* 1998a). Gnatcatchers have been observed within the impact area, and it is likely that displaced gnatcatchers will be forced to compete with resident gnatcatchers when attempting to expand an existing territory or establish a new territory. If displaced birds cannot find suitable habitat to forage and shelter in, we anticipate they will be more vulnerable to predation and otherwise may die or be injured. Gnatcatchers that successfully establish territories in adjacent habitat are expected to experience reduced productivity (e.g., delayed initiation or prevention of nest building, fewer nesting attempts per season, and/or overall reduction in reproductive output) due to reduced availability of foraging and breeding habitat and increased territorial interactions.

The West Parcel was known to support one pair of gnatcatchers and one unpaired male in 2015. Thus, the West Parcel supports up to two gnatcatcher territories. After restoration and preservation of existing CSS, the West Parcel will have a total of 8.1 acres of CSS. As described in the Status of the Species section, gnatcatcher territories range in size from less than 2.5 acres to greater than 25 acres depending on their distance from the coast (Atwood *et al.* 1998; Preston *et al.* 1998a). The project site is about 25 miles from the coast; therefore, we expect gnatcatcher territory sizes within the action area to be on the larger end of the territory size estimates. We believe that the West Parcel will only support one pair of gnatcatchers after the project, when there are just 8.1 acres of available CSS. Therefore, we expect up to one gnatcatcher pair on the West Parcel will be

harmed, including potential mortality and/or reduced reproduction due to significant loss of primary breeding, feeding, and sheltering habitat.

Mt. SAC will restore 5.11 acres of CSS in the neighboring expanded wildlife sanctuary, for a total of 8.14 acres of new CSS habitat within the action area. The total restoration area is approximately equal to the impact area resulting from the project (i.e., 8.36 acres of impact, and 8.14 acres of restoration). Therefore, we expect that in the future, after CSS has been restored and is functioning as suitable gnatcatcher habitat, the action area will support a similar number of gnatcatcher pairs (i.e., two or three) as it currently supports. In addition, Mt. SAC will conserve both the existing CSS and the newly restored areas for a total of 16.72 acres of conserved CSS on site. These conservation lands will be protected in perpetuity, which is a benefit to the gnatcatcher as result of project. We anticipate that it will take approximately 5 years for restored CSS habitat to be suitable to support gnatcatcher breeding activities. One to two gnatcatcher territories will remain within avoided CSS habitat in the action area during project construction and restoration activities. These territories, along with nearby individuals in the Covina Hills-South or Puente/Chino Hills metapopulations, will help repopulate the restored habitat within the action area in the future. Therefore, while the project is expected to result in the short-term loss of up to one gnatcatcher pair in action area, no appreciable reduction in the numbers, reproduction, or distribution of the Covina Hills-South metapopulation or the species rangewide is expected. The implications of habitat loss and corresponding impacts to gnatcatcher pairs are discussed in more detail in "Effect on Recovery" below.

Fragmentation

The project will not have a substantial impact on the connectivity between local metapopulations. As stated above, within about 5 years, approximately the same amount of CSS will be available to the gnatcatcher before and after the project. The impact area will be configured between the two conservation lands on the West Parcel and expanded wildlife sanctuary (Figure 2). Therefore, the action area will be more fragmented as a result of the project. At its widest point, the impact area will be 600-feet wide. However, gnatcatchers will be able to continue to disperse periodically between CSS habitat on the West Parcel and expanded wildlife preserve after the photovoltaic solar panels and infrastructure are installed. The conservation lands will help ensure that gnatcatcher individuals within the action area continue to be connected to gnatcatcher metapopulations nearby, despite the increase in fragmentation of CSS habitat. The implications of the increased habitat fragmentation are discussed in more detail in the "Effect on Recovery" section below.

Injury and Mortality during Construction

The project includes several CMs that will avoid and minimize impacts to gnatcatcher individuals and habitat. Vegetation clearing will be conducted outside of the gnatcatcher breeding season (CM 2). Prior to initiation of other construction activities during the gnatcatcher breeding season, a Service-approved biologist will survey the site to ensure that breeding gnatcatchers are not present within the impact area (CM 3.b). Construction will not occur within 500 feet of an active gnatcatcher nest unless it is conducted consistent with a Service-approved plan to avoid

disturbing gnatcatchers (CM 3.c). With the implementation of the CMs, the potential for gnatcatcher injury or mortality or destruction of active gnatcatcher nests is discountable.

Injury and Mortality due to Collision

Collision with project structures is a direct source of avian fatality at photovoltaic solar facilities. Waterbirds may be at an increased risk of collision if they confuse photovoltaic panels with bodies of water and subsequently attempt to land on the structures (lake effect hypothesis) (Walston *et al*. 2015). Birds may also collide with solar panels because the panels reflecting sky and clouds appear to be a clear flight path for the birds. Gnatcatchers are not waterbirds, so they are unlikely to mistake solar panels for water bodies and attempt to land on the structures. In addition, gnatcatchers forage by moving about actively in shrubs and low trees searching for insects, sometimes hovering to pick items from foliage, but rarely flying out to catch insects in mid-air (Audubon 2016). Thus, although it is possible that gnatcatchers could collide with the solar panels, we anticipate that the likelihood of injury or mortality due to collision is discountable.

Construction Noise and Dust

Gnatcatchers are resident (non-migratory) birds, so they may be present in the vicinity of the project while construction activities are occurring. Noise and vibration associated with the use of heavy equipment has the potential to disrupt gnatcatcher breeding, sheltering and foraging. Some evidence suggests that gnatcatchers tend to build fewer nests and lay fewer eggs in noisier areas (Awbrey and Hunsaker 1997). Gnatcatchers call most frequently just prior to the nesting season (Preston *et al.* 1998b), apparently in association with pair interactions. Noise levels above a particular and yet unknown threshold are likely to mask gnatcatcher calls. However, the available data also suggest that gnatcatchers may be comparatively resistant to the effects of noise once the incubation of nests is initiated (Atwood and Bontrager 2001). Gnatcatchers in the vicinity of the project occupy habitat adjacent to roadways and residential development. Therefore, we expect gnatcatchers in the action area are already habituated to moderate ambient noise levels.

Gnatcatchers adjacent to construction activities may be temporarily disturbed or startled by vegetation removal, grading, fugitive dust or other construction activities during and outside of the breeding season. Mt. SAC will implement a number of measures during vegetation removal and project construction to minimize the potential effects from noise and dust. These measures are expected to reduce the likelihood of impacts to gnatcatchers, particularly during the breeding season. All vegetation removal will be conducted outside of the gnatcatcher breeding season to avoid disturbance to nesting gnatcatchers (CM 2). Noise levels for other construction activities during the gnatcatcher breeding season will not be substantially higher than the existing ambient noise levels near active nests (i.e. 60 decibels) due to the implementation of CM 3.b and 3.c. In addition, due to the duration and phasing of the project, most of the impact area is not expected to be subject to higher than ambient noise levels at any one time. Mt. SAC will implement watering and other appropriate measures to minimize the impacts of fugitive dust (CM 7.f). The project will result in some noise and dust; however, with the implementation of the CMs, the effects of construction-related noise and dust will be insignificant.

Human Intrusion into Conservation Lands

To minimize effects associated with human intrusion into the onsite conservation lands, permanent signage and fencing (CM 1.c) will be installed along the boundary of the conservation lands to identify the areas as such and to restrict access into the area. Signage will be clearly visible and will be placed along the fencing. In addition, as stated above, onsite remaining gnatcatcher habitat will be preserved and managed in perpetuity, including fencing and signage. Therefore, the potential for human intrusion to impact gnatcatchers is discountable.

Invasive Plant Species

The project could result in an increase in the introduction of invasive plant species into native habitats within the onsite preserve adjacent to the completed project. Nonnative, weedy species often out-compete and exclude native species, potentially altering the structure of the vegetation, degrading or eliminating upland habitat used by the gnatcatcher, and providing food and cover for undesirable nonnative animals (Bossard *et al*. 2000). Mt. SAC has incorporated measures into the HMP to prevent the spread of invasive species within the action area. The success criteria of the Service-approved HMP (CM 1.b) require invasive weed species to be completely eradicated from the conservation lands every year (CM 15). These conservation lands will be preserved and managed in perpetuity. The effect of the introduction of non-native plant species into native habitats as a result of the project is discountable.

Predators

Construction activities have the potential to attract non-native predators or increase the numbers of native predators that could prey upon gnatcatchers. Food-related trash and open containers attract raccoons (*Procyon lotor)*, coyotes (*Canis latrans*), corvids (birds in the family Corvidae), and other predators. Any increase in normal predation levels could affect the small population of gnatcatchers that occupy the site. This potential impact will be minimized or avoided by the removing all trash that may attract predators from the project site, as described in CM 7.b. Thus, an effect to the gnatcatcher from a project-related increase in predation is discountable.

Management of Conserved Habitat

Under the HMP, various activities will occur in the conservation lands that have the potential to affect gnatcatchers. Activities such as native plant restoration, weeding of non-native species, gnatcatcher surveys, vegetation mapping, and fence installation and maintenance could disturb gnatcatchers in nearby habitat. However, several conservation measures will be implemented to avoid and minimize impacts to gnatcatcher individuals and habitat during the HMP (CM 2.b). Prior to initiation of construction activities during the gnatcatcher breeding season, a Service-approved biologist will survey the site to ensure that breeding gnatcatchers are not present within the impact area (CM 3.b). Construction will not occur within 500 feet of an active gnatcatcher nest unless it is conducted consistent with a Service-approved plan to avoid disturbing gnatcatchers (CM 3.c). Many of the activities conducted under the HMP are also passive

(i.e., not subject to construction work, such as mapping vegetation and biological surveys) and will be conducted by a Service-approved biologist. With the implementation of the CMs, the potential for gnatcatcher injury or mortality or destruction of active gnatcatcher nests during the implementation of the HMP is discountable.

Nevertheless, implementation of the HMP and the associated human intrusion into the conservation lands for the purpose of habitat management has the potential to disrupt gnatcatcher breeding, sheltering and foraging, and those effects may be adverse. For example, gnatcatchers may be disturbed by noise, dust and human activity during non-native plant removal from occupied habitat. However, Mt. SAC will implement CMs under the HMP, including conducting management activities during the breeding season that have the potential to destroy active nests (e.g., spraying or pulling CSS) or disrupt nesting activities (e.g., weed whipping along roads and trails adjacent to CSS), under the oversight of a monitoring biologist who will ensure that gnatcatcher nesting activities are not disrupted and that no nests are destroyed (Helix 2016). In addition, gnatcatchers in the vicinity of the project occupy habitat adjacent to roadways and residential development. Therefore, we expect gnatcatchers in the action area are already habituated to moderate levels of human disturbance. The implementation of the HMP will benefit the gnatcatcher by managing habitat in perpetuity, so any short-term disruption of gnatcatchers will be offset by the long-term benefits of the HMP. The effects to gnatcatcher breeding, feeding, and foraging from the HMP are insignificant.

Effect on Recovery

There is no recovery plan for the gnatcatcher, so we are evaluating this project relative to the general recovery goals of maintaining core populations of gnatcatchers and maintaining connectivity between populations. The project is not within a core population for the gnatcatcher, but despite an increase in habitat fragmentation on site, we expect the action area to support a similar number of gnatcatcher pairs (two to three) within 5 years. The project is a potential stepping stone for dispersal between gnatcatcher metapopulations in the Covina Hills to the north and the Puente/Chino Hills to the south. Because of the amount of developed land between the Covina Hills and Puente/Chino Hills, dispersal between the metapopulations in these areas is likely to be rare, and we have no direct evidence of such dispersal taking place. Nevertheless, the project will continue to serve as a potential stepping stone for any gnatcatchers attempting to disperse through the combination of developed and undeveloped lands between the Covina Hills and Puente/Chino Hills. Although the project will have a negative effect on habitat connectivity in the action area, it will benefit the gnatcatcher by conserving and managing the remaining and restored CSS in perpetuity, eliminating the threat of future development impacts. Because the project will not reduce or eliminate any core populations; will not substantially impact dispersal between core populations; and will maintain remaining and restored habitat in perpetuity, the project is not expected to appreciably impact the recovery of the gnatcatcher.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, Tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. We have not identified any State, Tribal, local, or private actions within the action area that should be considered in this biological opinion.

CONCLUSION

After reviewing the current status of the gnatcatcher and its critical habitat, the environmental baseline for the action area, effects of the proposed action, and the cumulative effects, it is our biological opinion that the proposed action is not likely to jeopardize the continued existence of the gnatcatcher. We reached this conclusion by considering the following:

1. The project will impact 8.36 acres of gnatcatcher habitat out of many thousands of acres of CSS within the range of the gnatcatcher;

2. Project-related habitat loss and degradation will result in substantial impacts to only one gnatcatcher pair, which represents less than 0.1 percent of the roughly 2,562 pairs rangewide;

3. Impacts to occupied gnatcatcher habitat will be offset by restoration, preservation and management of 16.72 acres of CSS habitat on site. All conserved lands will be placed within a restrictive covenant prior to project impacts and will be preserved and managed in perpetuity;

4. Despite the adverse effect of the project due to the increase in fragmentation of onsite habitat, gnatcatcher habitat within the action area will maintain its functionality by continuing to provide a potential stepping stone for dispersal between the conservation lands and suitable habitat in the Covina Hills metapopulations; and

5. With implementation of the conservation measures, impacts to the gnatcatcher are expected to be minimized and are not expected to appreciably reduce the numbers, reproduction, or distribution of the gnatcatcher in the action area or throughout the species' range.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential

behavior patterns, including breeding, feeding, or sheltering. Harass is defined as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of Section 7(b)(4) and 7(o)(2) of the Act, taking that is incidental to and not intended as part of the proposed action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this incidental take statement.

AMOUNT OR EXTENT OF TAKE

1. Harm to one gnatcatcher pair due to removal of 8.36 acres of CSS. The take exemption will be exceeded if more than 8.36 acres of gnatcatcher habitat (i.e., CSS) is cleared/graded.

No death or injury of chicks or eggs from vegetation clearing or project construction is anticipated; therefore, none is exempted from the section 9 take prohibitions under the Act.

EFFECT OF TAKE

In the accompanying biological opinion, we determined that this level of anticipated take is not likely to result in jeopardy to the gnatcatcher.

REASONABLE AND PRUDENT MEASURES

Mt. SAC will implement CMs as part of the proposed action to minimize the incidental take of gnatcatchers. In addition to these CMs, the following reasonable and prudent measures are necessary to further minimize the incidental take of gnatcatchers and to monitor and report the effects of the incidental take on gnatcatchers:

1. The Corps and/or Mt. SAC will monitor and report on compliance with established take exemptions for gnatcatchers associated with the proposed action; and

2. The Corps and/or Mt. SAC will receive Service approval prior to allowing access into conservation lands.

TERMS AND CONDITIONS

The measures described below are non-discretionary and must be undertaken by the Corps so that they become binding conditions of any permit issued to Mt. SAC, as appropriate, for the exemption in 7(o)(2) to apply. The Corps has a continuing duty to regulate the activity covered by this incidental take statement. If the Corps (1) fails to assume and implement the terms and conditions or (2) fails to require Mt. SAC to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of the incidental take, the Corps or

Mt. SAC must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement. [50 CFR§402.14(i)(3)].

The following terms and conditions implement reasonable and prudent measure 1:

1. Prior to vegetation clearing/grubbing, the Corps and/or Mt. SAC will provide to the CFWO a map showing the distribution of gnatcatchers relative to the project footprint after pre-construction surveys as described in CM 3. The Corps or Mt. SAC will provide an estimate of the number of gnatcatchers territories that will be impacted by the project, or confirm in writing that maps, distribution information, and the number of territories that will be impacted by the project as shown in the Figure 2 remain correct.

2. If any killed or injured gnatcatchers are observed during project construction activities, the Service-approved biologist shall immediately notify the CFWO.

3. The Corps and/or Mt. SAC shall notify CFWO within 30 days of completing removal of gnatcatcher habitat. The Corps and/or Applicant will also provide a final map depicting the areas that were cleared for project construction. The purpose of this notification is to ensure that impacts to gnatcatcher-occupied habitat from the proposed project do not exceed the take exemption.

4. If the level of take exempted in this biological opinion is exceeded during project construction, the Corps and/or Mt. SAC shall immediately contact CFWO.

The following term and condition implements reasonable and prudent measure 2:

1. Prior to allowing access activities in the conservation lands, the Corps and/or Mt. SAC will provide to the CFWO a description of the requested access activities as managed under the HMP (e.g., for college course use). The CFWO will review and approve access into conservation lands to ensure the activities do not result in effects to the gnatcatcher not previously analyzed in this biological opinion.

DISPOSITION OF SICK, INJURED, OR DEAD SPECIMENS

Upon locating dead, injured, or sick individuals of threatened or endangered species, initial notification must be made to our Division of Law Enforcement in either San Diego, California, at 619-557-5063 or in Torrance, California, at 310-328-6307 within 3 working days. Notification should also be made by telephone and in writing to this office in Carlsbad, California, at 760-431-9440 and 2177 Salk Avenue, Suite 250, Carlsbad, California 92008. Written notification must be made within 5 calendar days and include the collection date and time, the location of the animal, and any other pertinent information. Caution must be taken in handling sick or injured animals to ensure effective treatment and care, and in handling dead specimens to preserve biological material in the best possible state. The remains of intact specimens shall be placed with educational or research institutions holding the appropriate State and Federal permits. Remains shall be placed with the San Diego Natural History Museum, San Diego. Arrangements

regarding proper disposition of potential museum specimens shall be made with the institution by the authorized biologist prior to implementation of the action.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

On September 23, 2015, we recommended that Mt. SAC consider project alternatives, including installation of solar panels above existing parking lots on campus (Medak 2015, *in litt.*). Mt. SAC responded, presenting a timeline of decisions made by the Mt. SAC Board of Trustees to approve the placement of photovoltaic panels on the West Parcel. Mt SAC determined the project was consistent with the college's long-term goals of sustainability and energy conservation. Despite the analysis done by Mt. SAC, we believe there are other project alternatives that would avoid much of the current project design's impacts on gnatcatchers. We encourage the Corps to use your authorities to require Mt. SAC to refine their project designs to avoid unnecessary impacts to this species.

REINITIATION NOTICE

This concludes formal consultation regarding the Mount San Antonio College West Parcel Solar project as outlined in the materials submitted to us. As provided in 50 CFR § 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; and (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

If you have any questions or concerns about the consultation or biological opinion, please contact Colleen Dragueskу of my staff at 760-431-9440, extension 241.

Sincerely,

G. Mendel Stewart
Field Supervisor

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HELIX
Environmental Planning

West Parcel Solar Project at Mt. San Antonio College Project

Habitat Mitigation Plan

October 2016

Larry Sward
Principal Biologist

I declare under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who managed the system or those directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Shelby Howard
Biology Division Manager

Prepared for:
Mt. San Antonio College
1100 North Grand Avenue
Walnut, CA 91789

Prepared by:
HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard
La Mesa, CA 91942

West Parcel Solar Project at Mt. San Antonio College

Habitat Mitigation Plan

Prepared for:
Mt. San Antonio College
1100 North Grand Avenue
Walnut, CA 91789

Prepared by:
HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard
La Mesa, CA 91942

October 2016

West Parcel Solar Project at Mt. San Antonio College
Habitat Mitigation Plan

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ACRONYMS AND ABBREVIATIONS

Cal-IPC	California Invasive Plant Council
cm	centimeter
CDFW	California Department of Fish & Wildlife
CNPS	California Native Plant Society
CRAM	California Rapid Assessment Method
CWA	Clean Water Act
CWMW	California Wetlands Monitoring Workgroup
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
GIS	Geographic Information System
GPS	Global Positioning System
m	meter
Mt. SAC	Mount San Antonio College
NEPA	National Environmental Policy Act
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Service
Plan	Vernal Pool and Wetland Habitat Mitigation Plan
Project Proponent	Mt. San Antonio Community College District
RS	Restoration Specialist
RWQCB	Regional Water Quality Control Board
SWPPP	Storm Water Pollution Prevention Plan
U.S.	United States
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
WUS	Waters of the U.S.

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1.0 PURPOSE AND GOALS OF THE MITIGATION PLAN

This report presents the mitigation plan for impacts resulting from the placement of a solar power generation station on the West Campus Parcel (referred to as West Parcel hereinafter) of Mt. San Antonio College (Mt. SAC), located in the City of Walnut, California. Mitigation is necessary for impacts to Venturan coastal sage scrub (CSS) habitat, which is occupied by the federally listed as threatened coastal California gnatcatcher (gnatcatcher; *Polioptila californica californica*), and jurisdictional habitats: mule fat scrub (MFS)—a wetland habitat, and unvegetated streambeds. The proposed habitat restoration is intended to meet the resource agencies' (i.e., California Department of Fish and Wildlife [CDFW], U.S. Fish and Wildlife Service [USFWS], and U.S. Army Corps of Engineers [USACE]) mitigation requirements and fulfill the project's obligation under the California Environmental Quality Act (CEQA). These mitigation requirements are a result of the project's anticipated impacts to occupied gnatcatcher habitat and federal and state jurisdictional areas. Mitigation will occur as a combination of preservation and restoration of CSS and riparian habitats.

2.0 PROJECT SUMMARY

2.1 PROJECT LOCATION

Mt. SAC is located in the San Gabriel Valley, in southeast Los Angeles County, California (Figure 1). The college is situated near the intersection of North Grand and Temple Avenues in the City of Walnut. It is within unsectioned land, Township 2 South, Range 9 East on the U.S. Geological Survey (USGS) 7.5-minute San Dimas quadrangle map. The West Parcel consists of approximately 27.65 acres, and is located west of Temple Avenue and south of North Grand Avenue (Figure 2).

2.2 DEVELOPMENT PROJECT SUMMARY

The West Parcel Solar Project consists of grading a pad and placing a 2-megawatt photovoltaic system on it. Earthwork for this project will impact 17.22 acres of land, including 8.07 acres of CSS, 0.29 acre of disturbed CSS, 8.78 acres of agricultural land, 0.06 acre of mule fat scrub, and 0.02 acre of developed areas.

Jurisdictional riparian features exist on the west parcel in two ephemeral streams. The watershed for the southern streambed is contained on-site. The watershed for the northern streambed extends a short ways off-site and is slightly larger. Both streams are ephemeral. The USACE jurisdiction consists of approximately 0.08 acre along 999 linear feet of non-wetland streambed. CDFW jurisdictional habitat consists of approximately 0.06 acre of mule fat scrub along 133 linear feet of streambed, and 0.14 acre along 843 linear feet of non-wetland streambed.

2.3 MITIGATION PROJECT SUMMARY

This mitigation plan addresses impacts to coastal California gnatcatcher habitat (i.e., coastal sage scrub) and jurisdictional habitat. Jurisdictional habitat consists of non-wetland waters of the U.S.

on the federal level, and mule fat scrub and streambed on the state level. All created and rehabilitated habitats will be preserved in a restricted covenant. This conservation instrument will be recorded prior to any impacts to coastal sage scrub or jurisdictional habitats.

2.3.1 Coastal Sage Scrub.

Impacts to CSS will be mitigated at a ratio of 2:1, where each acre of impact will be mitigated for by 2 acres of CSS habitat preservation and restoration. The impact to 8.36 acres of gnatcatcher occupied habitat necessitates 16.72 acres of mitigation. Preservation of extant sage scrub habitat will occur on the West Parcel and Expanded Wildlife Sanctuary (Table 1; Figure 3).

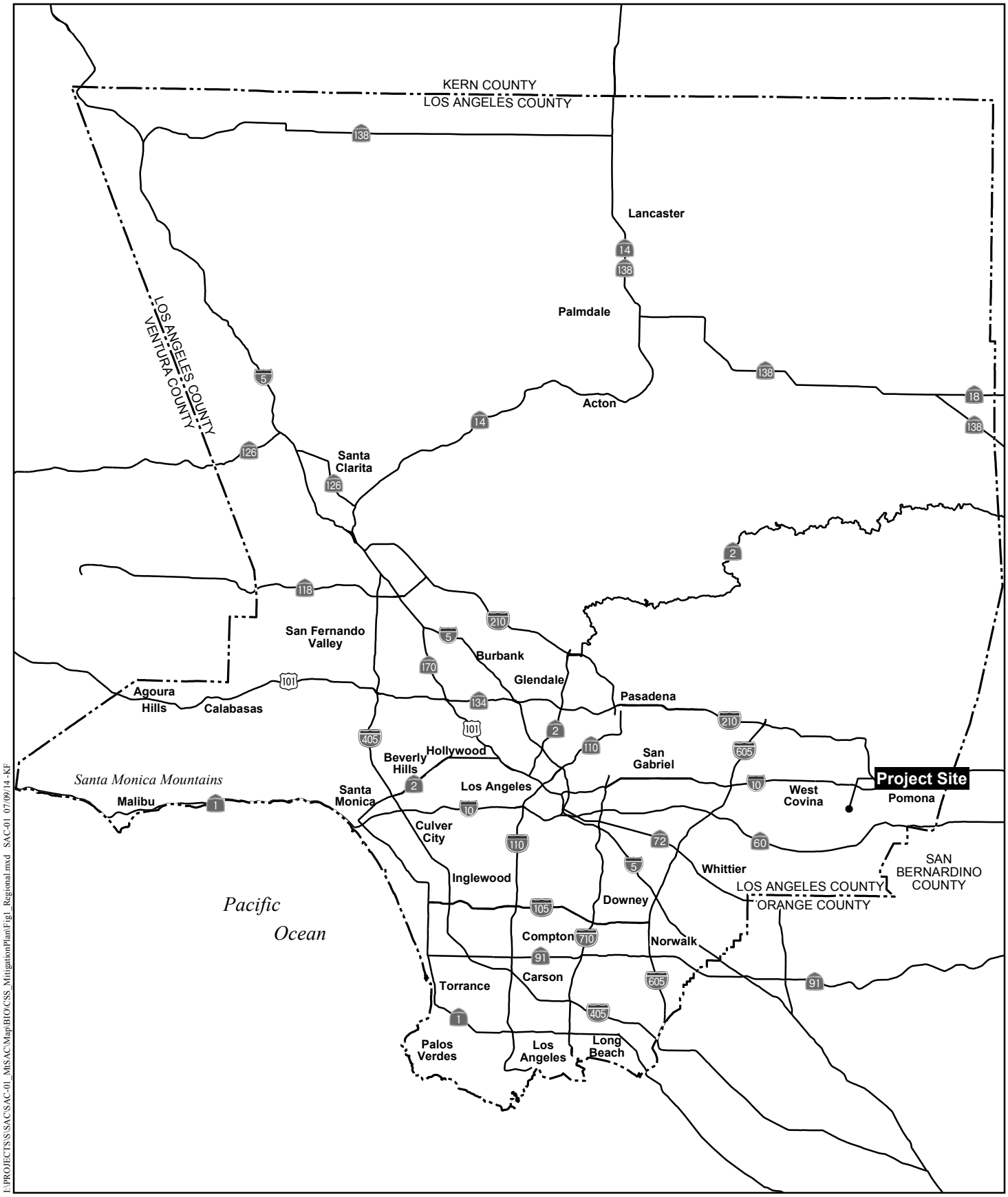
Table 1
COASTAL SAGE SCRUB MITIGATION

MITIGATION TYPE	ACRE(S)
Preservation	
West Parcel	5.07
Expanded Wildlife Sanctuary	3.51
Subtotal	**8.58**[1]
Restoration	
West Parcel	3.03[2]
Expanded Wildlife Sanctuary	5.11
Subtotal	**8.14**[3]
TOTAL	**16.72**

[1] Includes 0.46 acre of disturbed CSS in the Expanded Wildlife Sanctuary, which will also be restored.
[2] Includes restoration of 1.03 acres of temporary impact area, and 2.00 acres of agricultural land.
[3] 0.90 acre of restored CSS areas will be planted as cacti thickets; the remaining 7.24 acres of restoration will be planted as non-succulent dominated CSS.

2.3.2 Jurisdictional Habitats

Impacts to jurisdictional habitats will be mitigated at a ratio of 3:1 for vegetated habitats (i.e., MFS) and 1:1 for unvegetated habitats (i.e., streambed). Impacts to MFS must be mitigated at a ratio of 3:1, where each acre of impact will be mitigated for by 3 acres of restoration. The impact to 0.06 acre of wetland habitat necessitates 0.18 acre of mitigation. Mitigation will consist of 0.06 acre of creation (establishment or re-establishment) and 0.12 acre of rehabilitation. The impacts to streambed, which amount to 0.14 acre will be mitigated at a 1:1 ratio. The total amount of riparian mitigation is 0.32 acre. Riparian habitat creation (establishment) will occur on grazed (agricultural) land adjacent to Snow Creek (Table 2; Figure 3), as will the habitat enhancement (rehabilitation).



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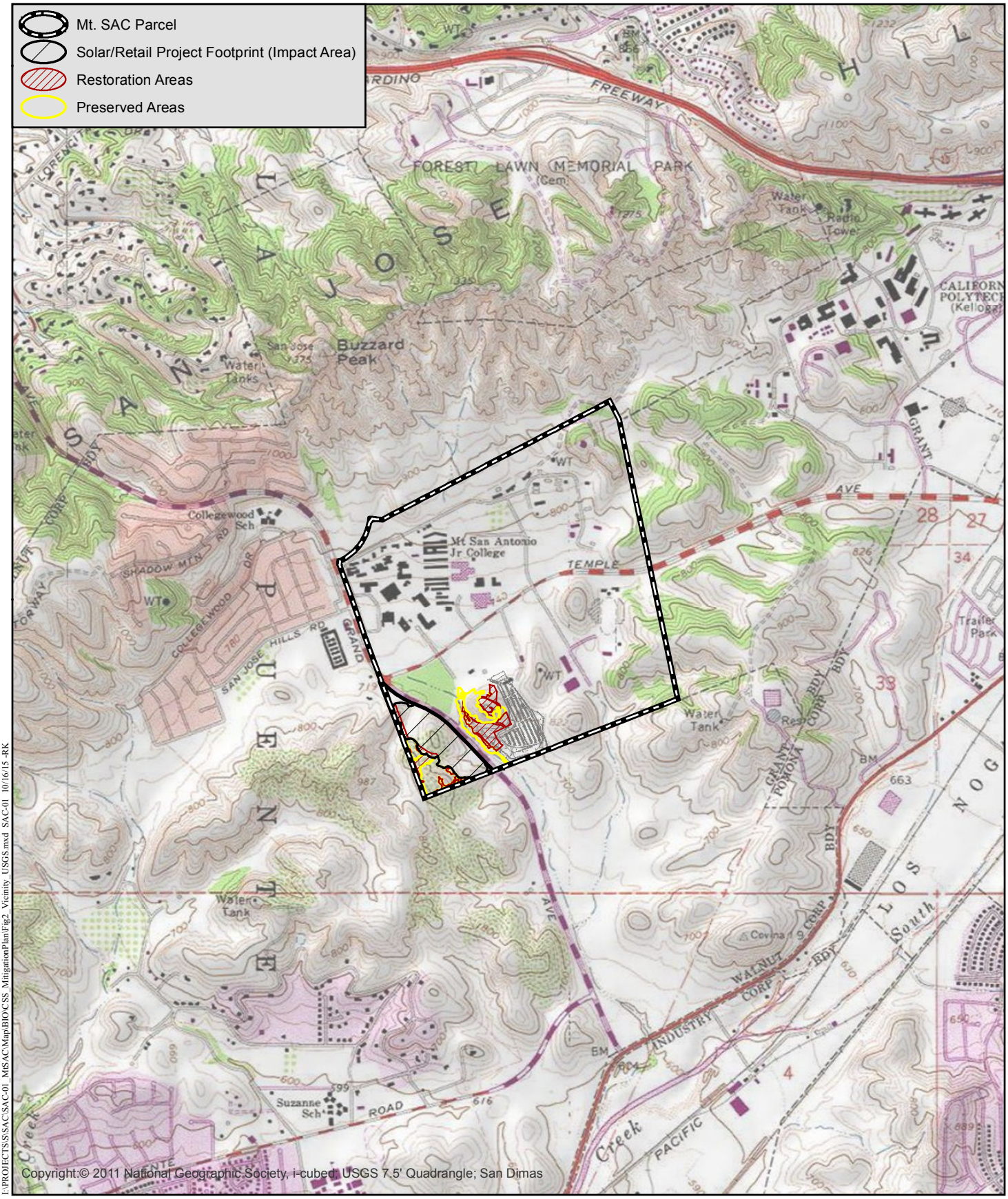
Regional Location Map

WEST PARCEL SOLAR PROJECT

HELIX Environmental Planning

N 0 10 Miles

Figure 1



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Project Vicinity Map (USGS Topography)

WEST PARCEL SOLAR PROJECT

HELIX Environmental Planning

N 0 2,000 Feet

Figure 2

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Mitigation Areas

WEST PARCEL SOLAR PROJECT

HELIX Environmental Planning

N 0 250 Feet

Figure 3

Table 2 JURISDICTIONAL MITIGATION	
MITIGATION TYPE	**ACRE**
Mule Fat	
Creation	0.06
Enhancement	0.12
Subtotal	**0.18**[1]
Streambed	
Creation	0.14
TOTAL	**0.32**

[1] Mitigation must include at least 0.06 acre of creation; enhancement obligation may be met by creation.

3.0 RESTORATION OVERVIEW

3.1 RESTORATION SITE LOCATION AND SIZE

The total coastal sage scrub obligation of the project is 17.04 acres. This will be done through a combination of 8.58 acres of preservation and 8.46 acres of restoration. The proposed 8.14 acres of CSS restoration (Table 1) will occur on the Mt. SAC campus in portions of the area to be disturbed by grading for the solar power generation station, in agricultural areas on the West Parcel, and in the Expanded Wildlife Sanctuary (Figure 3). The proposed 0.32 acre of riparian restoration will occur along Snow Creek on the Mt. SAC campus in areas previously disturbed by grazing (Figure 3).

The total jurisdictional habitat obligation is 0.32 acre. This will be done through the creation of 0.20 acre of habitat and the enhancement of 0.12 acre of riparian habitat. The creation component will occur in agricultural land adjacent to Snow Creek, where 0.20 acre will be graded to an appropriate elevation and planted with mule fat scrub. Enhancement will consist of removing all of the non-native woody riparian species, in an amount that is equal to or greater in area compared the mitigation requirement (i.e., 0.12 acre).

3.2 RESTORATION GOAL

The restoration project goal is to re-establish 8.04 acres of native CSS habitat that likely occurred in this area in the past and that at maturity will resemble the adjacent undisturbed habitat. Similarly, the goal is to improve the riparian functions and services along Snow Creek through a 0.20 acre of habitat creation (establishment) and 0.12 acre of habitat enhancement (rehabilitation).

3.3 EXISTING AND PROPOSED FUNCTIONS AND SERVICES

Currently, the areas proposed for restoration are either devoid of vegetation, grazed by cattle, or contain habitat that has been degraded by grazing or invasion by exotic species (e.g., field mustard [*Brassica rapa*], fennel [*Foeniculum vulgare*]. shamel ash [*Fraxinus uhdei*], giant reed

[*Arundo donax*], and Brazilian peppertree [*Schinus terebinthifolius*]). The grazed and disturbed places are dominated by exotic species. The function and services of the un-vegetated areas are very low. The areas subject to grazing have relatively low functions and services compared to established CSS. This is due to the preponderance of non-native weeds and annual grasses that provide limited habitat for native plant and animal species. The same is also true for the area being considered for MFS creation along Snow Creek. The areas slated for enhancement along Snow Creek provide better functions and services, but they are also a source for the spread of exotic weeds to other riparian areas.

The primary functions and services target for the CSS of this restoration plan is to provide habitat for the coastal California gnatcatcher. The composition of native vegetation within the restored habitat should reflect the species located in adjacent CSS habitat. The restored areas should eventually perform the same functions and services for wildlife habitat as adjacent, undisturbed habitat. The target functions and services for MFS are more general and will improve the overall wildlife and hydrology of Snow Creek.

Following the successful completion of the mitigation project, this area will have higher native plant species cover and a corresponding higher density and diversity of native wildlife, and will provide habitat for the gnatcatcher. Overall, the restored habitat provided by this plan, combined with the adjacent CSS habitat preservation, is expected to result in higher long-term ecological functions and services for the affected parts of the college.

3.4 PRESENT AND PROPOSED USES

The proposed preservation and restoration areas are located within the Mt. SAC campus. There are no other uses planned for the West Parcel beyond the small commercial area at the northern end of the parcel and the solar power generation station. Public access to the West Parcel will be restricted and thereby prevent disturbances to the area from off-road vehicles (ORVs), trash dumping, or other human-related activities.

Similarly, the restoration area on and near Mt. SAC Hill is not open to the public and unauthorized human-related impacts have been precluded from this area. The mitigation habitat will be fenced to preclude human related impacts. The area has, however, been degraded by many years of cattle grazing. It will be fenced to preclude any future grazing, and will become part of the college's Expanded Wildlife Sanctuary. Both areas will be designated as permanent biological open space in the college's Facilities Master Plan.

The courses offered at the college may periodically use the Wildlife Sanctuary as part of their curriculum. The curriculum will consist of passive observation from the existing access road during the breeding season (i.e., February 15th through August 31st). The curriculum outside of the breeding season may include activities on and off the existing road, provided they consist of passive observation (e.g., ecological measurements and wildlife observations). Prior to allowing access into the coastal sage scrub preservation and restoration areas, Mt. SAC will work with the resource agencies to ensure the areas are used in ways that do not adversely affect wildlife and habitat.

4.0 RESTORATION AND IMPLEMENTATION

4.1 RESPONSIBLE PARTIES

4.1.1 Project Proponent

The Mt. SAC Facilities Planning & Management Department (FPMD) will be responsible for retaining and financing the Restoration Specialist, Landscape Architect, and landscape contractor(s). This will encompass all the tasks associated with this mitigation, including the installation and initial 5-year maintenance and monitoring of the restored habitats described in this plan (see Section 2.1).

Mt. San Antonio College Community College District
Attn: Mikaela Klein, AIA, LEED AP
Senior Facilities Planner
1100 North Grand Avenue
Walnut, CA 91789
(909) 274-4850
Mikaela.Klein@mtsac.edu

The Mt. SAC Biology Department will be responsible for overseeing the long-term management of the preserved, enhanced, and restored mitigation habitat, which will be incorporated into their Wildlife Sanctuary (see also Section 10).

4.1.2 Resource Agencies

The Resource Agencies, including CDFW, RWQCB, USACE, and USFWS, will be responsible for the review and approval of the construction documents (i.e., drawings and specifications for the habitat restoration), modifications to the implementation, monitoring and maintenance of this plan, and will review the annual reports. The construction documents will be provided to the agencies 30 days prior to any use or reliance upon them. The agencies comments on these facets of the plan will be incorporated into the execution of the plan and management of the area. This plan has been prepared as part of the requirements of the resource agencies as specified in their permits. The permits for these agencies are:

- CDFW: 1600-2015-0022-R5;
- USACE: SPL-2015-00113-PKK;
- RWQCB: 15-021; and
- USFWS: FWS-LA-14B0243-15F0556.

4.1.3 Restoration Specialist

Overall supervision of the installation, maintenance, and monitoring of the restoration project will be the responsibility of a Restoration Specialist (RS) with a minimum of 5 years of experience in upland and wetland habitat restoration, including 3 years of experience in southern California. The RS will oversee work by the installation/maintenance contractor(s) for the life of

the project. Should modifications to the plan or substitutions be necessary, the RS will obtain approval from the resource agencies and Mt. SAC FPMD for these changes. Specific tasks of the RS include educating all participants with regard to the restoration goals and requirements, and directly overseeing planting, seeding, weeding, and maintenance. The RS will work with the installation/maintenance contractor(s) to avoid inadvertent impacts to adjacent sensitive habitat. The RS will periodically provide the project proponent and installation/maintenance contractor(s) with a written monitoring memo, including a list of items in need of attention. Maintenance memos typically consist of a brief description of the progress of the habitat development and a punch list of items requiring work by the maintenance contractor. The RS will prepare and submit required reports to both Mt. SAC FPMD and the resource agencies (see Section 7.2 for reporting schedule and report contents).

4.1.4 Landscape Architect

A California licensed landscape architect will prepare necessary construction plans and specifications for the restoration project, including irrigation and planting plans. The landscape architect must have previous project experience in preparing construction documents for at least three upland and three wetland habitat restoration projects. The planting plans will be subject to approval by the resource agencies. The landscape architect will also inspect the irrigation system and assist in other inspections (e.g., plant deliveries), as necessary.

4.1.5 Installation/Maintenance Contractors

The installation contractor must hold a State of California Landscape Contractor's License and have previous experience with at least three upland and three wetland habitat restoration projects. They will be under the direction of the RS and be responsible for site preparation, installation, and initial maintenance for the duration of the 120-day establishment period.

The maintenance contractor will be responsible for conducting maintenance activities for the initial 5-year maintenance/monitoring period, following the successful completion of the 120-day establishment period. The maintenance contractor and the installation contractor may be the same entity; the project proponent may change contractors at its discretion. The maintenance contractor will have at least 5 years of experience in upland and riparian habitat establishment and maintenance, including 3 years in southern California ecosystems, and must demonstrate knowledge in differentiating between native plants and weeds. The maintenance contractor will service the entire restoration area according to the maintenance schedule outlined below (Section 5.2). Service will include, but not be limited to, weed control, trash removal, watering, erosion control, dead plant replacement, and re-seeding. All activities conducted will be seasonally appropriate and approved by the RS. The installation and maintenance contractor(s) will meet the RS at the site when requested and will perform all checklist items within 2 weeks of receiving a written request from the RS for specific maintenance tasks.

5.0 IMPLEMENTATION PLAN

5.1 RATIONALE FOR EXPECTING ESTABLISHMENT SUCCESS

The restoration areas at the West Parcel and Expanded Wildlife Sanctuary are located adjacent to extant, native habitat. This proximity will facilitate natural recolonization over time. In portions of the site where native soils have been removed, vegetation is expected to be more sparse than adjacent habitat at the end of the 5-year maintenance and monitoring period; however, over time, as soil microorganisms and mycorrhizae colonize from adjacent habitat, and organic matter accumulates and becomes incorporated into the soil, this area is expected to resemble adjacent habitat. In all upland restoration areas, salvaged duff (Sections 5.4.2 and 5.5.3) will be spread to enhance the soil environment for CSS establishment. In areas that currently support a dense weed cover, the top two inches of soil will be removed and disposed of. At least 2 grow-kill cycles will be done prior to the application of salvaged duff in areas where the top two inches of soil have not been removed (Section 5.5.2). These measures will reduce competition with weeds. The installation of container plantings and seed and use of above-ground temporary irrigation will increase both the likelihood of restoration success, as well as the speed with which vegetation is established.

Competition from weeds is expected to decrease with time and with the establishment and growth of CSS. Regular weed control will be necessary until the habitat becomes fully established. The installation/maintenance contractor(s) will be responsible for weed control during the establishment period (initial 120 days) and initial 5 years of maintenance and monitoring. Following restoration sign off, the mitigation areas specified in this plan will be subject to long-term management to effect weed control, trash removal, fence repair, etc., which also will help ensure the long-term viability of the restored habitat. The Biology Department will be responsible for the long-term management of these mitigation areas, however funding for this management will be provided for in the Mt. SAC FPMD's budget.

5.2 SCHEDULE

The project schedule includes 4 consecutive phases: Pre-construction, Site Preparation, Installation, and 5-year Maintenance (Please also see Appendix A). There are a variable number of tasks associated with each phase, and for each phase there are various responsible parties (Table 3). The RS will be responsible for ensuring the entities responsible for any given task are aware of the objectives for that task and communicating with the project proponent and agency personnel as necessary.

The anticipated start date for the pre-construction activities is immediately upon project approval (i.e., all necessary permits have been secured). The anticipated start date for site preparation is September 6, 2016. This is when plant and soil salvage should be done ahead of grading. Planting and seeding will be done following installation of duff, which is the last phase of construction, other than documenting the completion of construction. Use of heavy equipment for construction of habitat on the West Parcel and Mt. SAC Hill is restricted to the dates between September 1 and February 14. This is necessary to avoid indirect impacts to nesting birds in general and the gnatcatcher in particular. Work may start earlier if the coastal California

gnatcatcher breeding season ends early, as documented by three surveys conducted 7 to 10 days apart. The establishment period will begin when the resource agencies deem the project is installed. Similarly, the 5-year maintenance and monitoring of the restoration effort will begin when the resource agencies deem the project has successfully completed the establishment period.

An annual report will be prepared by the RS and distributed to Mt. SAC FPMD and resource agencies by April 1 of each year. At the conclusion of the monitoring period, a final year report will be prepared by the RS and distributed to Mt. SAC FPMD and resource agencies.

5.3 PRE-CONSTRUCTION

5.3.1 Pre-construction Activities

Prior to initiation of restoration activities, an on-site meeting will be held with the project proponent, the installation contractor, and the RS to identify the restoration areas and adjacent native habitat to be avoided, as well as discuss the timeline in which installation activities will occur.

Burrowing owl take avoidance (pre-construction) surveys will be conducted within 30 days and no less than 14 days prior to ground disturbing activities. If the presence of burrowing owls is detected take avoidance and minimization measures will be implemented. This will include avoidance of active burrows with a minimum buffer of 500 feet. The following take avoidance measures shall be implemented if burrowing owls are detected:

- Avoid disturbing occupied burrows during the nesting period, from February 1 through August 31.
- Avoid impacting burrows occupied during the non-breeding season by migratory or non-migratory resident burrowing owls.
- Avoid direct destruction of burrows through chaining (dragging a heavy chain over an area to remove shrubs), disking, cultivation, and urban, industrial, or agricultural development.
- Develop and implement a worker awareness program to increase the on-site worker's recognition of and commitment to burrowing owl protection.
- Place visible markers near burrows to ensure that farm equipment and other machinery does not collapse burrows.
- Do not fumigate, use treated bait or other means of poisoning nuisance animals in areas where burrowing owls are known or suspected to occur (e.g., sites observed with nesting owls, designated use areas).
- Restrict the use of treated grain to poison mammals to the months of January and February.

For construction outside the avian breeding season (September 1 through February 15), a Service-approved biologist will perform pre-construction surveys immediately prior to the initiation of vegetation clearing or restoration construction. If any gnatcatchers are found in the project impact footprint, the biologist will direct workers to begin initial vegetation clearing in an

area away from the gnatcatchers. In addition, the biologist will passively flush birds toward areas of appropriate vegetation that will be avoided. It will be the responsibility of the biologist to ensure gnatcatchers will not be injured or killed by vegetation clearing/grubbing or construction. The biologist will record the number and map the location of gnatcatchers disturbed by restoration activities and report these numbers and locations to the Service within 24 hours.

For restoration construction during avian breeding season (February 15 through September 1), the Service-approved biologist will perform a minimum of three focused surveys, on separate days, to determine the presence of gnatcatcher nest building activities, egg incubation activities, or brood rearing activities within 500 feet of construction. The surveys will begin a maximum of 7 days prior to project construction, and one survey will be conducted the day immediately prior to the initiation of work. The biologist will notify the Service at least 7 days prior to the initiation of the breeding season surveys. The biologist will record the number and map the location of gnatcatchers observed during the breeding season surveys, and report these numbers and locations to the Service within 24 hours. Thereafter, surveys will be done once a week during project construction in the gnatcatcher breeding season. These weekly surveys may be suspended as approved by the Service.

Construction activities or vegetation clearing will not occur within 500 feet of an active gnatcatcher nest unless they are conducted consistent with a Service-approved plan to avoid disturbing nesting gnatcatchers (e.g., constructing sound walls, monitoring noise levels to ensure that they are less than 60 dBA, and nest monitoring).

Surveys during the avian breeding season shall be conducted within a 500-foot-buffer area for the presence/absence of breeding avian species, as well as nests or nest-building activity. The biologist will primarily inspect project areas proposed for physical disturbance within and near the unnamed streams; including vegetation that may support nesting birds. The biologist will conduct surveys during weather that is conducive to observing birds and will avoid conducting surveys during heavy rain, high winds (> 20 mph), dense fog, or extreme temperatures (over 95° F or 35° C). Data recorded on standardized field monitoring logs during each survey will include a notation of the date and time of the survey; investigators present; weather conditions; evidence of species presence (observation, vocalization, etc.); all other bird species or signs of such observed; avian behavior; habitat type; representative photo (if possible); and disturbance regime present. If these surveys are positive subsequent construction activities and monitoring will comply with the Federal Migratory Bird Treaty Act (MBTA) and resource agency permits.

5.3.2 Site Documentation

At least two photographic documentation locations per acre shall be identified for comparison with post-installation photos to document the restoration effort. Along with the location, the camera height, angle (0° is level, above level is plus degrees, and below level is negative degrees), and compass bearing will recorded for each location. Photo stations will be mapped with a sub-meter accuracy GPS and plotted on a map. The photos shall capture typical, special topography, special features and regulatory features, where present.

5.3.3 Flagging, Fencing, and Signage

Project boundaries will be fenced by the installation contractor and verified by the RS. This is necessary to avoid unauthorized impacts to native habitats adjacent to the restoration area. Flagging and/or temporary fencing will be installed prior to any grading for the project, including topsoil salvage. If topsoil will be stored, it will be outside of any stream or native habitat areas. Topsoil salvage storage areas will be identified and flagged. Impacts to CSS beyond the areas shown on the plan will be restored according to this plan. The cost of this will be borne by the installation contractor responsible for the impact. Four temporary signs will be installed at the West Parcel by the installation contractor to provide an explanation of the project and a contact number for any public inquiries. Once grading is underway, construction activities will be monitored weekly. These reports will be made available to the Project Proponent and resource agencies. Temporary flagging and fencing will be removed by the contractor when deemed no longer necessary by the RS. This aspect of monitoring will cease once grading is completed.

5.3.4 Site Access and Staging Area

One specific staging area will be established on or adjacent to each of the restoration areas: i.e., one on the West Parcel and one near the Expanded Wildlife Sanctuary. All staging areas will be outside of any streams and native habitats. All vehicles and construction equipment will be restricted to the staging areas when not required for restoration activities. Only construction equipment necessary to accomplish the duff salvage and habitat restoration will be allowed in the restoration area. No vehicular fluids will be added or changed within the restoration area.

5.4 SITE PREPARATION

5.4.1 Cacti Salvage

Following cessation of the cactus wren breeding season (March – July), coast prickly pear (*Opuntia littoralis*) pads will be salvaged from areas to be impacted by the West Parcel Solar Project. Salvage will consist of stem segments and entire plants. Pads will be collected from at least 10 separate stands to promote genetic diversity in the restored areas. Entire plants will be collected where they occur as individual plants or as small stands. Stem segments consisting of 2 to 4 pads will be collected and stored out of the sun and in a dry place. Pads will be stored for at least 2 weeks to allow for them to callous over. Entire plants will be collected and planted directly into the restoration areas, including the West Parcel and Mt. SAC Hill. At least 4,250 plants and stems shall be collected. The percentages for the various sizes of salvaged cacti are: 2 pads—50 percent (2,125 specimens); 3 pads—30 percent (1,275 specimens); 4 pad stems—15 percent (638 specimens); and entire plants—5 percent (212 plants).

5.4.2 Coastal Sage Scrub Duff Salvage

Native vegetation, exclusive of cacti stands over 25 square feet in size, located in the areas to be impacted by the project will be driven over with a tracked bulldozer to crush the vegetation. The crushed vegetation and top 6 inches of soil, collectively referred to as duff, will be collected and

reused in the CSS establishment areas. The cacti stands are to be avoided during salvage due to the potential for rot in the stockpiled topsoil if they are included. The duff processing, collection, and storage, will be done by the installation contractor under the direction of the RS. The Mt. SAC FPMD, Farm Supervisor, Wildlife Sanctuary Director, installation contractor and RS will meet prior to any duff related work to determine how and where this shall be done, as well as where and how the duff will be stored.

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Table 3
MT. SAN ANTONIO COLLEGE RESTORATION PROJECT

Restoration Project Phase	Restoration Task	Applicable Parties						
		Project Proponent[1]	Landscape Architect	Grading Contractor	Installation Contractor	Maintenance Contractor	Restoration Specialist	Resource Agencies
Pre-Construction	Order container plantings and seed[2]	X[3]			X[3]		X*	
	Prepare landscape plans		X				X*	X*
	Attend pre-construction meeting	X		X	X		X	
	Preconstruction bird surveys[4]							
	10-day notification to resource agencies						X	
	Install erosion control and perimeter fencing to protect existing habitat			X			X*	
	Document Pre-construction Conditions						X	
Site Preparation	Cacti salvage				X		X*	
	Crush and salvage topsoil (duff) (between September 1 and February 14)			X			X*	
	Surface preparation[5]			X				
Installation	Install irrigation				X		X*	
	Inspect irrigation		X		X			
	Grow-kill weed control[6]							
	Install salvaged topsoil			X	X		X*	
	Install salvaged cacti, container plantings, and seed				X		X*	
	Document as-built conditions			X	X		X	
	Prepare/submit as-built report						X	
	Document as-built conditions			X	X		X	
	Prepare/submit as-built report						X	
Maintenance								
120-day Establishment Period	Maintain site				X		X*	X*
	Replace dead container plantings				X		X*	
5-year Maintenance Period	Maintain site for minimum of 5 years or until sign off by resource agencies					X	X*	X*

[1] Mt. San Antonio College.
[2] Must provide all source locations and receive authorization of final seed and plant lists prior to ordering.
[3] Plant and seed orders should be placed one year prior to installation, or as soon as possible. If the installation contractor, who is normally responsible for this, has not been retained when the plant and seed orders should be placed, the order should be placed by the project proponent.
[4] Applies only if construction is initiated during bird breeding season (February 15 – August 31).
[5] Remove weed infested soils, rough grade, and/or rip as necessary.
[6] Grow-kill will be used in restoration areas that have not been recently manufactured or had weed-infested soils removed.
* Inspecting work related to this task.

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Reuse of duff provides plant propagules and soil microflora that are important in the establishment of native vegetation in highly disturbed places. Placement of duff in areas graded for the solar project will be the highest priority. This is because the biological activity and organic matter are most necessary in areas of exposed sterile soils. Any remaining duff will also be applied in the restoration areas elsewhere on the West Parcel and Expanded Wildlife Sanctuary. The remaining duff will be spread evenly over the remaining areas, provided there is enough to cover these areas with at least 1 inch of duff. If there is not enough for this, the areas with the more problematic weeds will be given higher priority. Duff should be collected between September 1 and October 15, prior to seasonal rains, when the ground and vegetation is dry and most habitat constituents are dormant. This period for grading also avoids damaging the biological components of the soil and disruptions to the avian breeding season (February 15 to August 31). If there are no conflicts with the avian breeding season, duff may be collected in August. Duff will be stockpiled in 3-foot-tall windrows. The portion for Expanded Wildlife Sanctuary may be placed directly there provided the requisite site preparations have already been done.

The stockpiled duff will be covered with a waterproof covering, provided it is dry when collected. Duff will only be applied after the soil surface has been prepared (Section 5.4.3) and any necessary weed control has been completed (Section 5.5.2).

5.4.3 Surface Preparation

In areas with dense weed cover, site preparation will include removal of the standing biomass and top 2 inches of soil. Soil removal in these areas is necessary to control future weeds by significantly reducing the amount of weed seeds in the soil. All soil and weed biomass will be disposed of in a legal manner.

The Mt. SAC restoration areas, including upland and riparian areas, exclusive of manufactured slopes will be decompacted and left in a rough condition. The area shall be ripped, disced, or otherwise prepared to at least 6 inches. Soil decompaction shall occur horizontally along the topographic contours (vs. perpendicular to the contours or up and down the slope). Soil roughening will provide an uneven surface for the duff to cling to and safe sites for the seeds.

Manufactured slopes within the restoration area on the West Parcel and Expanded Wildlife Sanctuary will be stair-step cut (Figure 4). This provides for better water infiltration and higher seed germination rates. The graded areas elsewhere on the West Parcel (i.e., between the stair-step cut slope and the solar arrays) will be relatively flat. These flat areas are to be ripped to 6 inches and left in a rough condition. This will increase the water infiltration and create safe sites for seeds in this area.

5.4.4 Duff Application

The stair-step cut slopes (Figure 4) will receive 2 inches of salvaged duff. Salvaged duff will be raked into the surface of the stair-step cut slopes.

In the remaining upland areas the remaining duff will be spread evenly. In ungraded areas where salvaged duff is applied, it will be integrated into the existing soil surface; the existing soil surface will be scarified to 6 inches deep prior to the duff placement and the duff will be spread over the surface, ripped to a depth of 6 inches, and compacted to 80 to 85 percent. This is necessary to prevent large scale erosion of duff. This surface shall also be left in a rough condition. It is essential that all biomass must be removed prior to application of duff. This is necessary to properly integrate the duff into the receptor site and prevent large scale sloughing of duff. Straw wattles shall be installed to minimize erosion in places where salvaged topsoil is applied to slopes, except for the stair-step cut slopes.

5.5 INSTALLATION

5.5.1 Irrigation

A temporary irrigation system will be installed throughout the restoration areas, except in the cacti thickets. The irrigation will be an overhead sprinkler design. The project landscape architect, together with the installation contractor, will inspect the irrigation to ensure full coverage of target areas prior to plant/seed installation. The RS will have control over the irrigation schedule and amount. All establishment areas must be off irrigation for 2 years prior to sign off.

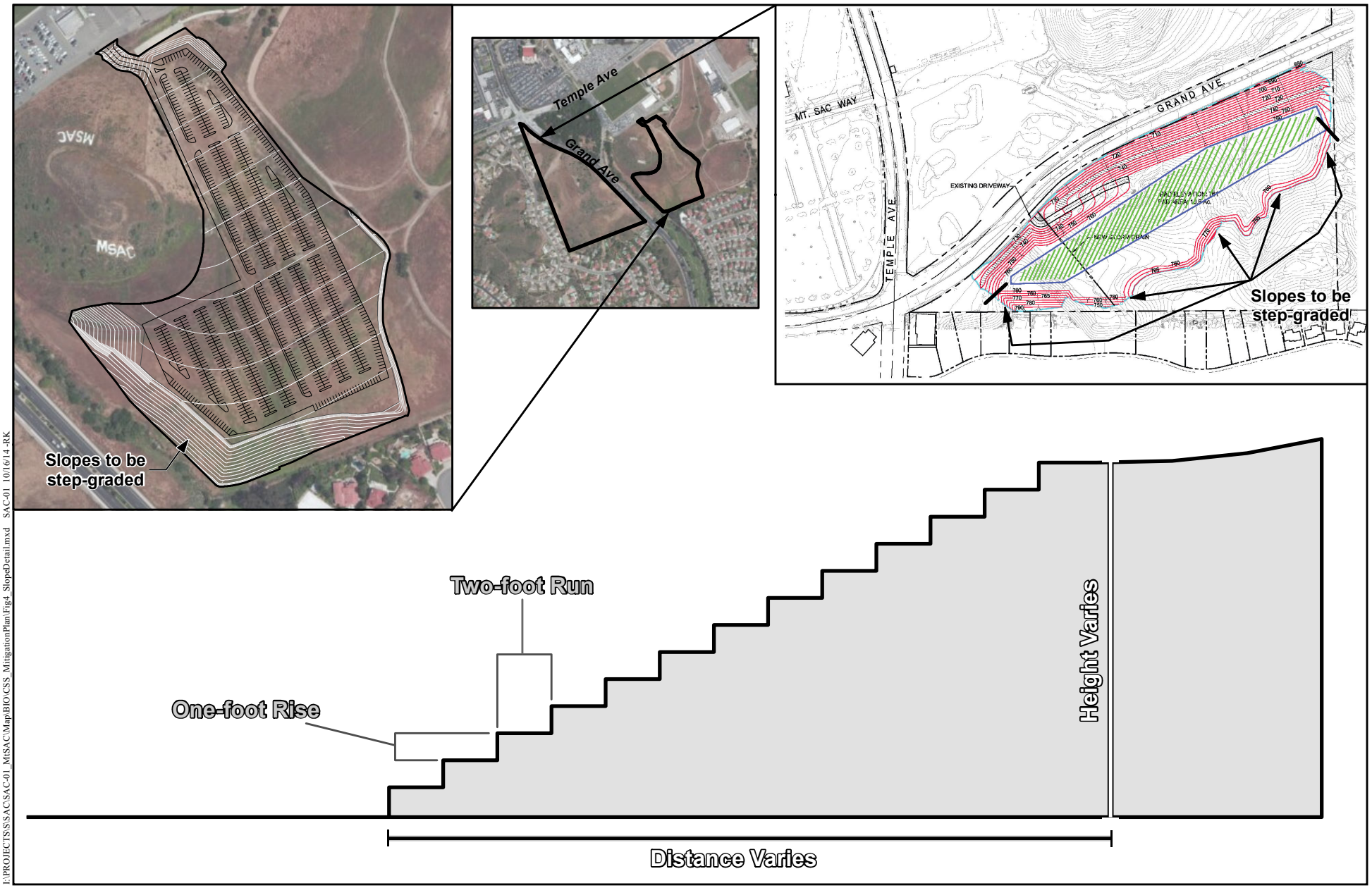
5.5.2 Weed Control

At least two weed grow/kill cycles will be conducted by the installation contractor prior to planting, preferably between September and April). The number of cycles will be dependent upon how effective the soil removal was in removing the weed seed soil bank, as determined by the RS. In each cycle (approximately 1 month per cycle), weeds will be allowed to grow and, prior to flowering, will be removed. If rainfall is not sufficient to catalyze the grow/kill cycles, it will be supplemented with irrigation. The grow/kill cycles are intended to reduce the weed seed bank on site and reduce non-native and invasive species competition in the restoration area. Initial weed removal may be conducted by mechanical line trimmers outside of the avian breeding season, hand, carefully managed goats, and careful herbicide application. All plant material, as well as any trash and other debris removed from the project area, will be disposed of in a legal manner.

Weed control will also be done within preserved habitat for any noxious weed species, except for naturalized annual grasses. Noxious weeds are those species rated as high by California Invasive Plant Council (Cal-IPC), except for annual grasses, and moderate with an alert.

These measures may not be necessary in the new manufactured slopes. If so, the grow/kill cycles will not be implemented.

The non-creation component for the MFS mitigation will be fulfilled by removing at least 0.12 acre of non-native perennial species from Snow Creek: all of the non-native perennial species south of the existing Wildlife Sanctuary will be removed. This will eliminate all of these species in the reach of Snow Creek at Mt. SAC south of Temple Avenue. These areas will be maintained free of non-native perennial species in perpetuity.



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Slope Grading Detail

WEST PARCEL SOLAR PROJECT

HELIX Environmental Planning

Figure 4

5.5.3 Container Plantings, Seed, and Salvaged Cacti

The plant palette was developed based on the species observed as part of biological surveys for the 2008 and 2012 Master Plan Update (HELIX Environmental Planning, Inc. 2008 and 2012) and for surveys of the West Parcel Solar project (2015). The species selected for planting and seeding are found in undisturbed Venturan CSS habitat on site or nearby. Substitutions, other donor sites, or use of commercial material may be allowed if materials are unavailable, at the discretion of the RS, and acceptable to the resource agencies. The source of all plant material and seed shall be provided in the as-built report for the site. The RS must inspect all plant material prior to installation to ensure healthy, disease free, and appropriately sized plants, and properly sourced seed and plants.

Container plantings and seed installation will begin immediately following final site preparation (e.g., installation of salvaged topsoil) and installation of the temporary irrigation system. Although planting and seeding may occur at any time of the year if an irrigation system is in place, it is highly recommended that plant material installation be conducted between October and January, the beginning of the rainy season and natural growth period for native upland vegetation.

Native seed collected from on site or nearby sources and nursery-grown container plants propagated from on site or nearby sources (i.e., southern cismontane Los Angeles and northern Orange Counties) will be used in the restoration areas. The species to be used are common in the region and known from this watershed. All seed and container stock must be inspected and approved by the RS prior to installation.

All container stock will be 1 gallon in size, be rooted appropriately for a 1-gallon pot (i.e., neither root bound or insufficiently developed), and shall be installed in holes that are the same diameter as the planting container and 1 to 2 times as deep. Holes may be dug with mechanical augers provided these are dug outside the bird breeding season. Holes must be located in places where soils are at least as deep as the planting container (i.e., not in shallow soils over rock). The auguring depth shall be between 1 and 2 times the depth of the container stock. Plants installed on manufactured slopes and recently exposed sterile subsoil will receive a small dose of slow release fertilizer.

Holes will be filled with water and allowed to drain twice before planting. A basin with a 1-gallon capacity will be constructed around each container planting. The basins shall be filled, allowed to soak in, and filled again following installation. This may take several days in heavy soils where draining is slow.

Seeding will be done immediately following the installation of the container stock. Seeding will be conducted either by hand, or as the first step in a two-step hydroseed/mulch application process. Where hand seeding is conducted, seed will be raked into the soil surface. If hydroseeded, the second step will include the bulk of the fiber mulch and tackifier. No other soil preparation, seed scarification, or inoculation will be required, and no additional amendments or additives will be used in the seeding process where salvaged topsoil has been applied. If there are areas where topsoil has not been applied, mycorrhizal inoculum must be added to seed mix.

Container stock must be temporarily covered during hydroseeding. No seeding will occur in the cacti thickets.

Coastal Sage Scrub. The CSS installation will occur as non-succulent dominated CSS and cacti thickets. Of the 8.14 acres of habitat restoration, 7.24 acres will be CSS and 0.90 acre will be cacti thickets. Plants shall be arranged in a way that mimics natural plant distribution; container plantings will be installed in species groupings of 3 to 38 plants depending on the species (Table 4). Woody species (e.g., laurel sumac [*Malosma laurina*] and lemonadeberry [*Rhus integrifolia*]) will be planted in the more mesic landscape position on the slope, if present. To aid plant establishment in the weed infested soils that exist in places on site, plants must be inoculated with mycorrhizae by the nursery or at installation. Seeding of the restored CSS is intended to reinforce major shrub components and introduce important herbaceous components (Table 5).

Table 4
VENTURAN COASTAL SAGE SCRUB PLANTING PALETTE

CONTAINER PLANTINGS					
Scientific Name	**Common Name**	**Spacing on Center**	**Grouping Size**	**Number Per Acre**	**Amount to be Ordered[1]**
Artemisia californica	California sagebrush	5	38	380	2,750
Encelia californica	California encelia	5	9	90	652
Ericameria palmeri var. *pachylepis*	Palmer's rabbitbrush	5	5	35	253
Eriogonum fasciculatum ssp. *fasciculatum*	California buckwheat	5	23	230	1,665
Heteromeles arbutifolia	toyon	10	3	15	109
Malosma laurina	laurel sumac	10	5	35	253
Rhus integrifolia	lemonadeberry	8	2	20	145
Salvia mellifera	black sage	5	16	160	1,158
Sambucus mexicana	blue elderberry	10	3	24	174
			TOTAL	**989**	**7,160**

[1] Container stock necessary for 7.24 acres of CSS restoration. The remaining 0.90 acre of CSS restoration consists of cacti thickets.

Table 5
VENTURAN COASTAL SAGE SCRUB SEED PALETTE

SEED MIXTURE				
Scientific Name	**Common Name**	**Percent Purity/ Germination**	**Pounds Per Acre**	**Amount to be Ordered[1]**
Artemisia californica	California sagebrush	90/25	3	21.7
Baccharis pilularis	coyote brush	2/40	0.5	3.6
Corethrogyne filaginifolia var. *filaginifolia*	California sandaster	NA	2	14.5
Deinandra fasciculata	fascicled tarplant	20/80	3	21.7
Encelia californica	California encelia	40/60	2	14.5
Eriogonum fasciculatum	California buckwheat	50/20	3	21.7
Eriophyllum confertiflorum	golden-yarrow	30/70	2	14.5
Pseudognaphalium biolettii	Two-color rabbit-tobacco	5/40	1	7.2
Heterotheca grandiflora	telegraph weed		1	7.2
Isocoma menziesii	goldenbush	40/30	1	7.2
Acmispon glaber	deerweed	95/80	1	7.2
Lupinus succulentus	arroyo lupine	98/85	1	7.2
Malacothrix saxatilis var. *tenuifolia*	cliff aster	NA	2	14.5
Mimulus aurantiacus	monkeyflower	2/60	2	14.5
Stipa lepida	foothill needlegrass	90/80	5	36.2
Plantago erecta	dot-seed plantain	90/80	2	14.5
Salvia columbariae	chia		2	14.5
Salvia mellifera	black sage	70/50	2	14.5
Sisyrinchium bellum	Blue-eyed grass		2	14.5
Stephanomeria virgata	virgate wreath plant		1	7.2
		TOTAL	**38.5**	**278.6**

[1] Seed necessary for 7.24 acres of CSS restoration. The remaining 0.90 acres of CSS restoration consists of cacti thickets.

Cactus Thickets. Salvaged, calloused cacti stems will be placed directly into the ground 3 feet on-center. Twenty-five thickets with an average size of 0.065 acre (2,830 square feet) will be created. The size of any one thicket shall be at least 0.04 acre and no larger than 0.19 acre. The unplanted ground within each cacti thicket will be covered with 3 inches of mulch. This is necessary to prevent weeds and other native species from becoming established within the cactus thickets. Two weeks following planting, the thickets shall be watered for the first time, allowed to dry out (approximately 4 weeks), and irrigated again. The cactus thickets shall not receive any further irrigation.

Mule Fat Scrub. Mule fat (*Baccharis salicifolia*) shall be planted throughout the MFS creation area (Table 6). Blue elderberry (*Sambucus nigra* ssp. *canadensis*) and arroyo willow (*Salix lasiolepis*) shall be planted in small groupings (2 to 3 plants) with elderberry planted along the outer edge and arroyo willow planted near Snow Creek. California blackberry (*Rubus ursinus*) shall be planted at the upper edge (east side) of the MFS creation area. Seeding for the MFS will be done by hand and raked in (Table 7).

Table 6 MULE FAT SCRUB PLANTING PALETTE				
CONTAINER PLANTINGS				
Scientific Name	**Common Name**	**Spacing On Center**	**Number Per Acre**	**Amount to be Ordered[1]**
Baccharis salicifolia	mule fat	6	600	120
Rubus ursinus	California blackberry	6	--	15
Sambucus nigra ssp. *caerulea*	blue elderberry	10	44	9
Salix lasiolepis	arroyo willow	10	44	9
	TOTAL		**688**	**153**

[1] Based on planting 0.20 acre.

Table 7 MULE FAT SCRUB SEED PALETTE				
SEED MIXTURE				
Scientific Name	**Common Name**	**Percent Purity/ Germination**	**Pounds Per Acre**	**Amount to be Ordered**
Ambrosia psilostachya	western ragweed	20/30	2	0.6
Baccharis salicifolia	mule fat	10/20	2	0.4
Epilobium ciliatum	willow herb	70/60	2	0.4
Persicaria lapathifolia	willow weed	NA	1	0.2
Cyperus eragrostis	tall flatsedge	90/80	2	0.4
Elymus triticoides	creeping wild rye	90/80	1	0.6
	TOTAL	**--**	**13**	**2.6**

[1] Based on planting 0.20 acre.

5.5.4 Fencing and Signage

Permanent fencing will be located around the perimeter of the mitigation areas as part of the installation. The type of fencing shall be appropriate for the need: fencing between the mitigation areas and public areas shall be 5-foot tall chain link; fencing between the mitigation and grazing areas shall be 3-strand barbed wire; fencing between the mitigation areas and students shall be split rail or other treatment based on the campus design guidelines and approved by CDFW; and internal areas generally only accessible by campus personnel (e.g., boundary between solar facility and mitigation areas) shall be a 3-strand wire fence.

Permanent signage identifying the sensitivity of the habitat as well as restricted activities shall be erected every 100 feet along the boundary of the mitigation areas. Signs will also be posted at entrances to the Wildlife Sanctuary restricting use of the area during the breeding season to established trails. These signs will be designed by the RS, and following approval by the resource agencies, placed by the installation contractor.

6.0 RESTORATION MAINTENANCE

Maintenance activities will be directed by the RS. Impacts to sensitive species are not anticipated to be an issue once the site is graded, installation has occurred, and the 5-year maintenance and monitoring period is initiated. Nonetheless, the RS will be responsible for ensuring that no activities (such as use of mechanized equipment) occur during the bird-breeding season that could affect nesting activities.

A 120-day establishment period, followed by a 5-year maintenance program is required to ensure the successful establishment and persistence of the restored habitats. The 5-year monitoring period may not begin unless signoff of the 120-day establishment period is approved by the RS.

If necessary, the installation/maintenance contractor(s) will correct any problems identified by the RS during the 120-day establishment period or at any time during the 5-year monitoring period. The RS will provide the installation contractor with a punch list of remedial measures 90 days into the 120-day establishment period to ensure signoff by the agencies at the end of the establishment period.

6.1 MAINTENANCE ACTIVITIES

The following maintenance requirements will be met for the 120-day establishment and 5-year monitoring periods. These maintenance guidelines are specifically tailored for native plant establishment[1].

6.1.1 Fence and Signage Maintenance

The installation/maintenance contractor(s) will be responsible for repairing damage to protective fencing and signage associated with the restoration areas within 2 working days of any damage.

6.1.2 Irrigation

The goal is to obtain seed germination and plant growth with the least amount of irrigation. Frequent irrigation encourages weed invasion and leaches nutrients from the soil. The CSS restoration that is minimally irrigated may fill in slower but ultimately will more closely mimic natural habitat.

After the initial plant establishment period, water will only be applied during the "normal" rainy season and only as needed outside of the rainy season to prevent the mortality of container plantings and seedlings. Irrigation may be used to help aid plant establishment. Following the 120-day establishment period, irrigation may be used for up to 3 years when rainfall during the winter and early spring is below average for a given month. The combined amount of winter and early spring irrigation and natural rainfall should not exceed the average[2] rainfall in any given month. Irrigation will also be applied twice monthly during the first summer. The RS will work

[1] Please see Section 10 for long-term management activities.
[2] Based on the previous 10 years of precipitation data from the NOAA.

with resources agencies in the application of irrigation if it shall be considered past year 3 of the 5-year monitoring period. The mitigation habitat must be off of irrigation for two years prior to signoff. The irrigation system may be activated several times in one 24-hour period to enhance deeper water absorption.

Once the plant material is established and does not require supplemental irrigation, the irrigation system will be disconnected but the above-ground components of the irrigation system will remain in place until the site approaches 5-year signoff. This will allow subsequent irrigation in special circumstances but avoid over irrigating the habitat. The RS will determine how and when the above-ground components of the irrigation system are to be removed; however, the irrigation system must be removed prior to final sign off. The maintenance contractor will be responsible for repairing damage to the irrigation system within 2 working days of such damage.

6.1.3 Weed Control

Weed control will be conducted as necessary to minimize competition that could prevent the establishment of native species. Eliminating the non-native weeds that dry out and readily ignite should be an effective fire management practice. As weeds become evident, they shall be removed by hand, line trimmers, or controlled with the proper herbicides (if approved by the RS). Mechanical and herbicide weed control shall be spot-treatment oriented. Maintenance personnel will be responsible for knowing the difference between weeds and native species. The RS will assist in training, if necessary, for this requirement. If there is a high turnover on the maintenance contractor's crew, the maintenance contractor may be fiscally responsible for the RS's time. All non-native plant material will be removed from the restoration site and disposed of in a licensed landfill. The RS will oversee weed control by the maintenance contractor.

Non-native species considered to be highly invasive by the California Invasive Plant Council (Cal-IPC List A and B species; 2014) shall be totally eradicated within restoration boundaries. Examples of invasive plants include but are not limited to fennel (*Foeniculum vulgare*), Pampas grass (*Cortaderia selloana*), and artichoke thistle (*Cynara cardunculus*).

6.1.4 Plant Replacement

Plants will be replaced at the direction of the RS. The maintenance contractor will be responsible for replacing any dead or terminally diseased plants at least 1 month prior to the end of the initial 120-day establishment period; thereafter, plant replacement by the maintenance contractor will be conducted as directed by the RS. Plant replacement will usually be completed within 30 days of the RS's request, although it may be longer if replanting occurs at an inappropriate time of year or if the desired planting stock is unavailable.

6.1.5 Pruning

No post-installation pruning is necessary unless otherwise directed by the RS.

6.1.6 Trash and Debris Removal

The restoration areas will be kept free of trash and debris and will be checked by maintenance contractor according to the maintenance schedule (see Section 6.3).

6.1.7 Pest Control

Insects, vertebrate pests, and diseases will be monitored. A high tolerance will be permitted before control measures are considered. Only a licensed pest control adviser, as required by law, will make specific recommendations. All applicable federal and state laws and regulations will be closely followed. The RS will be consulted on any pest control matters.

6.1.8 Fertilizer Application

Fertilizer, other than any incorporated within the installation, will not be applied except in extraordinary circumstances and only at the written direction of the RS, and then only in the upland areas.

6.1.9 Site Damage

Damage to plants, irrigation systems, and other facilities occurring as a result of unusual weather or vandalism will be repaired as directed by the RS. The applicant (Mt. SAC FPMD) is financially responsible for such damage. The maintenance contractor, at his expense, will repair any erosion damage caused by the maintenance contractor's inadequate maintenance or operation of irrigation facilities, as determined by the RS.

6.1.10 Fire Management

The preserved and restored habitats covered by this plan have been designed to avoid any currently required fire management areas for the nearby residential areas and proposed solar facility. Should fire suppression actions be required or occur in an emergency situation, subsequent consultation with the resource agencies will occur to determine if the habitat values of the preserved habitats have been compromised and what, if any, remedial measures are necessary.

6.2 RESPONSIBLE PARTIES

The Mt. SAC FPMD will be financially responsible for ensuring the RS and maintenance contractor fulfill their responsibilities with regard to the maintenance and monitoring programs.

6.3 MAINTENANCE SCHEDULE

The entire restoration area will be cleared of weeds at least monthly during the 120-day establishment period and at least 4 times per year for the duration of the 5-year maintenance period, or as needed to keep non-native vegetation from dropping seed at the site. Maintenance

activities shall be conducted primarily during the growing season, which is from December through July.

7.0 RESTORATION MONITORING

7.1 INSTALLATION MONITORING

The RS will monitor habitat restoration installation activities including cactus and duff salvage, finish grading, installation of cacti stems, duff, irrigation, container plants, and seeding. Installation monitoring will include attendance at one pre-construction meeting and monitoring of the site during the installation period (Table 8). Specifically, the RS will:

- Ensure that installation personnel understand the project requirements and limitations;
- Oversee duff and cactus salvage, weed biomass removal, duff application, and soil surface integration;
- Approve plant and seed orders;
- Ensure that grading is appropriate to support the target habitat types
- Inspect plant and seed material prior to installation;
- Monitor the manner in which the plant and seed material is installed; and
- Prepare an as-built letter report for submittal to the appropriate resource agencies stating that the installation is complete.

Table 8
INSTALLATION MONITORING SCHEDULE

TASK	SCHEDULE
Installation	
Pre-construction meeting	Prior to construction
First day of	• Duff salvage, cactus pad salvage; • weed biomass removal; • duff application and soil surface integration; • container stock installation • seeding; and • irrigation installation.
During	Once during each grow/kill cycle
Generally	At least 2 times per week

The landscape architect will ensure the irrigation system is installed correctly.

Photo documentation stations will be established prior to and after plant/soil salvage. These stations will be used throughout the 5-year maintenance and monitoring period (see also Section 7.3.1). The photos will be taken as follows:

- Photos will be taken with a GPS camera that records the location and direction of the photos.

- The camera will be mounted on a pole with a level at a consistent height and angle.

- The photo point location will be marked with a nailed, yellow, survey stake whisker, driven flush to the ground surface. The compass orientation will be marked with a second marker (blue whisker), approximately 5 feet from the photo location.

The 120-day establishment period will begin when the resource agencies verify the project has been installed per plan. The 5-year maintenance and monitoring period will begin when the resource agencies have verified that all planting has successfully been installed at the end of the 120 day establishment period.

Post-compliance Report

The Permittee shall submit a post-compliance Report to the resource agencies within thirty (30) days from the date construction is completed. The post- compliance report shall include: 1) A comparison including map overlays[3] of and a discussion on the pre- and post-construction conditions (with supporting photograph documentation); and 2) a summary of project compliance (including noncompliance and corrective actions taken to achieve compliance).

7.2 MAINTENANCE MONITORING

Following installation, a RS will monitor maintenance activities conducted by the maintenance contractor during the initial 120-day establishment period and subsequent 5-year maintenance and monitoring period (Table 9). Monitoring visits will be conducted monthly during Year 1. In Year 2, visits will be conducted monthly from February through July and two times in the remainder of the year (September and December). Quarterly visits (March, June, September, and December) will be conducted during Years 3 through 5. This monitoring schedule is the minimum; more frequent inspections may be necessary if there are problems with maintenance contractor performance or habitat development.

[3] This may be accomplished by marking up a set of construction plans to show where the plans deviated.

Table 9 MAINTENANCE MONITORING SCHEDULE	
PHASE	**SCHEDULE**
Installation Monitoring	
120-day establishment period	Monthly (4 visits)
Maintenance Monitoring	
Year 1	Monthly (12 visits)
Year 2	
February to July	Monthly (6 visits)
August to December	2 visits: September and December
Years 3 to 5	
Quarterly	4 visits: March, June, September, and December

The RS will provide as necessary monitoring memos noting any issues with plant establishment and growth, irrigation, sediment control, etc., to Mt. SAC FPMD and the installation/maintenance contractor(s). During each visit, the RS will inspect the site to ensure that the restoration effort is progressing as expected and to identify any problems that may affect the successful establishment and growth of the native habitat. The installation/maintenance contractor will correct any problems identified by the RS. If necessary, the RS will provide a list of items in need of attention to the project proponent and installation/maintenance contractor following each inspection. The installation/maintenance contractor will respond in writing within 2 weeks to report completion of any identified maintenance tasks to both the RS and Mt. SAC FPMD.

7.3 SUCCESS MONITORING

In addition to maintenance monitoring visits, the RS will conduct success monitoring visits in May of each year during the 5-year maintenance and monitoring period. Data collected during success monitoring events will be used to determine if the restoration project has met success criteria for the given year. Monitoring will be conducted when annual species are readily identifiable.

Technical monitoring will include assessment of the vegetation community in the restoration area as compared to the vegetation community in a reference area located in nearby undisturbed CSS habitats. Technical monitoring will provide a quantitative comparison of community composition between the restoration area and the reference area that will indicate whether the restoration area is on a trajectory to meet the restoration goal and what remedial measures are necessary to establish that trajectory if it is not.

Vegetation

A total of one 50-meter transect per acre will be used to collect data in the CSS establishment areas during Years 3 through 5 for the success monitoring. Two 30-meter long transect will be used for the MFS area. The CSS transects will be haphazardly located during the first year (May of Year 1), and permanently marked with rebar to facilitate their use in subsequent years.

Transect placement will capture a representative sample of slope configurations, steepness, and orientation. The MFS transect will be centered in the MFS restoration area and parallel to Snow Creek.

Vegetative data will be collected along each transect using the point intercept line transect sampling methods described in the California Native Plant Society's Field Sampling Protocol (Sawyer and Keeler-Wolf 1995). Species cover data will be collected by recording all of the species intercepted at each 0.5-meter interval along the length of each transect. Vegetation will be recorded separately for herb (0 to 0.6 meter), shrub (0.6 to 2 meters), and tree (greater than 2 meters) layers. Species richness data will be collected by noting all species occurring within a 5-meter belt transect centered on each line transect.

Animal Diversity

Wildlife use of the restoration area will be noted opportunistically during each maintenance monitoring visit and success assessment by direct visual or audio observations, or indirectly from the presence of their tracks, scat, or dens. No focused wildlife surveys will be conducted.

7.3.1 Photo Documentation

In addition to the qualitative and quantitative monitoring, several permanent photo documentation stations will be established. Photos will be taken as part of all 5 success monitoring events and will be included in the annual success monitoring reports prepared by the RS. The ground level photos will be taken in the same places and manor as the preconstruction photos (Section 5.3.2). An aerial photo of the restoration areas, taken within the previous year, will also be included in the annual report.

7.3.2 Reports

Reports will be prepared by the RS each year during the 5-year monitoring period and submitted to the resource agencies and Mt. SAC FPMD by April 1 of each year. Each report will evaluate the success of the mitigation effort to date, pursuant to the success criteria (Section 8), along with any recommendations for future work that may be deemed necessary. This report shall also include the survival, percent cover, and height of both tree and shrub species for the mule fat scrub establishment area. The number by species of plants replaced, an overview of the revegetation effort, and the method used to assess these parameters shall also be included. The report shall include other relevant information such as: a summary of invasive species control, methods used to remove non-native plants, and a list of wildlife observed on site.

8.0 SUCCESS CRITERIA

The following sections provide standards to determine the successful completion of the restoration effort as well as measurement methods for success criteria. Attainment of these standards indicates the restoration area is progressing toward, and has the habitat function and value specified by this plan.

8.1 120-DAY ESTABLISHMENT PERIOD

Success at the end of the 120-day establishment period will be met if there is 95 percent survivorship of the container stock and cacti cuttings, head-to-head coverage cover, with no more than two to three foot overlap, and appropriate application rates for the irrigation system, no erosion-related issues, weed cover of less than 1 percent, and seed germination from hydroseed that is at least 1 seedling per square foot. It is recommended that the initial container stock and seed order include 10 to 15 percent more plants and seeds than specified in the plans to help ensure adequate establishment success. Extra container stock may be held in a nursery for no more than 1 month and installed at the time of initial planting or as needed during the 120-day establishment period, at the installation contractor's discretion. Replacement container stock shall be in the ground for at least 30 days prior to the end of the 120-day establishment period.

8.2 5-YEAR MAINTENANCE AND MONITORING PERIOD

These success criteria apply to Years 3 through 5 of the monitoring period. The Year 3 report is also of particular significance. At Year 3 it should be apparent if the project is on track to meet the fifth and final year success criteria. If it is not, Mt. SAC FPMD, resource agencies, and RS shall determine what steps, or course of action, shall be undertaken to meet the mitigation obligation. Contingency measures will be driven by the nature of the obstacle(s) to success. Potential measures include replanting, extension of the irrigation, or restoring at a different location.

Habitat establishment for the coastal sage scrub and mule fat scrub will be assessed relative to specific success criteria. The sage scrub criteria will be according to predetermined cover values (Table 10). Species richness will be determined according to the average species richness derived from four, 5 meter by 50 meter belt transects (Figure 5). The reference transect data will be collected in May 2017.

TABLE 10
COASTAL SAGE SCRUB SUCCESS CRITERIA MILESTONES

CRITERIA	YEAR 3	YEAR 4	YEAR 5[1]
Minimum native vegetation cover[2]	35	50	70
Shrub cover	30	40	55
Herbaceous cover	5	10	15
Species richness[3]	65	75	90
Maximum weed cover[2]	15	10	10
Maximum invasive species cover[2, 4]	0	0	0
Recruitment[5]	+	+	+

[1] Year 5 success criteria were provided by the USFWS
[2] Percent native vegetation, weed, and invasive species cover will be evaluated based on absolute cover. To meet success criteria for a given year, it must be within the standard deviation for the percentage listed.
[3] This criterion is relative to established values for native species in the reference transects.
[4] This category is for species rated as "high" by Cal-IPC, except for naturalized grasses (e.g., *Bromus madritensis*, ssp. *rubens*).
[5] Any recruitment satisfies this criterion.

Coastal Sage Scrub Reference Transect Locations

WEST PARCEL SOLAR PROJECT

HELIX Environmental Planning

N 0 250 Feet

Figure 5

The reference habitat for the mule fat scrub was sampled in June 2016 (Appendix B). These data will be used for comparison with the Years 3 through 5 success assessments for the mule fat scrub (Table 11). It was necessary to collect this data prior to construction because all of the existing mule fat scrub will be lost as a result of the project.

TABLE 11
MULE FAT SCRUB SUCCESS CRITERIA MILESTONES

CRITERIA	YEAR 3	YEAR 4	YEAR 5
Minimum native vegetation cover[1]	≥55	≥65	≥80
Tree/Shrub cover	≥45	≥55	≥70
Herbaceous cover	≥10	≥10	≥10
Species Richness	≥100	≥200	≥300
Maximum weed cover[1]	≤115	≤110	≤100
Maximum invasive species cover[2]	0	0	0
Recruitment[3]	1	1	1

[1] Native vegetation, species richness, and weed percent cover is evaluated relative to the reference transects.
[2] This category is for species rated as "high" by Cal-IPC, except for naturalized grasses (e.g., *Bromus madritensis*, ssp. *rubens*).
[3] Milestone is shown as number of species.

8.2.1 Native Cover

Cover by native vegetation should increase over time and ultimately approach that of the existing adjacent habitat. Native vegetation cover will be measured separately for herb, shrub and tree strata within the restoration area, but the success criterion only applies to total native cover. At least 50 percent of the relative native cover in the coastal sage scrub must consist of 1 or more of the following species: California sagebrush, California buckwheat, and black sage. The restored coastal sage scrub will have 90 percent of the species richness relative to the reference transects. The mule fat scrub species richness will be required to exceed what was observed in corresponding reference transects because the observed species richness was so low.

8.2.2 Mule Fat Scrub Remediation

As specified in the CDFW Lake and Streambed Alteration Agreement (Agreement measure 4.7), if revegetation survival and/or cover requirements do not meet success criteria, replacement planting, additional watering, weeding, invasive exotic eradication, or any other practice, must be undertaken to achieve these requirements. Replacement plants shall be monitored with the same survival and growth requirements for five years after planting. This requirement applies only to the mule fat scrub establishment.

8.3 NON-NATIVE COVER

Non-native cover is typically a problem with habitat restoration, particularly at the outset of the project. However, as the restoration takes hold and with diligent maintenance efforts, non-native cover should decrease to an acceptable level. Given the intense maintenance schedule for the

site, non-native cover shall not exceed 15 percent relative cover by Year 3 of the project, and 10 percent relative cover in Years 4 and 5.

8.4 INVASIVE SPECIES

Invasive weed species shall be completely eradicated from the restoration site each year. No invasive species (except naturalized annual grasses) shall be allowed to persist within the restoration area. Certain non-native grasses have been included in various invasive species lists. Some of these are naturalized in our region and a typical component of "undisturbed" CSS. The tolerance for these species will be the same as other non-invasive, non-native species.

8.5 IRRIGATION

To provide evidence that vegetation is self-sufficient, direct irrigation of the restoration area must be shut off at least 2 years prior to final sign off (e.g., Year 3 if project is to be signed off in Year 5).

9.0 COMPLETION OF RESTORATION

9.1 NOTIFICATION OF COMPLETION

The RS shall notify the resource agencies and the Mt. SAC FPMD of completion of the mitigation effort through the submittal of the Year 5 annual monitoring report. If success criteria are not met by the end of Year 5, the RS shall work with Mt. SAC FPMD and the resource agencies to determine appropriate remedial measures for achieving success criteria.

9.1.1 Agency Confirmation

If the habitat restoration meets the success standards identified in this plan at the end of the 5-year monitoring period, the restoration will be considered a success; if not, the maintenance and monitoring program will be extended one year at a time until the standards are met. Specific remedial measures (approved by the resource agencies) will be used during any extension. Monitoring extensions will be done only for areas that fail to meet final success criteria. This process will continue until all Year 5 standards are met or until the resource agencies determine that other mitigation measures are appropriate. Alternatively, a subsequent agreement may be negotiated with the resource agencies. Only areas that fail to meet the success standards will be subject to any subsequent agreement.

9.2 CONTINGENCY MEASURES

9.2.1 Initiating Procedures

Upon receipt of any of the annual monitoring reports, if the resource agencies determine that the restoration effort is not on course to meet final success criteria for the project, the resource agency(ies) will notify the project proponent in writing that the restoration effort is in need of

remedial measures. The project proponent shall have 30 days to respond to, challenge, or confirm the determination that remedial work must be done. Potential remediation measures include such items as extending the monitoring period, planting more container stock and/or seed, and planting additional areas.

9.2.2 Alternative Locations for Contingency Mitigation

Alternate restoration areas (including creation and enhancement, as appropriate) should only be considered if there is compelling reasons related to the mitigation sites for the failure of this plan. Sufficient contingency restoration areas are present within the Mt. SAC campus, however, if necessary off-site locations will also be considered. If the success criteria are not met within the restoration areas designated by this plan, Mt. SAC FPMD, the resource agencies, and the RS will work toward a mutually acceptable alternative solution, which may include attempting CSS and/or MFS restoration elsewhere on the Mt. SAC campus.

10.0 LONG-TERM MANAGEMENT PLAN

Mt. SAC will fund the long-term management of the mitigation habitat (preserved, enhanced and restored; i.e., re-established and created habitats) described in this report. This includes areas on the West Parcel and near Mt. SAC Hill, which are referred to collectively in this report as the *Wildlife Sanctuary*. Following signoff of the project (Section 9.1), long-term management will commence. Long-term management will entail: monitoring and reporting, maintenance, and management (Table 12).

The Wildlife Sanctuary Director at Mt. SAC will oversee management of this area. The Director must know the obligations the college is under as part of their environmental and resource agency permits for this project. The Director will be responsible for the long-term monitoring, directing maintenance. The Director will work with Mt. SAC FPMD to file all required reports with the resource agencies.

Table 12
LONG-TERM MANAGEMENT PLAN TASKS

TASK	TASK DESCRIPTION	RESPONSIBLE PARTY	NUMBER & TIMING OF TASKS
Master Plan Update	Enter boundaries of Wildlife Sanctuary into campus geographic database	Mt. SAC FPMD	Once: at the beginning of the Long-Term Management Period
Qualitative Assessment	Map invasive and troublesome weedy plant species, and prepare a memorandum to discuss timing of invasive plant species removal	Qualified Biologist*	Semi-annually: Spring and Fall
	Oversee invasive plant species removal by contractor		
	Identify areas of erosion		
	Assess integrity of Wildlife Sanctuary fencing and signage		
	Remove invasive plant species within 4 weeks of mapping	Mt. SAC FPMD	
	Repair erosion		
	Repair fencing and signage		
Administration	Management of Mitigation Land[1]	Qualified Biologist*	Semi-annually: Summer and Winter
Technical Assessment	Visually assess habitat quality and wildlife use. Compile list of plant and animal species observed during the inspection.	Qualified Biologist*	Annually (May)
	Update management plan activities to address changes in the habitat or surrounding areas that could negate the habitat values of the Wildlife Sanctuary. Provide management recommendations as is necessary		
	Conduct photo documentation		
	Provide results of qualitative and technical assessments in a report to the resource agencies		
	Map vegetation and inventory plant and animal species.	Qualified Biologist*	Once every 5 years in the late spring
	Coastal California gnatcatcher protocol surveys	Permitted Biologist	Once every 5 years during breeding season (February 15 to August 31)

*May be from the Mt. SAC Biology Department or a biologist from elsewhere. The biologist conducting the work must have the knowledge, training, and experience with southern California ecosystems requisite to the task, and be pre-approved by the resource agencies.

[1] Oversee management of mitigation land. Includes ordering equipment and supplies (e.g., plants and seeds), and scheduling qualitative and technical monitoring, and maintenance.

10.1 MANAGEMENT

The Wildlife Sanctuary is intended to serve as a habitat preserve and outdoor biological classroom, and as such, is not compatible with uses that disrupt wildlife and alter the native vegetation. Activities specifically prohibited include off-road vehicle use, dumping, construction activities and staging, vegetation clearing, grazing, and removal of natural resources. Signage, fencing, and measures to restrict activities will be implemented by Mt. SAC to ensure that passive, educational uses do not adversely affect wildlife and habitat. Prior to allowing access, Mt. SAC will work with the resource agencies to ensure the Wildlife Sanctuary is used in ways that do not adversely affect wildlife and habitat.

Brush removal for fire safety is only allowed if specifically directed by the local fire marshal in an emergency situation. The mitigation habitat has been planned to avoid typical brush management zones (i.e., are at least 100 feet from any residential or commercial structure). Brush management for fire safety would only be done under very unusual circumstances.

Management activities during the breeding season (February 15 through September 1) that have the potential to destroy active nests (e.g., spraying or pulling vegetation within coastal sage scrub or woody riparian vegetation) or disrupt nesting activities (e.g., weed whipping along roads and trails adjacent to coastal sage scrub or woody riparian vegetation) will be conducted under the oversight[4] of a monitoring biologist[5] who will ensure that gnatcatcher nesting activities are not disrupted and that no avian nests are destroyed.

Adaptive management may be necessary to ensure the values persist that were intended by this plan. Adaptive management includes those activities necessary to address the effects of climate change, fire, flood, or other natural events. The need for adaptive management and a change in management approach to the Wildlife Sanctuary will be assessed based on the findings of the qualitative/quantitative and technical assessments (Section 10.2). Any adaptive management measures must be consistent with California Fish & Game Code and the Migratory Bird Treaty Act.

During the scheduled assessments, the Biologist will visually assess the amount of change that has occurred, if any, to the quality and distribution of the coastal sage and mule fat scrubs. If the visual assessment determines there has been a 20 percent decrease or more from the baseline conditions, vegetation mapping will be updated to reflect current conditions. These maps will be used to consult with the resource agencies to determine whether or not a change in the management approach is necessary. Examples of adaptive management responses are a greater effort toward weed removal, and seeding with appropriate native species.

[4] "Oversight" includes, but is not limited to, the following activities, which will be conducted as necessary to ensure that no nests are destroyed and that nesting activities of listed species are not disrupted: training personnel on vegetation to be avoided and removed; flagging specific areas to be avoided; training personnel on avoidance and minimization measures; regularly inspecting work activities; and providing direct supervision of management activities when necessary.

[5] The monitoring biologist will be familiar with the gnatcatcher and its breeding behavior.

The preserved and restored habitats covered by this plan have been designed to avoid any currently required fire management areas for the nearby residential areas and proposed solar facility. Should fire suppression actions be required or occur in an emergency situation, consultation with the resource agencies will occur to determine if the habitat values of the preserved habitats have been compromised and what, if any, remedial measures are necessary.

10.2 MONITORING AND REPORTING

The Wildlife Sanctuary will be monitored in perpetuity in two ways: qualitatively and technically. The person conducting the monitoring[6] will be appropriately qualified for the task. Biological monitors (Biologist) must be pre-approved by the resource agencies. The curriculum vitae or resume will be provided to the resource agencies for their review and approval. The agencies will have 1 month for that review. If the agencies fail to respond within 1 month the candidate will be considered approved.

Maintenance Assessments. A Biologist will inspect the Wildlife Sanctuary on a semi-annual basis: once in the spring and again in the fall, with particular attention placed on the recorded mitigation areas. Areas of interest during these inspections include amount of weeds, erosion, fencing, signage, and unauthorized access and vandalism. A brief report, including photos from the photo documentation stations, will be prepared following each inspection. This report, which will be prepared under the direction of the Biology Department, will be provided to Mt. SAC FPMD and the resource agencies. Any issues in need of remedial actions will be described in this memo, along with recommended solutions. Mt. SAC FPMD will either direct staff or hire a consultant to resolve the issue, or forward the information to the Biology Department for their attention.

Technical Assessments. Annual inspections will be conducted to assess habitat status and wildlife use. A list of all plants and animals observed will be recorded, with an emphasis on weeds, and sensitive plant and animal species. Information gathered during these inspections will be included in the annual reports. These reports will be provided to the resource agencies and may be used as a basis for modifying the management practices. Photographs taken from established photo-documentation points will also be included in the annual reports. Annual reports will be provided to USFWS and CDFW.

Directed coastal California gnatcatcher surveys will be completed during the first year, the third year, the fifth year, and then subsequently every 5 years thereafter. Surveys will adhere to the February 1997 survey protocol, except there will only be three surveys. Surveys shall be completed during the breeding season by a permitted biologist. The Biologist shall notify the USFWS of their intent to conduct surveys at least 15 working days prior to the anticipated first date. The results of the survey shall be filed with the resource agencies within 90 days of the third survey.

Vegetation communities and boundaries may change over time due to natural processes such as fire, flood, and succession. Changes within the Wildlife Sanctuary may affect the function and

[6] May be an individual from the Mt. SAC Biology Department or from elsewhere.

value provided; thus, monitoring and documentation of such changes in habitats is important to the successful long-term management of the resources. As such, vegetation mapping will be updated in the field every 5 years using a current aerial photograph as a base map to determine what, if any, changes have occurred in the Wildlife Sanctuary that warrant changes to the management activities outlined in this plan. Proposed changes in the management activities will require review and approval from the resource agencies.

10.3 MAINTENANCE

Maintenance tasks include weed removal, erosion control, trash removal, and fence and sign maintenance.

Weed Eradication. Mt. SAC FPMD will be responsible for controlling weeds within the Wildlife Preserve. A Biologist will assess weed cover twice per year to prioritize weed eradication efforts. The highest priority weed specie or species will targeted for removal based on the threat to the habitat, with the focus placed on the most problematic species. The number of species targeted for eradication will depend on the amount of budget for weed eradication relative to the eradication effort, but at least one species will be focused on per year. Once a species is targeted for eradication, efforts to eliminate that species will continue until it has been expunged from the mitigation area. A memorandum identifying the specie or species targeted for eradication will be prepared immediately following the weed assessment inspection. The Biologist will oversee removal, as necessary. The Biologist shall take photographs before and after implementation of weed species eradication measures.

Weed removal will be accomplished by hand or mechanical means. The use of chemical herbicides within the Wildlife Preserve will be restricted unless the Biologist determines it necessary for their control. Permitting and compliance with all applicable federal and state laws and regulations related to herbicide use and handling will be the responsibility of Mt. SAC. If the use of herbicide is deemed necessary, application should be kept to an absolute minimum and the following general guidelines should be implemented:

- All herbicide use will involve short duration, biodegradable chemicals;
- Herbicide application should be minimized to the extent possible;
- Herbicide application should target weeds, and backpack sprayers or stump painting should be used for focused application;
- Herbicide will only be applied when there is no wind; and
- To maximize success, herbicide should be applied during the appropriate time(s) of year and be applied in the manner appropriate for the target plant species.

Mt.SAC FPMD will be responsible for initiating weed removal within 4 weeks after receipt of the qualitative assessment memo. These activities will be conducted to remove weed species to the maximum extent practicable, although complete removal of all weeds may be infeasible.

Focused weeding events will be conducted in the spring and fall, but additional weeding can occur as needed throughout the year. Mt. SAC may modify this schedule to accommodate

annual fluctuations in weed growth. Prevention/reduction of exotic species introduction will be an on-going process.

Erosion Control. A Biologist will report to Mt. SAC FMPD any noted erosion problems within the Wildlife Sanctuary. Mt. SAC FMPD will identify appropriate measures to address the erosion issue while minimizing impacts to adjacent habitat. Remediation measures may include:

- Decomposed granite surfacing;
- Plantings;
- Wooden footer rails and/or water bars;
- Use of positive grading techniques and appropriate drainage facilities (e.g., swales or brow ditches) to direct surface flows away from unstable areas and into existing drainage outlet points;
- Use of erosion control/stabilizing measures such as geotextiles, mats, fiber rolls, soil binders, or temporary hydroseeding (or other plantings); and
- Use of sediment controls to prevent off-site sediment transport (i.e., silt fences, fiber rolls, gravel bags, temporary sediment basins, check dams, and/or energy dissipaters). Energy dissipaters will reduce the velocity and downstream erosion potential of runoff leaving the site.

If the erosion has already damaged habitat in an area set aside as mitigation for project impacts, the habitat will be restored under the direction of a qualified restoration biologist.

Trash Removal. Mt. SAC FMPD contractors will be responsible for trash removal from the Wildlife Sanctuary, which will occur once a year (spring). If littering is noted as a particular problem at certain locations (i.e., overlooks along trails), trash receptacles may be installed to control the problem. If provided, the receptacles will be emptied regularly to avoid attracting nuisance animals. In cases of excessive trash disposal, Mt. SAC FPMD may enlist the help of student or community volunteer groups to conduct litter removal.

Fence Maintenance. Permanent fencing for the Wildlife Sanctuary will be installed as part of the installation and establishment of this plan. Perimeter fencing will be inspected semi-annually in the spring and fall, as part of the qualitative assessments. All defective locations will be noted in a brief report to Mt.SAC FPMD, who will arrange for any necessary repairs to be done within 4 weeks of receiving the report.

Campus security may periodically inspect wildlife sanctuary for homeless encampments and problems with the perimeter of the fencing.

10.4 FUNDING

Mt. SAC will be responsible for all costs associated with the long-term. Funds for this work will come from a dedicated line item in the college's general fund. The annual cost for the long-term maintenance and monitoring is estimated to be $15,141 per year (Appendix C). This will increase by 3% each year. Every 10 years, Mt. SAC shall conduct a financial review of the

budget amount and adjust the line item amount to match the needs of the habitat management. Any changes in funding must be acceptable to the resource agencies.

11.0 REFERENCES

California Invasive Plant Council. 2014. Invasive Plants of California's Wildland. http://www.cal-ipc.org/ip/management/ipcw/categories.php.

HELIX Environmental Planning, Inc. 2008. Mt. San Antonio College 2008 Master Plan Update, Biological Technical Report. July 16.

2012. Mt. San Antonio College 2012 Master Plan Update, Draft Biological Technical Report. August 17

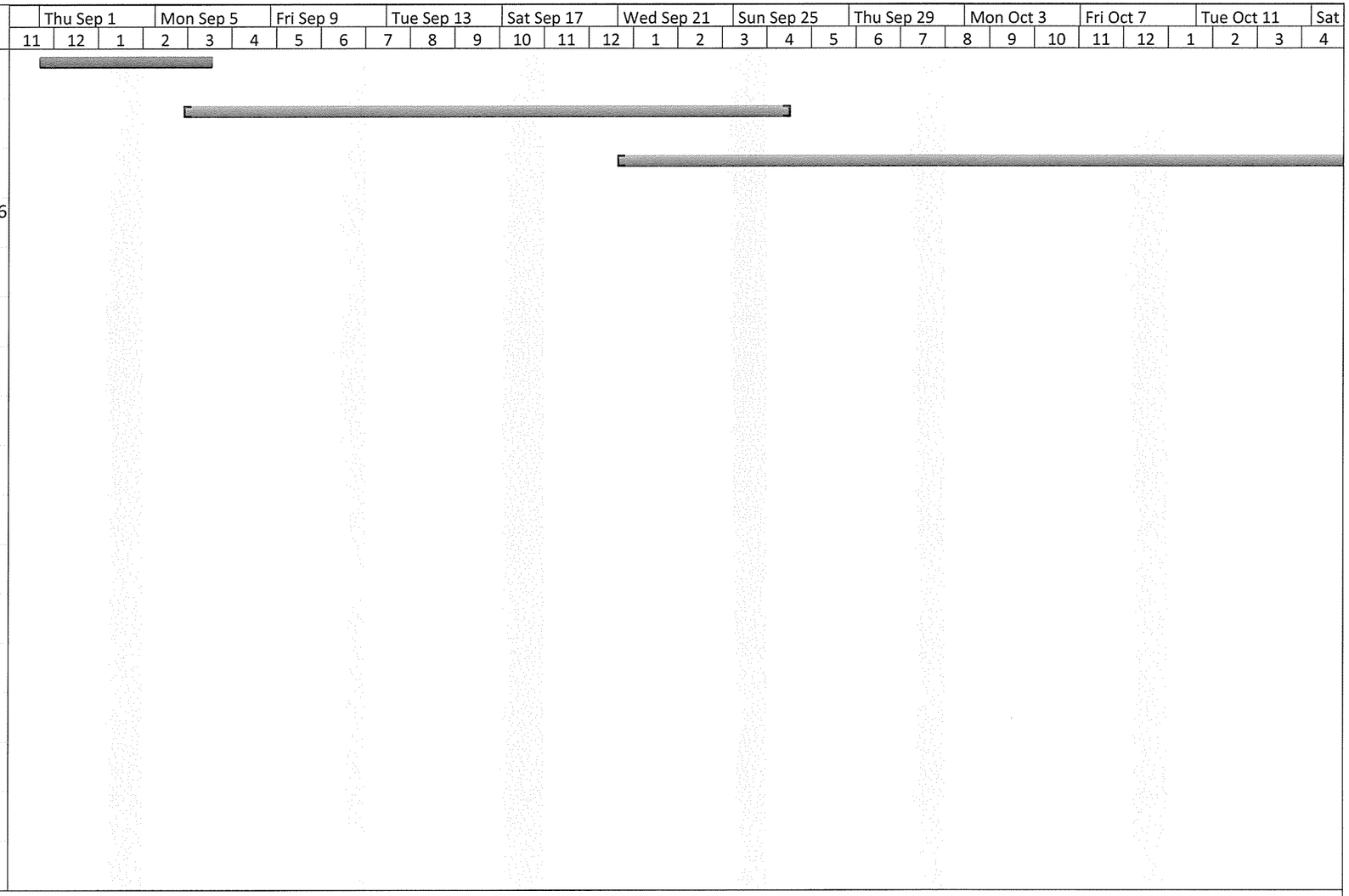
2015. West Parcel Solar Project at Mt. San Antonio College, Biological Technical Report . 29 May. 26 pp, plus appendices.

Sawyer, J.O. and T. Keeler-Wolf. 1995. A Manual of California Vegetation. CNPS. 472 pp.

Appendix A

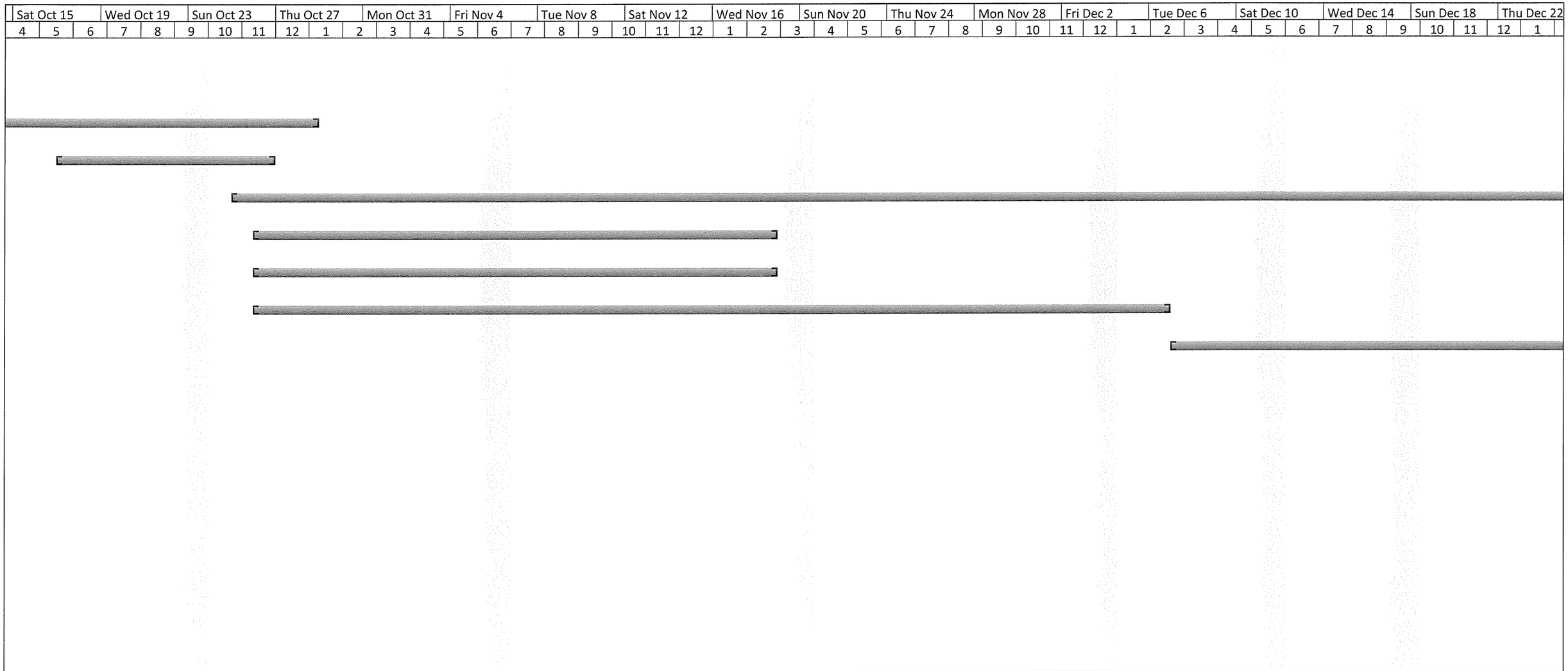
CONSTRUCTION SCHEDULE

ID	Task Mode	Task Name	Duration	Start	Finish
1		cacti collection WP	4 days	Thu 9/1/16	Tue 9/6/16
2		duff collection	15 days	Tue 9/6/16	Mon 9/26/16
3		OX & Prep for fill	28 days	Wed 9/21/16	Fri 10/28/16
4		Grade and Apply Duff EP	8 days	Mon 10/17/16	Wed 10/26/16
5		Fill & Grade WP	90 days	Tue 10/25/16	Mon 2/27/17
6		Install Fencing EP	18 days	Wed 10/26/16	Fri 11/18/16
7		Irrigation EP	18 days	Wed 10/26/16	Fri 11/18/16
8		Grow/Kill EP	30 days	Wed 10/26/16	Tue 12/6/16
9		Plantings EP	17 days	Wed 12/7/16	Thu 12/29/16
10		120 day establishment EP	120 days	Mon 1/2/17	Fri 6/16/17
11		Finish Grade WP	30 days	Mon 2/13/17	Fri 3/24/17
12		Place Duff WP	5 days	Mon 3/27/17	Fri 3/31/17
13		Install Fence WP	20 days	Mon 3/27/17	Fri 4/21/17
14		Install Irrigation WP	15 days	Mon 4/3/17	Fri 4/21/17
15		Grow/Kill WP	30 days	Sat 4/22/17	Thu 6/1/17
16		PlantingWP	15 days	Thu 6/1/17	Wed 6/21/17
17		120 day establishment WP	120 days	Thu 6/22/17	Wed 12/6/17



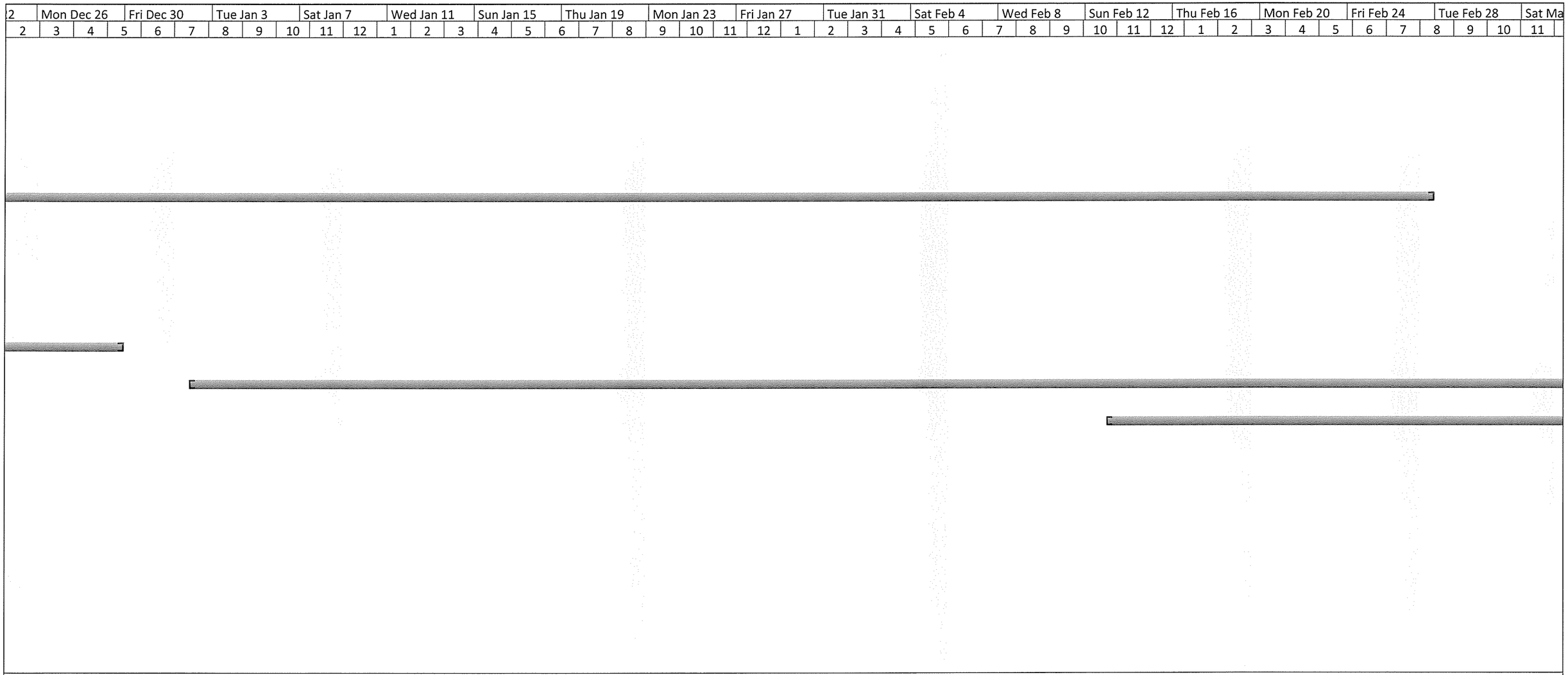
Project: 5-yr Monitoring
Date: Tue 8/9/16

Task	Project Summary	Inactive Milestone	Manual Summary Rollup	Deadline
Split	External Tasks	Inactive Summary	Manual Summary	Progress
Milestone	External Milestone	Manual Task	Start-only	
Summary	Inactive Task	Duration-only	Finish-only	



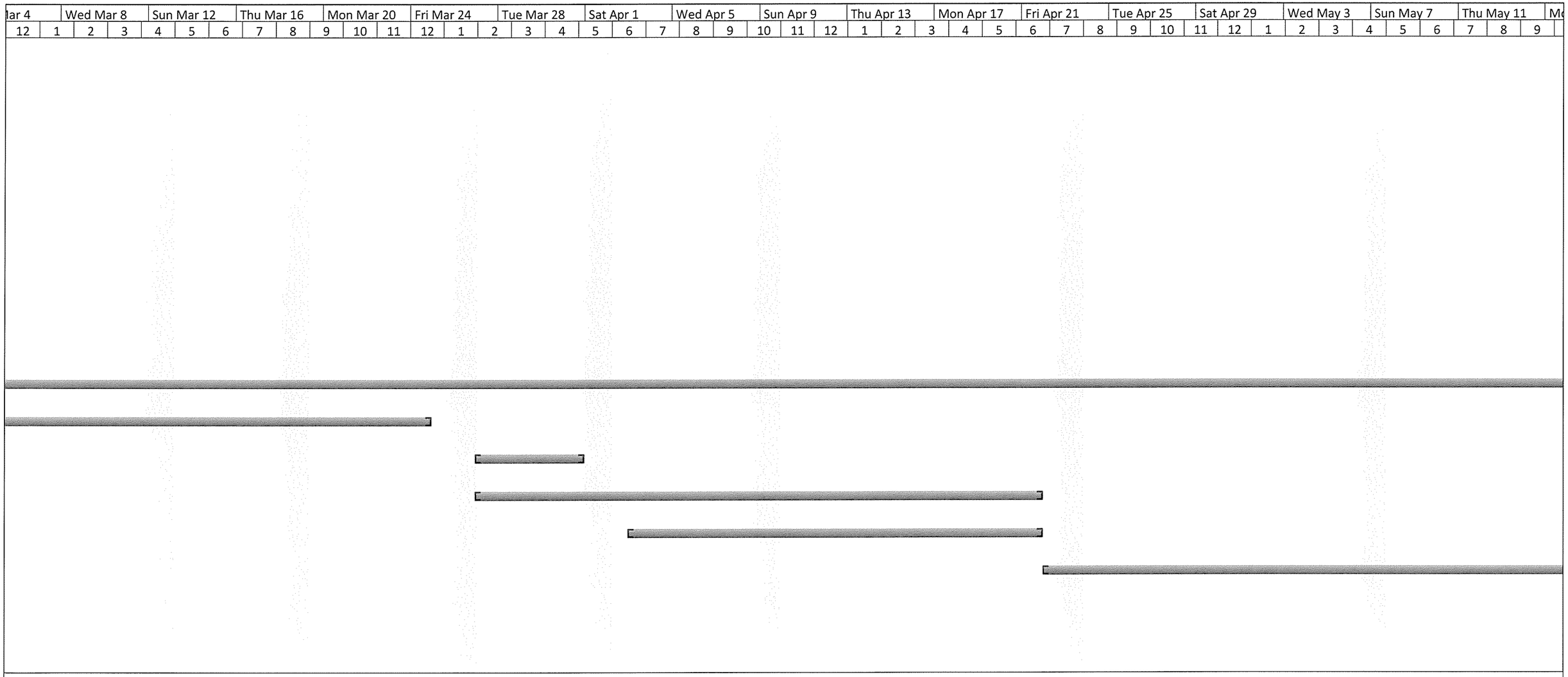
Project: 5-yr Monitoring
Date: Tue 8/9/16

Task	Project Summary	Inactive Milestone	Manual Summary Rollup	Deadline
Split	External Tasks	Inactive Summary	Manual Summary	Progress
Milestone	External Milestone	Manual Task	Start-only	
Summary	Inactive Task	Duration-only	Finish-only	



Project: 5-yr Monitoring
Date: Tue 8/9/16

Task	Project Summary	Inactive Milestone	Manual Summary Rollup	Deadline
Split	External Tasks	Inactive Summary	Manual Summary	Progress
Milestone	External Milestone	Manual Task	Start-only	
Summary	Inactive Task	Duration-only	Finish-only	



Project: 5-yr Monitoring
Date: Tue 8/9/16

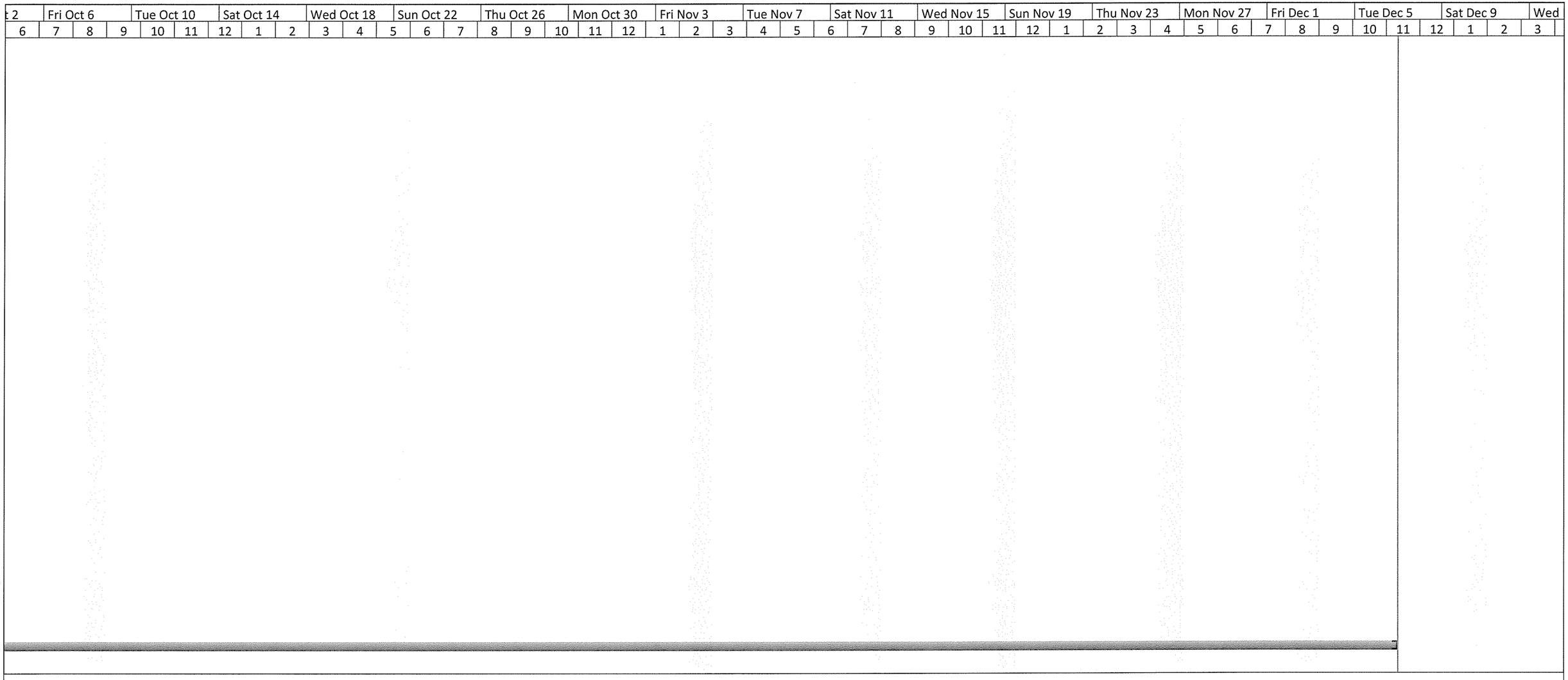
Task	Project Summary	Inactive Milestone	Manual Summary Rollup	Deadline
Split	External Tasks	Inactive Summary	Manual Summary	Progress
Milestone	External Milestone	Manual Task	Start-only	
Summary	Inactive Task	Duration-only	Finish-only	

Project: 5-yr Monitoring
Date: Tue 8/9/16

Task	Project Summary	Inactive Milestone	Manual Summary Rollup	Deadline
Split	External Tasks	Inactive Summary	Manual Summary	Progress
Milestone	External Milestone	Manual Task	Start-only	
Summary	Inactive Task	Duration-only	Finish-only	

	Wed Jul 26			Sun Jul 30			Thu Aug 3			Mon Aug 7			Fri Aug 11			Tue Aug 15			Sat Aug 19			Wed Aug 23			Sun Aug 27			Thu Aug 31			Mon Sep 4			Fri Sep 8			Tue Sep 12			Sat Sep 16			Wed Sep 20			Sun Sep 24			Thu Sep 28			Mon Oct 1
	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5		

Project: 5-yr Monitoring Date: Tue 8/9/16	Task	Project Summary	Inactive Milestone	Manual Summary Rollup	Deadline
	Split	External Tasks	Inactive Summary	Manual Summary	Progress
	Milestone	External Milestone	Manual Task	Start-only	
	Summary	Inactive Task	Duration-only	Finish-only	



Project: 5-yr Monitoring
Date: Tue 8/9/16

Task	Project Summary	Inactive Milestone	Manual Summary Rollup	Deadline
Split	External Tasks	Inactive Summary	Manual Summary	Progress
Milestone	External Milestone	Manual Task	Start-only	
Summary	Inactive Task	Duration-only	Finish-only	

Appendix B

MULE FAT SCRUB REFERENCE DATA

Appendix B. Mule Fat Scrub Reference Data

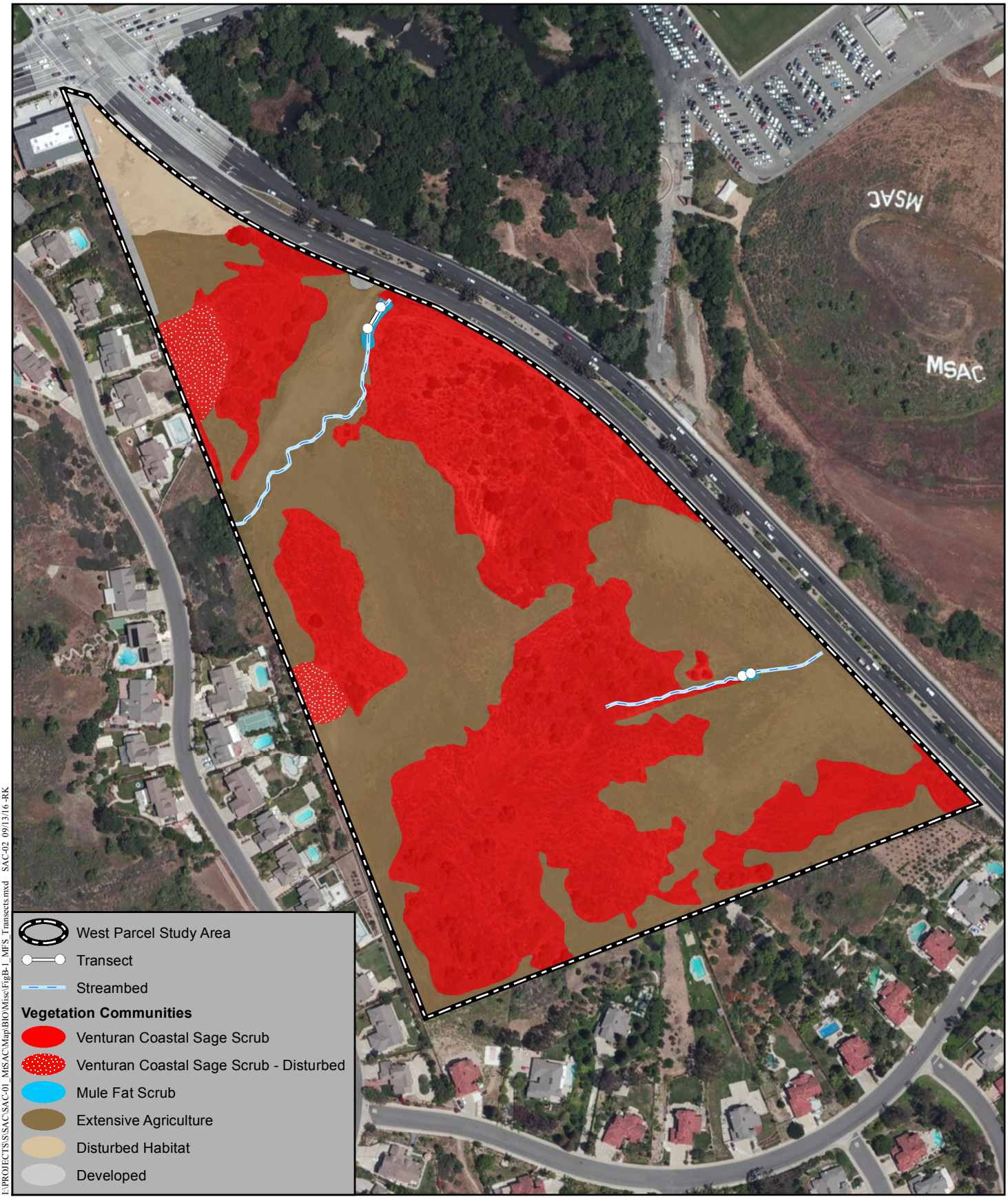
HELIX Environmental Planning, Inc. biologists Benjamin Rosenbaum and Talaya Rachels collected transect data in the two stands of mule fat scrub on the West Parcel on June 28, 2016 (Figure B-1). Due to the small size of these stands the combined transect lengths totaled 34.0 meters. Vegetation data was collected along the 2 transects using the point intercept line transect sampling methods described in the California Native Plant Society's Field Sampling Protocol (Sawyer and Keeler-Wolf 1995). Species cover data was collected by recording all of the species intercepted at each 0.5-meter interval along the length of each transect. Data was recorded separately for herb (0 to 0.6 meter), shrub (0.6 to 2 meters), and tree (greater than 2 meters) layers.

The mule fat scrub at these locations has been subject to many years of grazing, which has resulted in minimum cover in the shrub and herb layers (Table B1). Species richness in mule fat scrub is typically low and that aspect of the habitat at these locations is minimal, with only 2 species observed along the transects—mule fat (*Baccharis salicifolia*) and short-pod mustard (*Hirschfeldia incana*). The lack of species richness may also be partly a function of the timing of the survey, which was favorable for perennial wetland species but less so for annual species.

Table B1
MULE FAT SCRUB REFERENCE DATA

LAYER	COMPONENT				TOTAL
	MULE FAT	SHORT-POD MUSTARD	LEAF LITTER	BARE GROUND	
Herb	--	2%	58%	40%	100%
Shrub	--	9%	--	--	9%
Tree	100%	--	--	--	100%

Mule fat is the tree layer defined for this habitat based on its size. The herb layer was essentially unvegetated and shrub layer had very low cover of a weed species.



Mule Fat Scrub Reference Transect Locations

WEST PARCEL SOLAR PROJECT

HELIX Environmental Planning

N 0 250 Feet

Figure B-1

Appendix C

COST OF LONG-TERM MANAGEMENT

Long-Term Management Budget for the Mt. SAC Wildlife Sanctuary Mitigation Lands					Date:	1-Sep-2016		
					Prepared By:	WLS		
Annual Management & Maintenance Cost Table								
Item #	**Activity Category**	**Activity/Expense**	**Frequency (times per year)**	**Hours/event**	**# events/year**	**Hourly Cost**	**Annual Cost**	**Notes**
1	Site Maintenance							
		Signs & fence replacement	semi-annually	2	2	65	$260	
		fence and sign supplies	semi-annually	1	2	350	$700	
2	Habitat Maintenance							
		Weed control	semi-annually	16	2	65	$2,080	
		Herbicide Use	semi-annually	1	2	75	$150	
		Trash removal	semi-annually	3	2	65	$390	
		Replanting and Reseeding	semi-annually	4	2	65	$520	
		Dump Fees	annually	4	1	250	$1,000	
		Container stock and seeds	semi-annually	1	2	200	$400	
3	Habitat Monitoring							
		Write memo	semi-annually	2	2	90	$360	
		Inspect fence	semi-annually	2	2	90	$360	
		Map weeds	semi-annually	8	2	90	$1,440	
		Map remedial planting and seeding areas	semi-annually	4	2	90	$720	
4	Biotic Surveys							
		Site visit	annually	8	1	125	$1,000	
		Photodocumentation	annually	1	1	125	$125	
		Report	annually	12	1	125	$1,500	
		CAGN Survey	1/5 years	12	0.2	125	$300	
		Site visit	1/5 years	6	0.2	125	$150	
		Equipment	annually	1	1	200	$200	
		5-yr report	1/5 years	24	0.2	125	$600	
5	Adaptive Management	Unscheduled maintenance and monitoring	annually	1	1	73	$ 73	1% of annual maintenace and monitoring. This should be allowed to accumulate.
6	Mileage	mileage to site	10 trips	50	10	0.58	$290	
Subtotal	**Direct Costs**	**sum of items 1-6**					**$12,618**	
7	Project Management/ Administration	Program oversite, bookkeeping	semi-annually				$1,262	10% of direct costs
8	Contingency						$1,262	10% of direct costs
Total							**$15,141**	

HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard
Suite 200
La Mesa, CA 91942
619.462.1515 **tel**
619.462.0552 **fax**
www.**helixepi**.com

June 7, 2016 SAC-02

Ms. Mikaela Klein
Mt. San Antonio College
Facilities Planning and Management Department
1100 North Grand Avenue
Walnut, CA 91789

Subject: Noise Impact Planning for the Mt. San Antonio College (Mt. SAC) West Parcel Solar Project

Dear Ms. Klein:

At your request, HELIX Environmental Planning, Inc. (HELIX) is providing construction noise control planning for the Mt. SAC West Parcel Solar (Project).

The Project analysis required the implementation of a noise control plan because of the Project site proximity to sensitive habitat areas with Venturan coastal sage scrub habitat (Habitat) occupied by the federally listed as endangered coastal California gnatcatcher (*Polioptila californica californica*; CAGN).

Guidelines produced by the U.S. Fish and Wildlife Service (USFWS) require that noise be limited to a level not to exceed an hourly limit of 60 dBA L_{EQ}, or the average ambient noise level, whichever is greater, at the edge of Habitat during the CAGN breeding season (February 15 to August 31).

NOISE METRICS

All noise-level and sound-level values presented herein are expressed in terms of decibels (dB), with A-weighting, abbreviated "dBA," to approximate the hearing sensitivity of humans. Time-averaged noise levels of one hour are expressed by the symbol "L_{EQ}" unless a different time period is specified. Some of the data also may be presented as octave-band-filtered and/or A-octave-band-filtered data, which are a series of sound spectra centered on each stated frequency,

with half of the bandwidth above, and half of the bandwidth below, the stated frequency. These data are typically used for machinery noise analysis and barrier-effectiveness calculations.

Noise emission data are often provided based on the industry standard format of sound power (noted by S_{WL}), which is the total acoustic power radiated from a given sound source as related to a reference power level. Sound power differs from sound pressure (if notation is needed the abbreviation is S_{PL}), which measures the fluctuations in air pressure caused by the presence of sound waves and is generally the format that describes noise levels as heard by the receiver. Sound pressure is the actual noise experienced by a human or registered by a sound level instrument. When sound pressure is used to describe a noise source, it must specify the distance from the noise source to provide complete information. Sound power is a specialized analytical method to provide information without the distance requirement, but it may be used to calculate the sound pressure at any desired distance.

LOCATION OF HABITAT

As previously noted, the site and immediately adjacent areas (within the same property) were subject to previous biological surveys, which documented CAGN sightings and nests in the Habitat adjacent to the construction site. The Diegan coastal sage scrub and other (riparian) habitats on the portion of the site proposed for construction would be cleared outside of the breeding season. Additional areas of Habitat located immediately along the western and southern Project site boundaries will be maintained.

SITE VISIT AND EXISTING NOISE ENVIRONMENT

An initial site visit was conducted on Thursday, May 12, 2016 at approximately 1:15 p.m. Several noise measurements were made at the site (not all reported). The highest measured noise level of 61.2 dBA L_{EQ} occurred at a point set back approximately 200 feet from North Grand Avenue. This measurement site is directly (west) from the access gate and has a clear (unobstructed) view of the road. A second measurement of 43.0 dBA L_{EQ} was observed at a site in the existing canyon area, with no view of the road.

In general, only the small entrance valley (non-habitat area) has any significant roadway noise. The habitat areas are set well back from the road and shielded by significant intervening topography; ambient noise levels at the planned construction site and the adjacent, unaffected Habitat areas are significantly below 60 dBA. As a result, the allowable noise limit during construction cannot exceed 60 dBA L_{EQ}, per the USFWS guidelines.

PROJECT SCHEDULE

The general schedule for Project construction, with related assumptions and noise control requirements, is outlined below.

CONSTRUCTION PLANNING ASSUMPTIONS

- The rough grading of the site is planned for the period between the 2016 and 2017 breeding season (i.e., September 1, 2016 through February 14, 2017).

- Solar panel mounts and panel installation (light equipment) would occur during the 2017 breeding season.

- Erosion containment and control systems (per the site's best management practices [BMPs]) would be in place during the 2017 breeding season. They would require only minor hand-maintenance activities once in place.

Rough grading and construction of the solar panel mounts and panel installation have the potential to exceed the noise thresholds for the unaffected CAGN Habitat specified in the USFWS guidelines. BMPs maintenance is assumed to have only minimal noise impacts.

CONSTRUCTION NOISE CONTROL REQUIREMENTS

As previously noted, site grading is planned for completion prior to the start of the 2017 breeding season. Contingency planning, however, is required as part of the permit approval process to determine the feasibility of noise-control mitigation and applicability in the event that site grading is not completed prior to the start of the 2017 breeding season. The solar panel mount construction and panel installation would occur during the 2017 breeding season, and thus may require noise control.

SITE CONSTRUCTION PLANNING INFORMATION

The grading of the solar panel pad area would require significant earth movement (after brush clearing), including the removal of two low separate hills. The excavated material, along with imported material, would be used to fill in a large valley area and create a single large pad. After grading, the nearby Habitat would be located upslope (south and west) of the finished pad elevation, with short, two-to-one grade slopes at the pad edges extending to the Habitat areas.

CONSTRUCTION NOISE

Construction noise planning is broken into two separate construction phases, which would be done by different organizations with different equipment requirements:

1. Grading
2. Panel Installation

Reasonable and foreseeable on-site equipment (noise sources) used for the proposed Project would include:

Grading

- (2) D8 or D9 CAT (class) or similar crawler dozers
- (3 or 4) 24 cubic yard (CY) or similar size scrapers
- (1 or 2) off-road dump trucks
- (2 or more) on-road dump trucks
- (2) 3 to 6 CY loaders
- (1) Rubber tired dozer
- (1) Water truck
- (1) Vibrating roller
- Other miscellaneous small equipment

Solar Panel Installation

- Mobile drill(s) (small) for foundations
- Mobile (rubber-tired) crane(s)
- Concrete pumper (boom or hose)
- Concrete trucks
- Skylift or similar extending forklift (rubber-tired)
- Backhoe skip loader(s)
- Bobcat(s) or similar skid steer (rubber-tracked or -tired)
- Truck-mounted welding equipment
- Material delivery trucks

EQUIPMENT NOISE LEVELS

Data to plan for construction equipment noise is extracted from three sources: (1) the Federal Highway Administration (FHWA) Construction Noise Data Base; (2) the Department of Food and Rural Affairs (DEFRA; England) Construction Noise Data Base; and (3) personal construction site noise measurements. Table 1, *Noise Source Data*, provides the octave spectra for the equipment used in this analysis.

Table 1
NOISE SOURCE DATA

	Noise Levels in Decibels[1] (dB) Measured at Octave Frequencies in Hertz (hz)									Overall Noise Level in A-weighted Scale (dBA)
	31.5 hz	63 hz	125 hz	250 hz	500 hz	1,000 hz	2,000 hz	4,000 hz	8,000 hz	
Dozer	130.0	125.5	114.5	116.5	113.5	112.5	118.5	102.5	96.5	121.2
Scraper	105.1	115.4	125.6	117.1	120.7	116.1	107.4	107.3	103.4	121.1
Cement Truck	120.0	117.7	108.7	113.7	106.7	105.7	112.7	102.7	94.7	115.6
Cement Pumper	120.0	117.7	115.7	112.7	113.7	111.7	108.7	105.7	100.7	116.5
Loader	110.7	121.5	111.3	105.8	103.4	127.4	113.0	100.8	96.1	127.6
Small Drill	103.2	108.5	97.8	95	95.7	94.9	97.4	91.9	87.9	101.8
Backhoe / Loader	104.0	106.7	97.7	101.7	101.7	97.7	96.7	90.7	84.7	103.7
Concrete Saw	105.3	106.7	123.7	115.7	114.7	114.7	116.7	120.7	119.7	125.3
Mobile Crane	112.3	114.7	113.7	107.7	108.7	107.7	107.7	98.7	89.7	112.9
Backup Alarm[2]	12.7	12.7	12.7	12.7	12.7	109.7	12.7	12.7	12.7	109.7

[1] Based on Sound Power Levels (S_{WL})
[2] Backup alarms are highly directional but are assumed as non-directional sources in this analysis to provide a worst-case noise planning scenario.

NOISE IMPACTS

Two separate scenarios have been analyzed for noise control planning:

1. The site grading is in process but not complete prior to the start of the breeding season.
2. Solar panel installation is occurring during the breeding season.

Grading

The following noise control conclusions are associated with assumed dozer and scraper operations in a general work area. Specifically, construction equipment operations would typically occur in a limited portion of the construction site at any given time.

- Normal site grading operations may occur without noise control requirements at any distance greater than 650 feet from any Habitat location. Figure 1, *Near Complete Grading/No Barrier*, shows the expected construction noise contours for the Habitat areas if grading occurs nearby.

- A 6-foot-high wall at the outer extents of the site grading (top of disturbed slope area) would reduce the construction setback requirement from Habitat to approximately 225 feet (the top of ungraded slope is typically about 15 feet above the finished pad elevation). Figure 2, *Near Complete Grading/6-ft Barrier*, shows the impacts that could occur at the Habitat if grading occurred at least 225 feet away and if there were a 6-foot-high noise control wall. As indicated on this figure, noise levels are locally projected at up to approximately 62 dBA within the Habitat. These noise levels reflect a worst-case scenario (due to topography) and work occurring only in this area. If work would occur only less than 225 feet from the Habitat, additional monitoring would be required, with the potential for limited construction hours.

- A 12-foot-high wall at the outer extents of the site grading (top of disturbed slope area) would reduce the construction setback from Habitat to approximately 180 feet.

- If grading is conducted at closer distances with normal heavy equipment, compliance with the 60 dBA L_{EQ} limit would not be feasible.

Panel Installation

The following noise control conclusions are associated with the assumed operation of a mobile crane and a small drill rig for footings construction. While a cement truck would exhibit approximately the same noise generation as the crane, these two pieces of equipment likely would not operate simultaneously in the same area.

- Normal solar panel installation may occur at distances greater than 225 feet from the edge of the Habitat, assuming the use of a small drill rig for the panel footings. Operation of a normal mobile crane or cement truck(s) would require a minimum 450-foot setback from the Habitat without noise control. Figure 3, *Unmitigated Solar Construction*, shows the anticipated noise impacts for a single drill rig and crane operating at these distances.

- With an 8-foot-tall wall at the top of the slope adjacent to the Habitat, the noted setback distances would allow work within the full limits of the planned solar panel installation area (not the full pad area). Figure 4, *Solar Construction/8-ft Wall*, shows the anticipated noise contours for the same two pieces of equipment working in the site footprint with an 8-foot-tall wall.

Specific Notes and Limitations:

- Construction equipment (and associated noise levels) and/or site conditions (grades, elevations, or materials) that vary from those analyzed in this report may result in higher noise levels than predicted herein.

- Noise planning for equipment used in close proximity to the specified distances from the perimeter wall does not include planning for a long and continuous backup alarm. Noise from a backup alarm under the described conditions may exceed the allowable limits.

Accordingly, alternate safety measures, including lights and/or flaggers, may be required during the grading phase of construction.

- All equipment must be operated in compliance with applicable safety rules and regulations. HELIX staff would not be responsible for the failure to operate construction equipment safely and/or accidents occurring from unsafe operation of construction equipment.

Figure 5, *Habitat and Sensitive Species Map/Project Footprint,* shows the current habitat limits.

NOISE BARRIER CONSTRUCTION

All temporary sound attenuation walls will be constructed of plywood or construction noise-control blankets, with no cracks or gaps through or below the wall. Any gate(s) in such sound attenuation walls must be designed with overlapping closures.

Sound attenuation barriers may be either: (1) semi-permanent fencing or hanging noise control blankets with a laboratory specified minimum Sound Transmission Control (STC) of 18, and in-ground support systems (posts); or (2) similar temporary barriers mounted on K-rail, scaffolding, or another movable mounting system.

For very small noise-control barriers, a single sheet of ¾-inch-thick plywood with no cracks or gaps and a support system that holds the sheet(s) upright is sufficient for short-term, portable noise control.

If the barriers require semi-permanent ground installation as noted, the installation of the barrier must be completed prior to February 15. If construction extends past February 15, noise levels from the construction would need to be continuously and actively monitored in the Habitat immediately adjacent to the construction, including the installation of posts, pipes or telephone poles with cable attachments for the support cable.

Plywood barriers shall be made with either a single ¾-inch-thick layer of material with no cracks or gaps or a double layer of ½-inch-thick plywood mounted in a ships lap configuration.

The safe construction, placement, maintenance, use, and (if applicable) repair of noise barriers under all applicable conditions (e.g., rain or high winds) are the responsibility of the construction contractor.

DESCRIPTION OF PLANNED MONITORING

Active Monitoring: An individual trained in the operation of an appropriate noise meter will be used for the initial construction work, as well as for any unplanned or unusual requirements that may arise. The noise meter(s) will be located close to the edge of the Habitat and will be monitored at appropriate intervals (to be determined after construction schedules are finalized) to measure the hourly noise levels. Noise level results will be communicated to the project manager.

Passive Monitoring: Following the initial construction work, a noise monitoring system will be set up at one or more fixed locations beyond the new wall and inside the occupied Habitat. The monitoring system will be mounted on a 2-inch-diameter and 6-foot-tall metal pipe, or a 4-inch square wooden pole at the monitoring location. Data will be collected on a weekly basis, and the results will be communicated to the project manager weekly. Passive monitoring will continue for the duration of any construction during the breeding season and will not cease until all work at the site is stopped or the breeding season ends (i.e., after August 31).

REPORTS

A hand-written, one-page, fill-in monitoring report will be submitted after each day of monitoring, showing the hourly L_{EQ} measurements at the associated monitoring site(s) when active monitoring is required. Passive monitoring data will be entered into a laptop computer weekly, and a standard compliance/non-compliance form with a noise level graph will be prepared and submitted to the project manager weekly. The Project Manager will then submit these reports to the appropriate agencies during the periods of noise control for sensitive species.

If, at any time the passive monitoring documents noise levels exceeding the allowable level of 60 dBA L_{EQ} for one or more of the three conditions listed below, the acoustics consultant will immediately attempt to determine the cause and develop a suitable mitigation methodology. If no such mitigation can be developed and implemented, the offending operation will be terminated until mitigation can be developed.

1. An exceedance of 64 dBA L_{EQ} during any one-half hour;
2. An exceedance of 61 dBA L_{EQ} during any two one-half hours in two consecutive days; or
3. An exceedance of 61 dBA L_{EQ} during any three one-half hours in a single day.

If mitigation is required, the next monitoring report will contain a brief description of the problem and the steps taken to correct it.

Specialty Notice

If the Project Manager is unavailable for any reason, the acoustics consultant will not attempt to stop the offending operation but will attempt to locate the Project Manager (or another qualified representative) at the construction trailer (or other applicable location) to provide notification of the condition and seek assistance.

CERTIFICATION

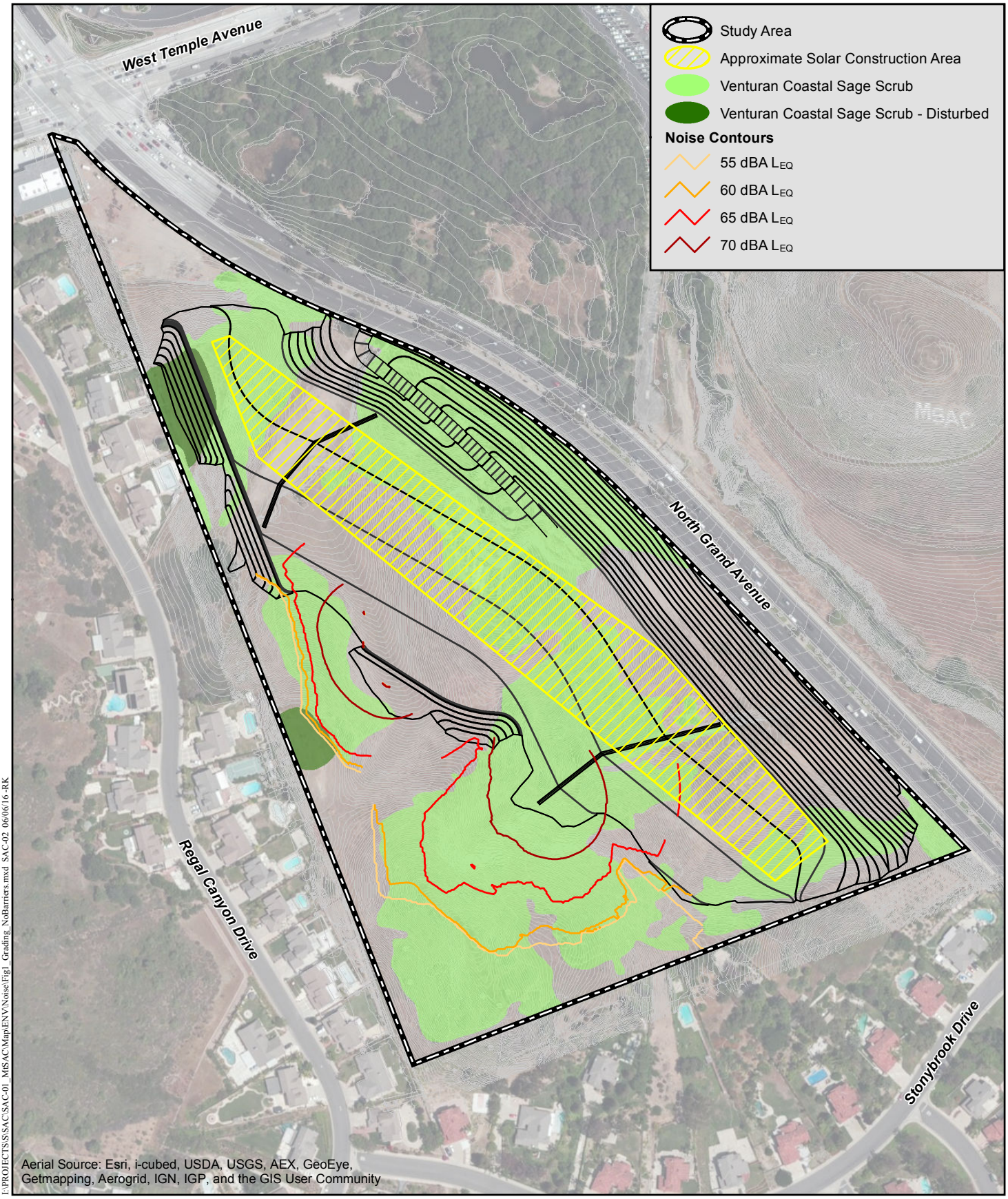
This report is based on the Project information provided to HELIX, as well as measured noise levels derived from monitoring conducted by HELIX. The resulting content and conclusions of this report represent a true and factual analysis of the acoustical impact issues associated with proposed construction at the Project site.

Regards

Charles Terry
Senior Acoustical Analyst

Attachments:

Figure 1: Near Complete Grading/No Barriers
Figure 2: Near Complete Grading/6-ft Barrier
Figure 3: Unmitigated Solar Construction
Figure 4: Solar Construction/8-ft Wall
Figure 5: Habitat and Sensitive Species Map/Project Footprint



I:\PROJECTS\S\SAC\SAC-01_MSAC\Map\ENV\Noise\Fig1_Grading_NoBarriers.mxd SAC-02 06/06/16-RK

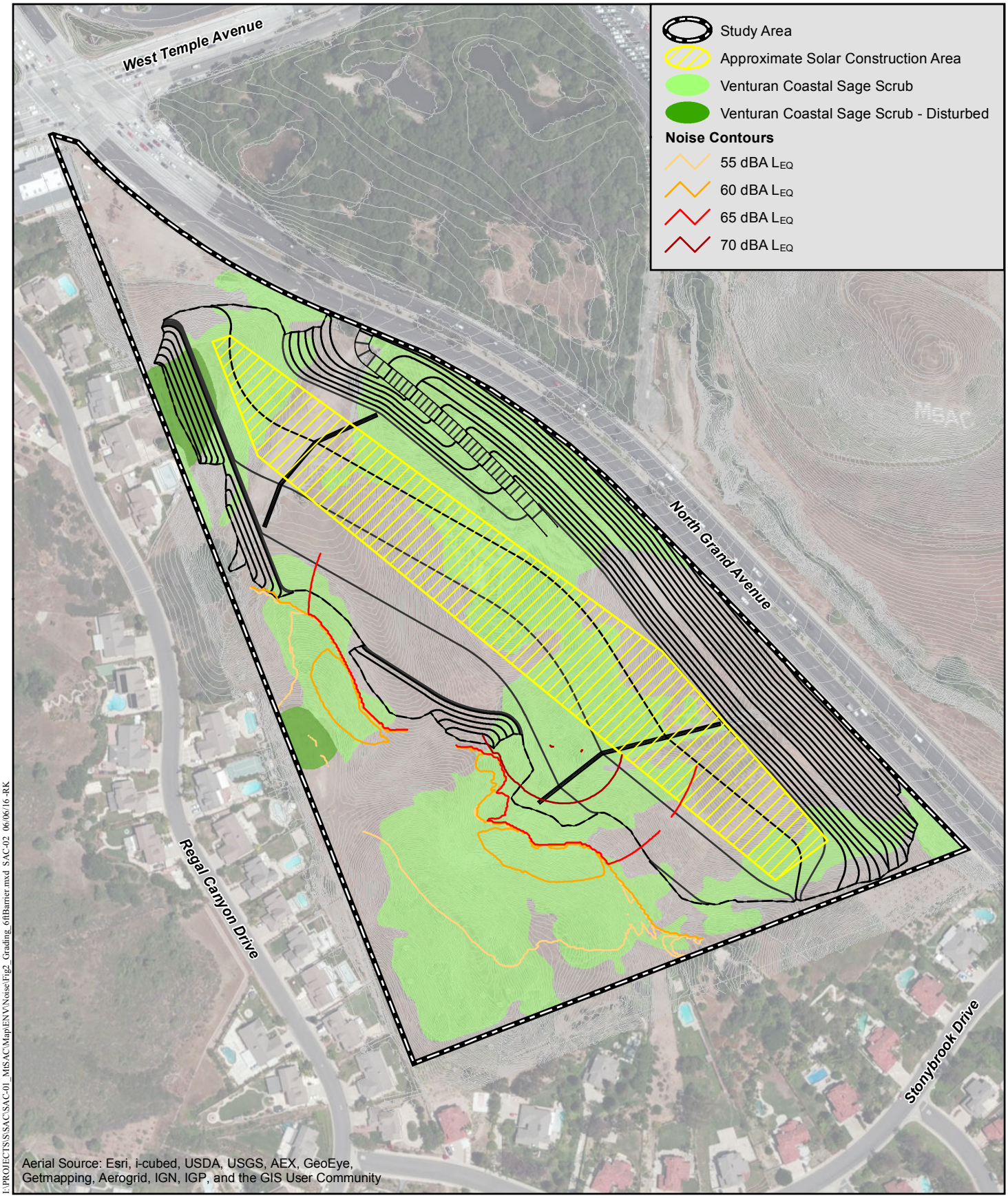
Near Complete Grading/No Barriers

WEST PARCEL SOLAR PROJECT

HELIX Environmental Planning

N 0 250 Feet

Figure 1



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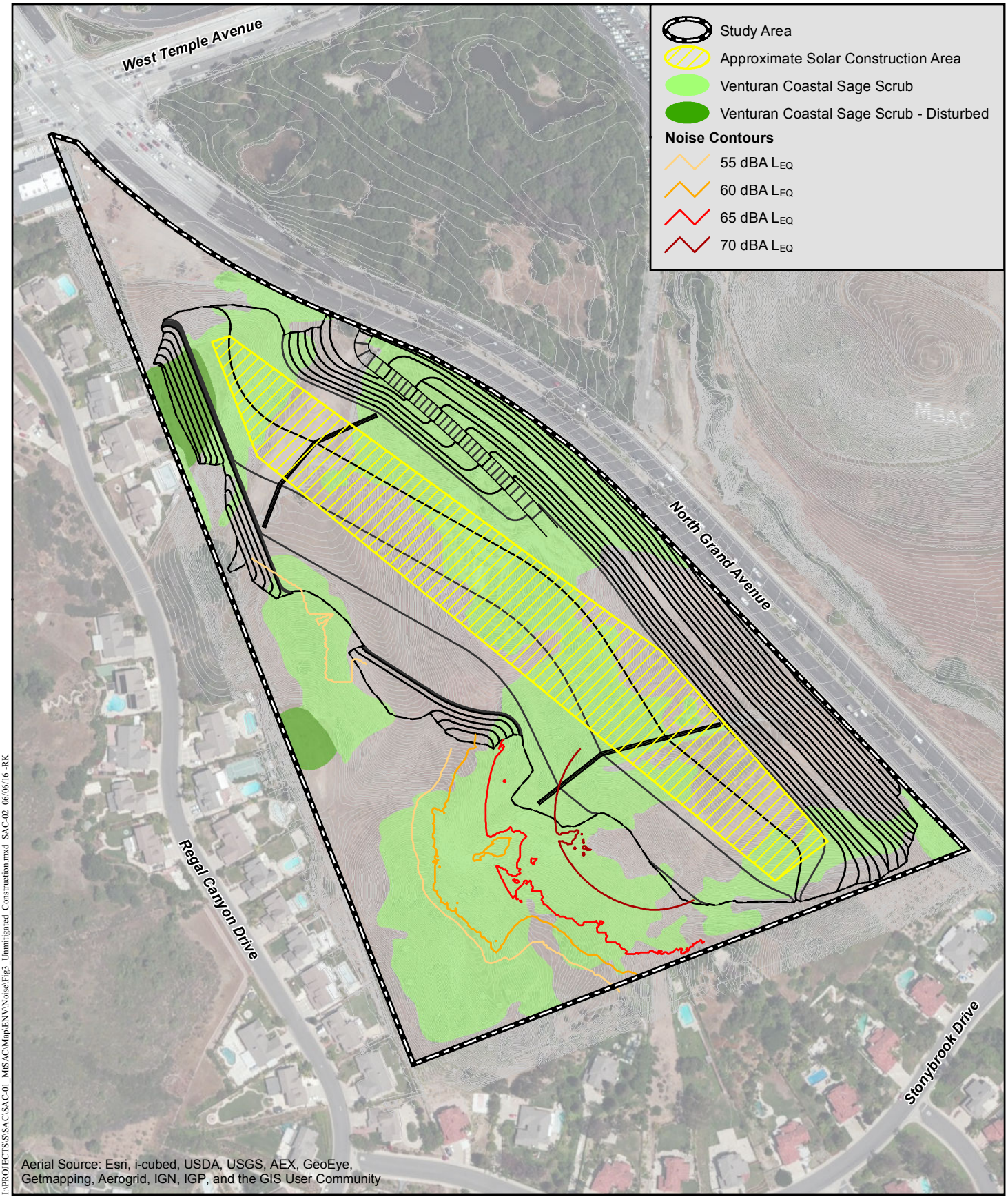
Near Complete Grading/6-ft Barrier

WEST PARCEL SOLAR PROJECT

HELIX Environmental Planning

N 0 250 Feet

Figure 2



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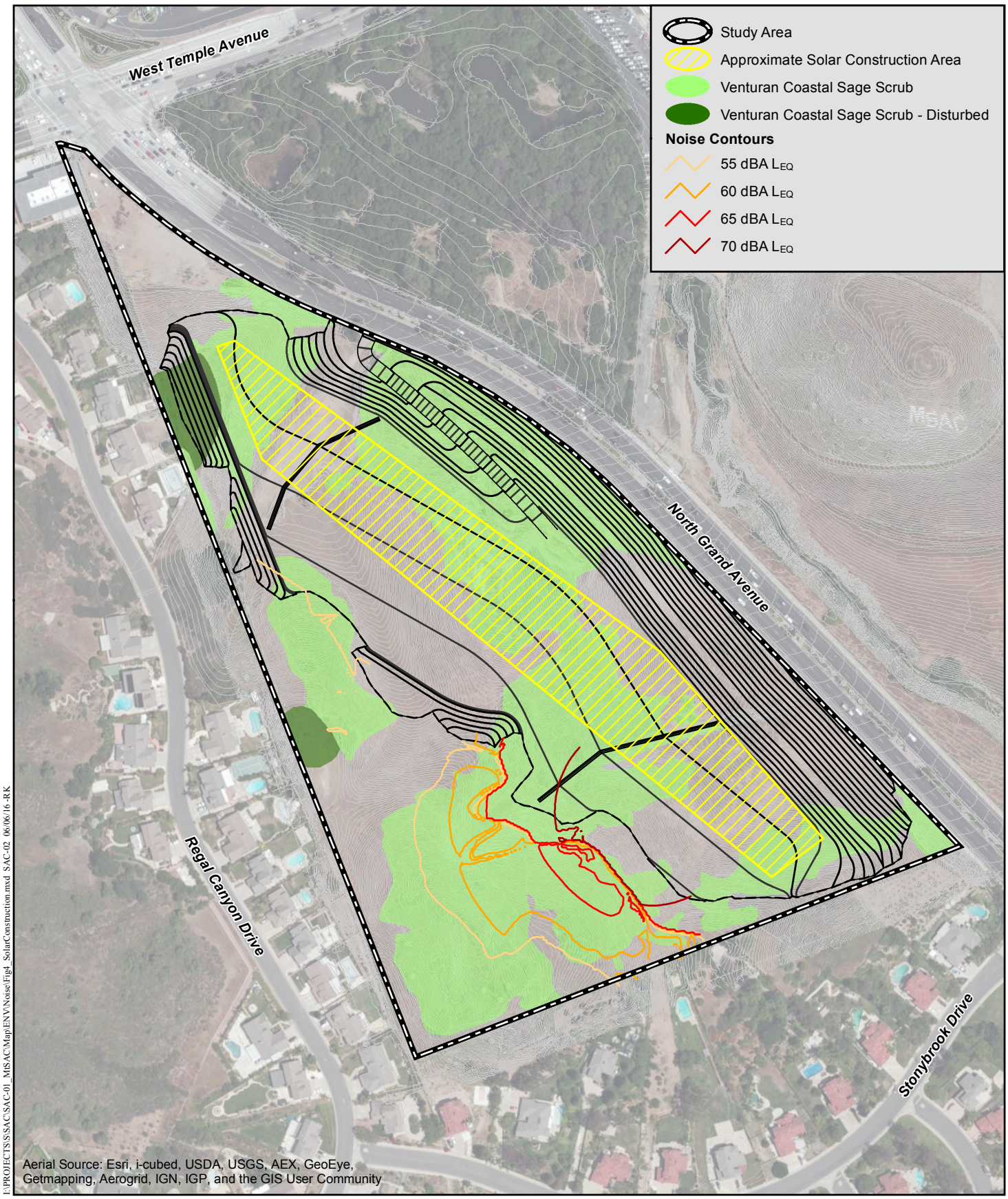
Umitigated Solar Construction

WEST PARCEL SOLAR PROJECT

HELIX Environmental Planning

N 0 250 Feet

Figure 3



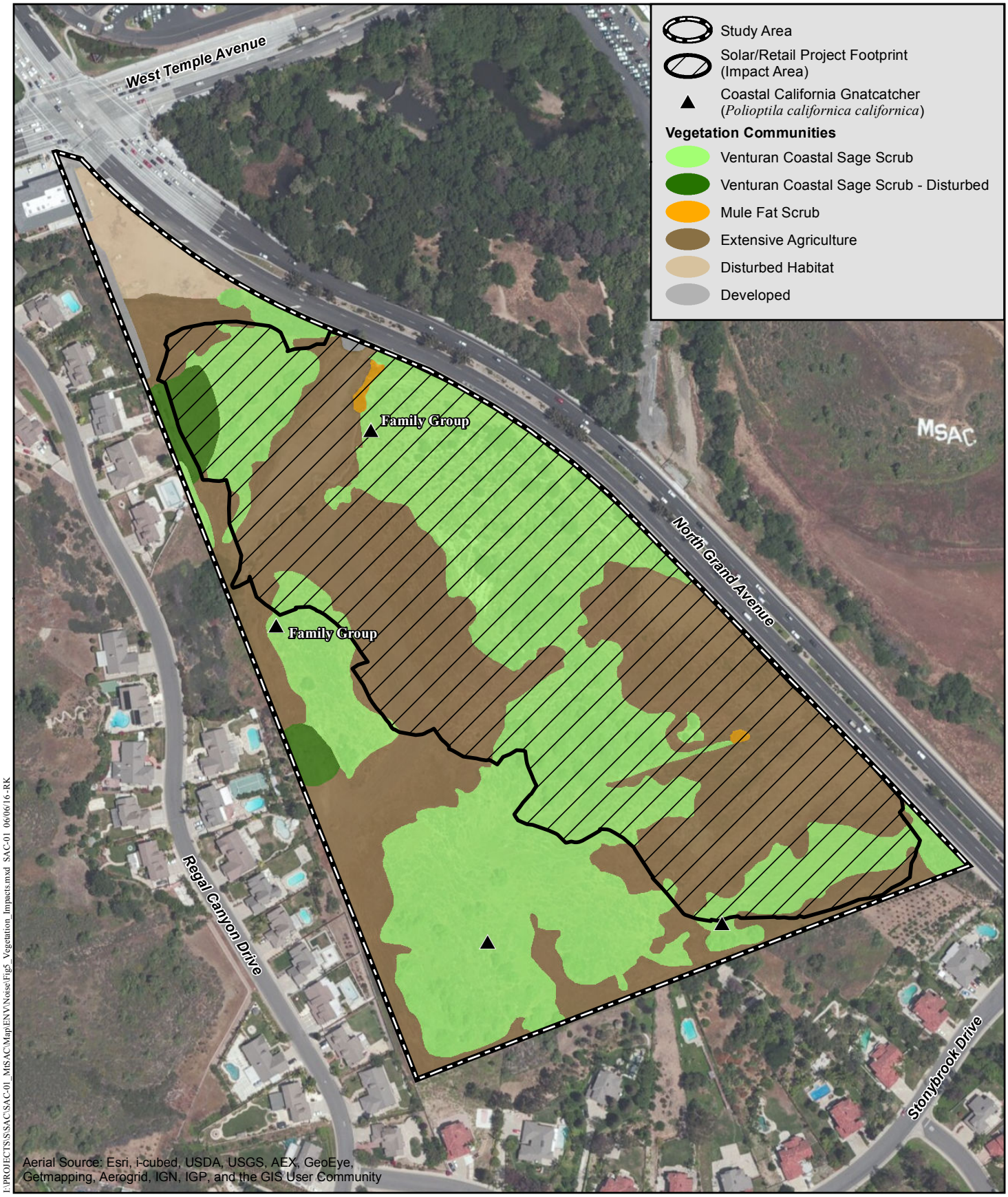
Solar Construction/8-ft Wall

WEST PARCEL SOLAR PROJECT

HELIX Environmental Planning

N 0 250 Feet

Figure 4



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Habitat and Sensitive Species Map/Project Footprint

WEST PARCEL SOLAR PROJECT

HELIX Environmental Planning

N 0 250 Feet

Figure 5

Your Project. Visualized.
www.photosims.com

WW Design & Consulting, Inc.
5427 W 139th Street, Hawthorne, CA 90250
rick@photosims.com • (415) 350-5842
www.photosims.com • www.wwdci.com

September 16, 2015

MT. SAN ANTONIO COLLEGE
WEST PARCEL SOLAR PROJECT

Site Visits & Line of Site Vetting

WW Design & Consulting, Inc. visited the project site on September 14, 2015 and September 16, 2015 to evaluate existing conditions and take photographs from the locations referenced in the United Walnut Taxpayers' Mt. SAC Solar Power Plant Line of Site and Alternative Issues presentation dated August 2015. In some cases, private residence access was required to view the locations referenced in the Taxpayers' presentation. Wherever possible, a suitable publically accessible substitute location was chosen to reasonably demonstrate the potential visual impact of the proposed Project. The photograph locations, including latitude and longitude coordinates, were recorded. All photographs were shot at 5'-8" above finished grade (approximate eye level) at each location using a Nikon D3100 camera at a 52.5mm effective focal length.

Project Simulation

WW Design & Consulting, Inc. created a three-dimensional scale model of the proposed Project based on the information provided by both Psomas and Borrego Solar Systems using Autodesk 3ds Max modeling and animation software. An in-software daylight system was created to simulate the sun location and strength at the Project longitude and latitude at the time the photographs were taken. Using the real world camera locations as a reference, virtual cameras were created in the scale model at the various locations so the subsequent renders would precisely match the real world photographs. The focal lengths, aperture, exposure time and camera heights of the virtual cameras were then created to precisely match the real world camera settings. Virtual photographs of the viewpoint locations were then rendered in Autodesk 3ds Max.

The rendered site photographs were then composited with their real world photograph counterparts in Adobe Photoshop to complete the simulated views of the Project.

Shot Map

Your Project. Visualized.
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West Parcel Solar Project

Existing

Date Taken: 09.14.2015 12:46 PM
Effective Focal Length: 52 mm

Your Project. Visualized.
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Existing conditions as seen looking east from 1131 Regal Canyon Drive

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Photo simulation as seen looking east from 1131 Regal Canyon Drive

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West Parcel Solar Project

Existing

Date Taken: 09.16.2015 8:42 AM
Effective Focal Length: 52 mm

Your Project. Visualized.
www.photosims.com

Existing conditions as seen looking south from 20939 Stoddard Wells Rd

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West Parcel Solar Project

Your Project. Visualized.
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Photo simulation as seen looking south from 20939 Stoddard Wells Rd

MT. SAC
Mt. San Antonio College

West Parcel Solar Project

Existing

Date Taken: 09.16.2015 8:42 AM
Effective Focal Length: 52 mm

Your Project. Visualized.
www.photosims.com

Existing conditions as seen looking southeast from across the street from 21119 Granite Wells Drive

MT. SAC
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West Parcel Solar Project

Your Project. Visualized.
www.photosims.com

Photo simulation as seen looking southeast from across the street from 21119 Granite Wells Drive

MT. SAC
Mt. San Antonio College

West Parcel Solar Project

Existing

Date Taken: 09.14.2015 1:17 PM
Effective Focal Length: 52 mm

Your Project. Visualized.
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Existing conditions as seen looking west from 21775 Buckskin Drive

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Mt. San Antonio College

West Parcel Solar Project

Your Project. Visualized.
www.photosims.com

Photo simulation as seen looking west from 21775 Buckskin Drive

MT. SAC
Mt. San Antonio College

West Parcel Solar Project

Existing

Date Taken: 09.14.2015 12:46 PM
Effective Focal Length: 52 mm

Your Project. Visualized.
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Existing conditions as seen looking southwest from the vacant lot across the street from 20331 Shadow Mountain Road

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West Parcel Solar Project

Your Project. Visualized.
www.photosims.com

Photo simulation as seen looking southwest from the vacant lot across the street from 20331 Shadow Mountain Road

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West Parcel Solar Project

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213.488.0345
iteris.com

801 South Grand Avenue, Suite 530
Los Angeles, CA 90017

WEST PARCEL SOLAR (TRUCK HAUL PLAN)

To: Gary Nellesen, Mt San Antonio College

From: Deepak Kaushik, P.E., Sowmya Chandrasekhar, T.E., P.E., Iteris Inc.

Date: July 20, 2017

Subject: West Parcel Solar (WPS) – Truck Haul Plan

1. INTRODUCTION

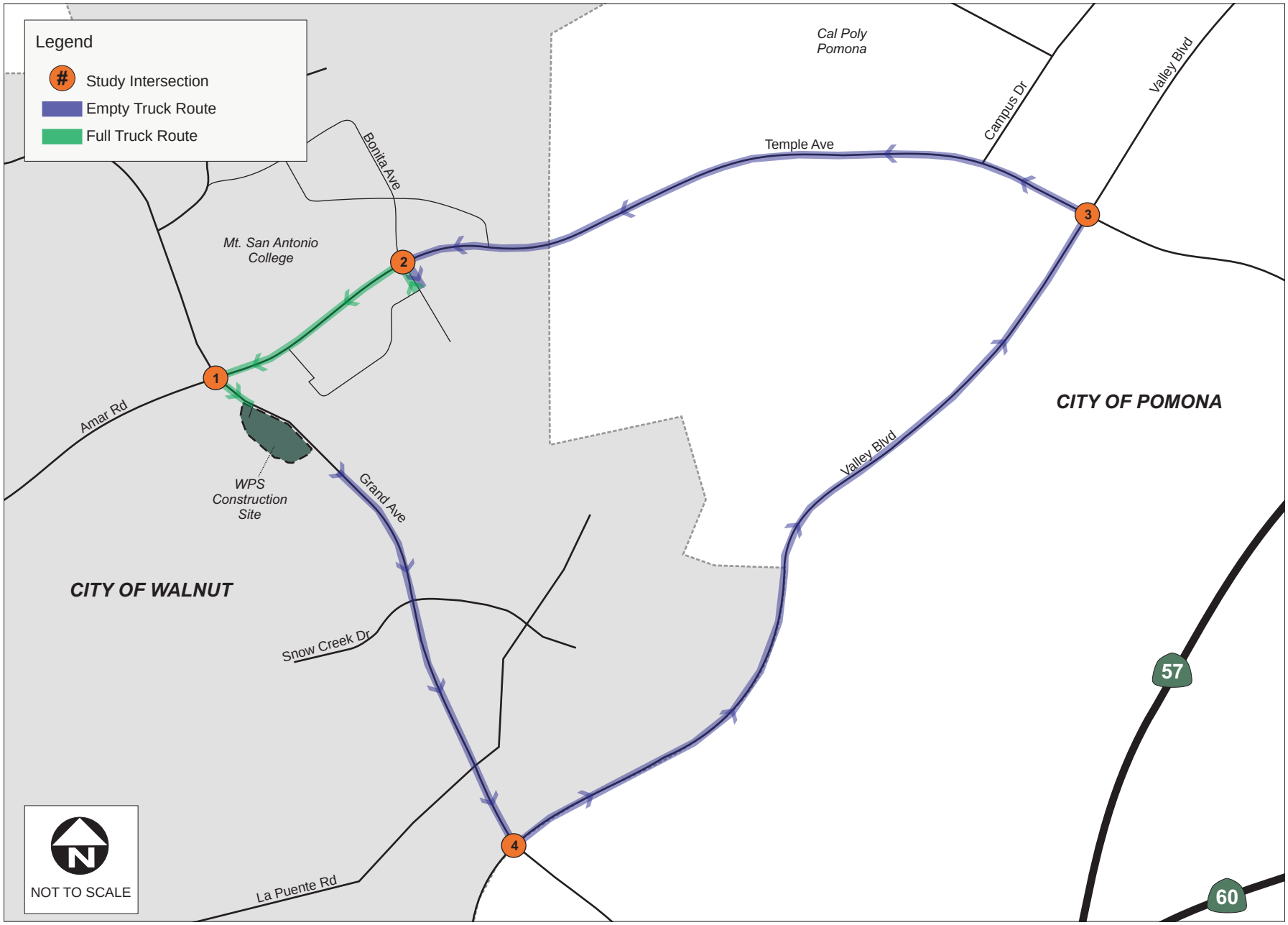
This memorandum presents Iteris' assessment of potential traffic impacts and mitigation related to the West Parcel Solar (WPS) project construction truck hauling activities in the City of Walnut. This Truck Haul Plan is based on discussions with Mt. San Antonio College (Mt. SAC) and City of Walnut staff.

The first leg of the haul route, where trucks are fully loaded, is planned to start from the dirt hill adjacent to Hilmer Lodge Stadium on the Mt. SAC campus and end at the WPS construction site along Grand Avenue approximately 1,000 feet southeast of Temple Avenue. Trucks would be loaded or fill up at the hill site, or borrow site, and travel to the WPS construction site to dump their load. The second leg of the haul route, where trucks are empty, would begin at the WPS construction site and loop around Grand Avenue, Valley Boulevard, and Temple Avenue back to the hill site. **Figure 1** shows the proposed truck haul route.

The following four (4) intersections are analyzed as part of the haul route in this memorandum:

1. Grand Avenue/Temple Avenue-Amar Road;
2. Bonita Avenue/Temple Avenue;
3. Valley Boulevard/Temple Avenue; and
4. Grand Avenue/Valley Boulevard.

While the Grand Avenue/La Puente Avenue Road intersection is also a signalized intersection along the proposed return route (empty truck route), it is not expected that truck traffic making only a southbound through movement would impact the intersection operations. Thus, this intersection was not analyzed. Storage space for vehicles queued at through movements are not limited in the same manner as storage space for vehicles queued at left-turn movements. There is more storage space available at the former, and less storage space available at the latter movements.



Mt San Antonio College
WPS Initial Study - Truck Haul Plan

FIGURE 1
Proposed Truck Route and Study Intersections

2. Traffic Operations Methodology

The quality of traffic operations is characterized using the concept of level of service (LOS). Level of service is defined by a range of grades from A (best) to F (worst). At intersections, LOS "A" represents relatively free operating conditions with little or no delay. LOS "F" is characterized by extremely unstable flow conditions and severe congestion with volumes at or near the intersection's design capacity. This results in long queues backing up from all approaches to intersections.

In this report, analysis of traffic operations analysis was conducted according to the Los Angeles County traffic impact analysis guidelines. Utilizing these guidelines, intersection operating conditions were quantified using the Intersection Capacity Utilization (ICU) method. Volume-to-capacity (V/C) ratios and corresponding levels of service (LOS) were calculated at study intersections during the weekday a.m. and p.m. peak hours most closely matching the construction time periods. LOS analyses for all study intersections were conducted using TRAFFIX software. **Table 1** presents a brief description of each level of service letter grade, as well as the range of V/C ratios associated with each grade for signalized intersections.

Table 1: Intersection Level of Service Definitions

Level of Service	Description	Intersection Volume to Capacity (V/C) Ratio
A	Excellent operation. All approaches to the intersection appear quite open, turning movements are easily made, and nearly all drivers find freedom of operation.	0.000-0.600
B	Very good operation. Many drivers begin to feel somewhat restricted within platoons of vehicles. This represents stable flow. An approach to an intersection may occasionally be fully utilized and traffic queues start to form.	>0.600-0.700
C	Good operation. Occasionally drivers may have to wait more than 60 seconds, and back-ups may develop behind turning vehicles. Most drivers feel somewhat restricted.	>0.700-0.800
D	Fair operation. Cars are sometimes required to wait more than 60 seconds during short peaks. There are no long-standing traffic queues.	>0.800-0.900
E	Poor operation. Some long-standing vehicular queues develop on critical approaches to intersections. Delays may be up to several minutes.	>0.900-1.000
F	Forced flow. Represents jammed conditions. Backups form locations downstream or on the cross street may restrict or prevent movement of vehicles out of the intersection approach lanes; therefore, volumes carried are not predictable. Potential for stop and go type traffic flow.	> 1.000

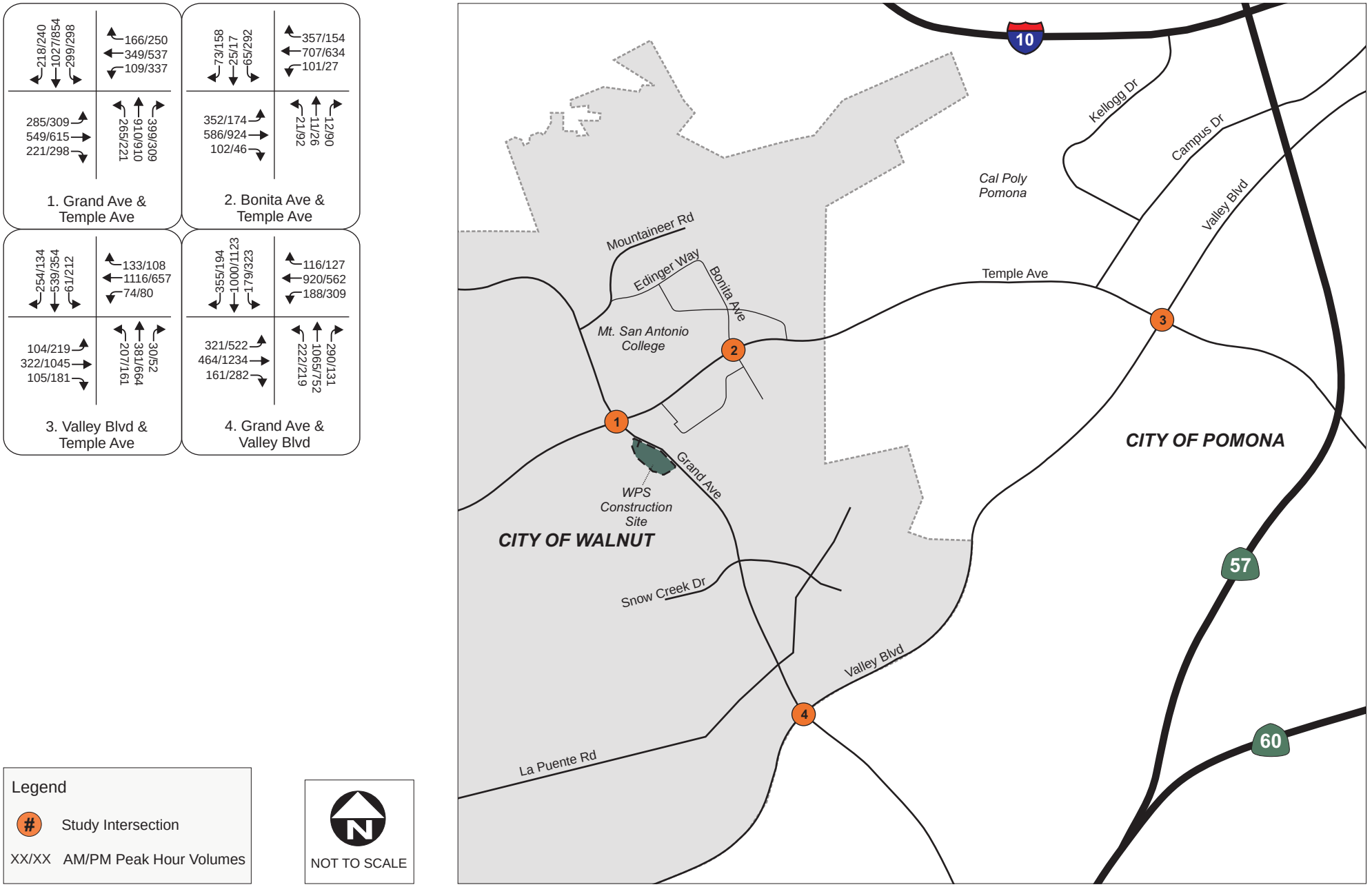
This analysis conservatively utilizes the Los Angeles County Public Works traffic impact review guidelines, which state that a project's traffic impact is evaluated based on ICU and is considered significant if the change in volume to capacity ratio (V/C) relative to the "without project" signalized intersection level of service (LOS) meets or exceeds the thresholds contained in **Table 2**. These guidelines are more stringent than the Los Angeles County Metropolitan Transportation Authority (LACMTA) guidelines which were used in the 2008 traffic impact analysis for the Mt. SAC Master Plan Update EIR.

TABLE 2: INTERSECTION SIGNIFICANT IMPACT CRITERIA

Intersection LOS in Pre-Project Conditions	V/C	Project V/C Increase
C	0.71 to 0.80	0.04 or more
D	0.81 to 0.90	0.02 or more
E / F	0.91 or more	0.01 or more

3. EXISTING CONDITIONS

This section presents the existing conditions of the study area. Existing intersection traffic counts were collected on October 1, 2015 during the a.m. peak period (7:00 – 9:00 a.m.) and the p.m. peak period (4:00 – 6:00 p.m.) on a typical weekday with school in session. The volumes collected between 8:00 to 9:00 a.m. and 4:00 to 5:00 p.m. were used in this analysis to be most consistent with the truck hauling process which is planned to occur between 8:30 a.m. and 4:30 p.m. on weekdays and Saturday. This data is consistent with the data used in the 2015 Facility Master Plan Program/Project EIR and the 2017 Physical Education Project (Phase 1, 2) EIR. Any changes in traffic volumes between 2015 and 2017 would not substantially alter the study conclusions. **Figure 2** shows the existing traffic volumes at the study intersections. Existing traffic count data is provided in **Appendix A**.



Mt San Antonio College
WPS Initial Study - Truck Haul Plan

FIGURE 2
Existing Peak Hour Traffic Volumes

A level of service analysis was conducted to evaluate existing intersection operations during the a.m. and p.m. peak hours at the four study intersections. **Table 3** summarizes the existing LOS at the study intersections. LOS calculations sheets are provided in **Appendix B**.

TABLE 3: EXISTING INTERSECTION PEAK HOUR LEVEL OF SERVICE

Intersection		Control Type	AM Peak Hour		PM Peak Hour	
			V/C	LOS	V/C	LOS
1	Grand Ave/Temple Ave	Signalized	0.665	B	0.698	B
2	Bonita Ave/Temple Ave	Signalized	0.570	A	0.568	A
3	Valley Blvd/Temple Ave	Signalized	0.723	C	0.745	C
4	Grand Ave/Valley Blvd	Signalized	0.670	B	0.756	C

Notes:
V/C = Volume to Capacity Ratio, LOS = Level of Service.

As shown in **Table 3**, all study intersections are currently operating at LOS C or better.

4. CONSTRUCTION TRAFFIC

This section summarizes the total truck traffic forecast to be generated by construction activities related to trucks hauling dirt from the borrow site to the construction site as well as trucks returning from the construction site back to the borrow site. It is anticipated that 40' length trucks would be used for truck hauling. These trucks have a capacity of 14 cubic yards. The empty weight of a typical truck is 47,000 lbs, while the estimated full weight (carrying 14 cubic yards of dirt) would be 80,000 lbs.

A limiting factor regarding the amount of trucks that can be accommodated within the circulation network are the existing left-turn pocket storage lengths at the four study intersections, where left-turn movements would be made. These storage lengths are as follows:

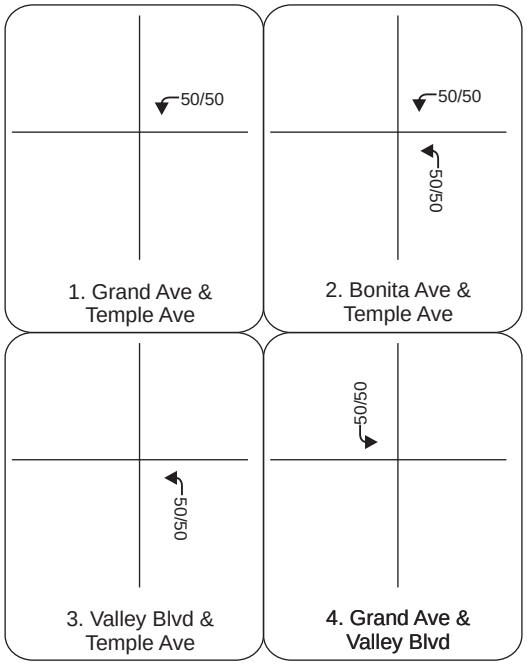
- Grand Avenue/Temple Avenue – 260' WB left-turn pocket length (dual left-turn lanes)
- Bonita Avenue/Temple Avenue – 170' NB left-turn pocket length and 120' WB left-turn pocket length
- Valley Boulevard/Temple Avenue – 180' NB left-turn pocket length
- Grand Avenue/Valley Boulevard – 250' SB left-turn pocket length (dual left-turn lanes)

Based on these pocket lengths and the 40' length of the typical truck, it is recommended that, in order to avoid queue back up outside a left-turn pocket, no more than two trucks exit the borrow site at the same time. Ideally, each truck would leave the borrow and construction sites no more than every three minutes, resulting in a total of 20 trucks per hour.

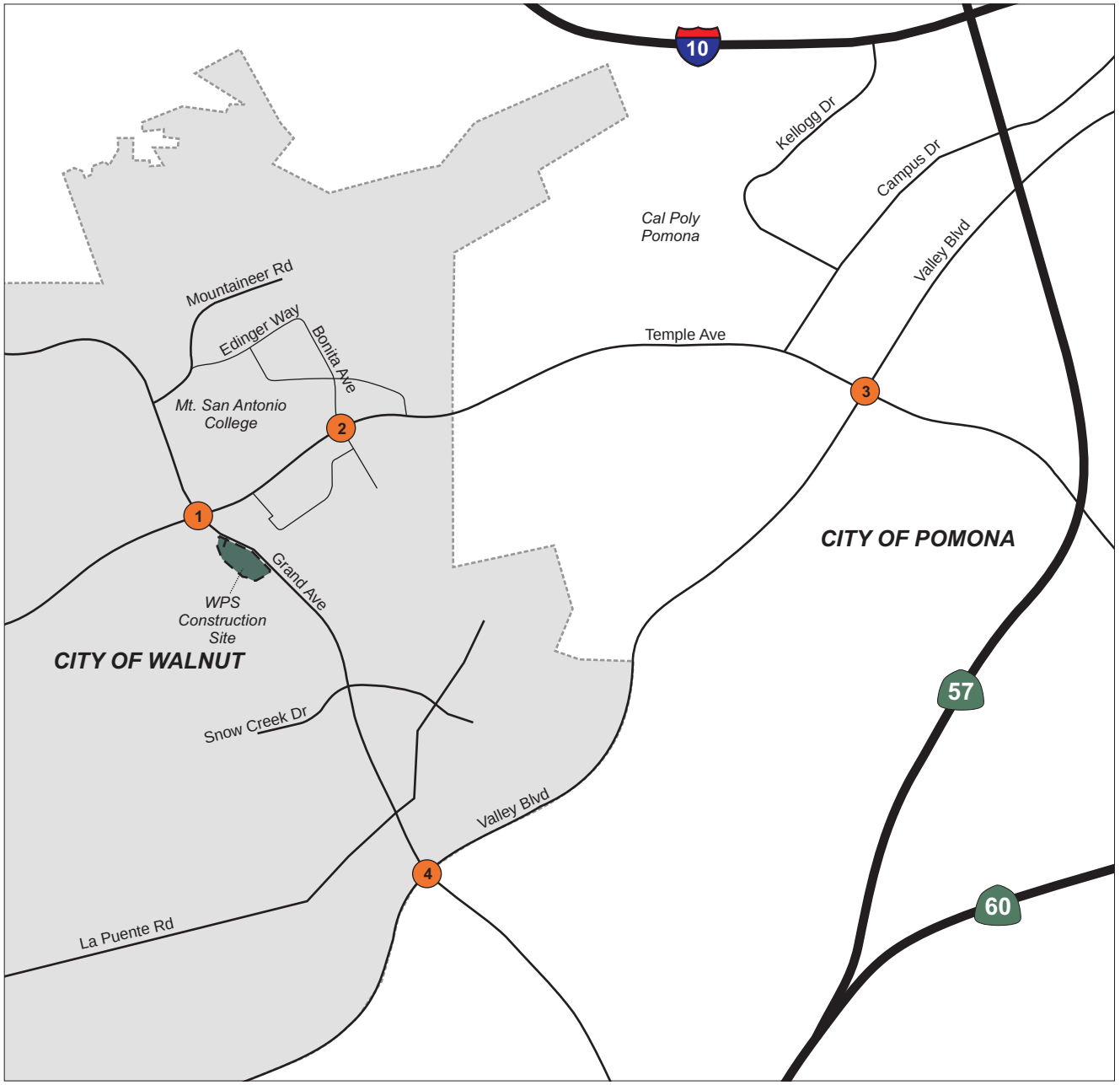
The process used to calculate the total number of days needed for construction assuming 20 trucks hauling dirt to the construction site per hour, as well as the Passenger Car Equivalent (PCE) truck trips, is summarized below. PCE is the number of passenger cars that would occupy the same space in a lane as one truck (i.e. 2.5 passenger vehicles):

- A total of 139,000 cubic yards of dirt is expected to be hauled (provided by Psomas)
- The capacity of a 40' truck, to be used for this construction, is 14 cubic yards
- As a result, a total of 9,929 truck loads are required:
    - 139,000 / 14 = 9,929 truck loads
- It is anticipated that construction would occur for a total of 8 hours a day
- As a result, a total 160 truck loads would be delivered per day:
    - 20 truck loads per hour * 8 hours a day = 160 truck loads per day
- As a result, the construction period is expected to last approximately 62 days:
    - 9,929 truck loads / 160 truck loads per day = 62 days
- Based on the 40' truck size, a PCE factor of 2.5 passenger vehicles per truck is assumed, resulting in approximately 50 PCE trips per hour generated at each site:
    - 20 truck trips x 2.5 vehicles per truck = 50 PCE-adjusted trips.

Figure 3 shows the assignment of PCE-adjusted truck trips within the study area during the a.m. and p.m. peak hours.



Note:
The truck volumes shown have been adjusted to
Passenger Car Equivalent (PCE) trips using a PCE factor of 2.5



Legend

Study Intersection

XX/XX AM/PM Peak Hour Volumes

N

NOT TO SCALE

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FIGURE 3
Construction Truck Traffic Peak Hour PCE-adjusted Volumes

5. EXISTING PLUS PROJECT CONDITIONS

This section summarizes the traffic operations of the study intersections for existing conditions with the construction truck hauling activities described in Section 4. **Figure 4** shows the existing plus construction traffic volumes which include the PCE-adjusted truck volumes at the study intersections. **Table 4** summarizes the existing plus construction LOS at the study intersections. The LOS calculations sheets are provided in **Appendix B**.

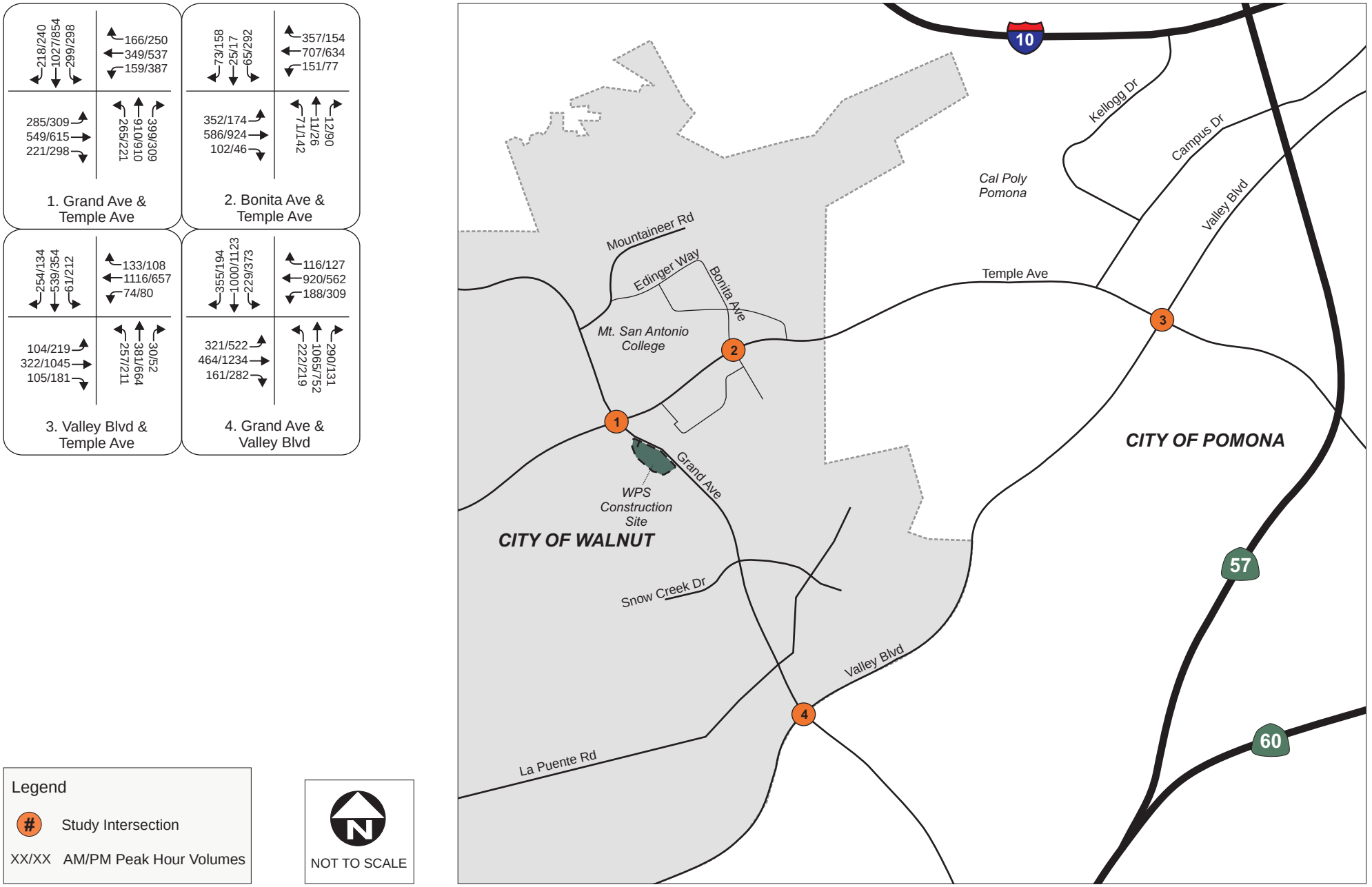

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FIGURE 4
Existing Plus Construction Traffic Peak Hour Volumes

TABLE 4: EXISTING PLUS CONSTRUCTION INTERSECTION PEAK HOUR LEVEL OF SERVICE

Intersection		Existing Conditions				Existing Plus Construction Conditions				Change in AM V/C	Change in PM V/C	Significant Impact?
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour				
		V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS			
1	Grand Ave/Temple Ave	0.665	B	0.698	B	0.681	B	0.714	C	0.016	0.016	No
2	Bonita Ave/Temple Ave	0.570	A	0.568	A	0.602	B	0.599	A	0.032	0.031	No
3	Valley Blvd/Temple Ave	0.723	C	0.745	C	0.754	C	0.745	C	0.031	0.000	No
4	Grand Ave/Valley Blvd	0.670	B	0.756	C	0.685	B	0.756	C	0.015	0.000	No

Notes:
V/C = Volume to Capacity Ratio, LOS = Level of Service.

As shown in **Table 4**, assuming the additional PCE-adjusted truck trips in the circulation network, the study intersections are forecast to continue to operate at LOS C or better during both peak hours. As also shown, the truck hauling activities are not forecast to result in any significant traffic impacts based on LA County thresholds of significance.

6. RECOMMENDATIONS

It is recommended that separate truck ingress and egress points be provided at the WPS site. Truck ingress would occur at the northern driveway along Grand Avenue, approximately 650 feet south of Temple Avenue/Amar Road. There is an existing driveway curb cut, which is approximately 20 feet in width, at this location. If two-directional (ingress/egress) operations occur at this driveway, the existing driveway should be widened to 40 feet. This would be needed to accommodate the rare situation where trucks would be exiting and entering the site at the same time. It is recommended that radio communication be used between truck operators waiting to exit the borrow site and construction staff at the construction site. This would ensure that entering and exiting trucks are spaced accordingly.

Truck egress is recommended to occur at a new second driveway approximately 1,260 feet south of the northern ingress driveway. **Figure 5** shows the locations of the two driveways. **Figure 6** shows the detailed truck turning paths and minimum recommended driveways widths.

Some benefits to separating the truck ingress and egress are as follows:

- Southbound Grand Avenue tapers down from four lanes to three lanes to two lanes within a short distance south of its intersection with Temple Avenue. At the northern driveway, vehicles are currently merging from the number three lane to the number two lane due to the lane taper. This taper width at the northern driveway can be utilized for truck ingress operations without obstructing the southbound through movement along Grand Avenue.
    - However, for the egress movement with the existing lane configuration, the trucks have to yield to three lanes of oncoming southbound vehicles (including the merge lane) at the northern driveway. At the proposed southern driveway location, the exiting trucks have to yield to only two lanes of oncoming traffic prior to making a right-turn onto Grand Avenue.
- If the ingress and egress operations occurred at the same time at only the northern driveway, the line of exiting trucks would be obstructed by entering trucks. This situation is avoided by separating the ingress and egress access points.

The location of the southern egress driveway was initially evaluated at a location approximately 1,110 feet south of the northern driveway. However, based on the posted speed limit on Grand Avenue (50 miles per hour), the calculated sight distance for right-turn maneuvers from the southern driveway would be 775 feet. This distance was calculated based on American Association of State Highway and Transportation Officials (AASHTO) – A Policy on Geometric Design of Highways and Streets (6th Edition). The line of sight is anticipated to be obstructed by the hill (on west side of Grand Avenue) as shown in **Figure 7**. Hence, it is recommended that appropriate temporary signage be provided along Grand Avenue to alert motorists along southbound Grand Avenue of construction traffic. The recommended signage would consist of a California Manual on Uniform Traffic Control Devices (CA MUTCD) C44 (CA) "Trucks Entering Exiting" Sign (with flashers, if needed).

Alternatively, it is recommended that the south driveway be constructed at a location 1,260 feet south of the north driveway (150 feet south of the initially proposed location). The minimum required sight

distance per AASHTO of 775 feet is met at this location without any sight obstruction (as shown in **Figure 7**).

However, it should be noted that for a small portion of the construction activities, only one driveway (north) would be utilized. It is estimated that use of the southerly driveway for exiting the site will be available for approximately 75 percent to 80 percent (i.e. a maximum of 50 days of hauling) of the estimated total 62-day import period before the area needs to be filled, graded and compacted to/from the solar array pad. When the southern driveway is no longer available, only the northern driveway will be available for both ingress and egress. In this case (approximately 12 days of the 62-day period), the single northern driveway condition is not expected to result in traffic congestion. As described below, adequate gaps in southbound traffic are anticipated, based on a site survey.

Field Assessment

Iteris staff performed a recent site visit during a typical weekday to observe the following:

- Gaps in southbound Grand Avenue traffic south of Temple Avenue.
- Average vehicle travel time from borrow site to fill site and from fill site back to borrow site.

The Gap Analysis was performed from 2:30 – 3:30 p.m., which represents peak southbound Grand Avenue volume conditions. During this hour, a total of 27 gaps in traffic exceeding 15 seconds were observed. Based on these observed gaps in traffic, it can be expected that 20 trucks could exit the construction site per hour and not create a significant delay to southbound Grand Avenue traffic.

The following average vehicle travel times were observed during the site visit, utilizing the proposed routes shown in **Figure 1**:

- Borrow Site to Construction Site: 3 minutes
- Construction Site to Borrow Site: 10 minutes and 30 seconds

It can be expected that a truck traveling along these routes would experience slightly higher travel times due to lower speeds of travel.

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FIGURE 5
WPS Site Access Points

LEGEND

- Exist. Edge of Pavement
- Exist. Pavement Markings
- Prop. Edge of Pavement
- Prop. Pavement Markings (White)

NOTES:

1. North Driveway is proposed to have two-way operations.
2. South Driveway is proposed to be used for egress only.
3. AASHTO Intermediate Semi-Trailer (WB-40) was considered as the design vehicle for the turn-path analysis.

SCALE: 1" = 100'

THIS CONCEPTUAL LAYOUT HAS BEEN PREPARED FOR ILLUSTRATIVE PURPOSES ONLY. IT IS NOT TO BE USED FOR PERMITTING OR CONSTRUCTION PURPOSES.

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FIGURE 6
WPS Site Driveway Widths & Truck Turning Paths

LEGEND

- Exist. Edge of Pavement
- Exist. Pavement Markings
- Prop. Edge of Pavement
- Sight Triangle

NOTES:

1. The stopping sight distance calculated for right-turns exiting South Driveway for both alternatives is 775 feet.
2. The sight distance is obstructed by hill for Alternative 1 location as shown in this exhibit. CAMUTCD C44 (CA) "Trucks Entering Exiting" Sign is recommended to be used (with flashers, if needed) to alert drivers along southbound N Grand Avenue.
3. The sight distance restriction for Alternative 1 location can be mitigated by relocating the driveway approximately 150 feet south along N Grand Avenue.

SCALE: 1" = 100'

THIS CONCEPTUAL LAYOUT HAS BEEN PREPARED FOR ILLUSTRATIVE PURPOSES ONLY. IT IS NOT TO BE USED FOR PERMITTING OR CONSTRUCTION PURPOSES.

iteris

Mt San Antonio College
WPS Initial Study - Truck Haul Plan

FIGURE 7
WPS Site South Egress Driveways - Alternative Locations & Sight Distance

Currently, the southbound departure leg at the intersection of Grand Avenue and Temple Avenue has a sign prohibiting trucks over 5 tons on this stretch of roadway (shown in **Figure 8**). It is recommended that this sign be temporarily bagged.

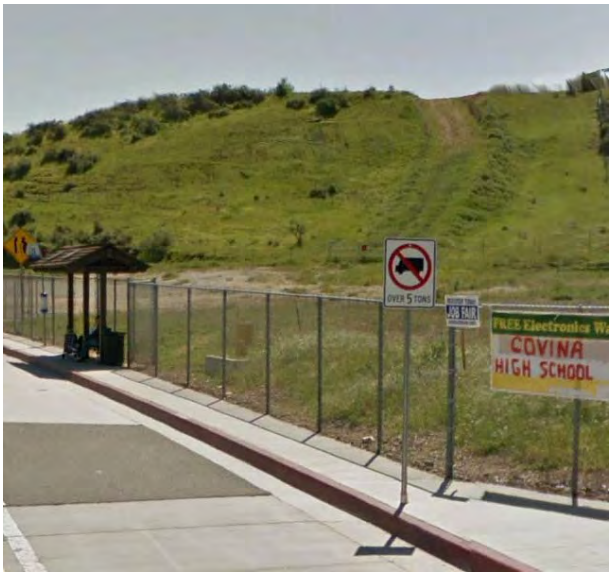

Figure 8 *– Sign Prohibiting Trucks over 5 Tons on Southbound Departure Leg of Grand Avenue South of Temple Avenue*

In addition, it is recommended that the City of Walnut consider temporarily removing/disengaging the eastbound Amar Road right-turn overlap phase at Grand Avenue and placing a temporary CA MUTCD R13A (CA) "No Right Turn on Red" sign. This signal modification will allow for more traffic gaps along southbound Grand Avenue, as eastbound Amar Road right-turning vehicles would only be able to turn during the eastbound green phase. This scenario was evaluated using the Synchro software, utilizing the Highway Capacity Manual (HCM) 2010 methodology which uses average vehicle delay in seconds to measure levels of service. The results are shown in **Table 5**.

TABLE 5: EXISTING PLUS CONSTRUCTION INTERSECTION PEAK HOUR LEVEL OF SERVICE - WITH EB RIGHT-TURN SIGNAL PHASE ADJUSTMENT

Intersection		Existing Plus Construction Conditions				Existing Plus Construction Conditions (Removal of EB Right-turn Overlap & Added "No Right-turn on Red")			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS
1	Grand Ave/Temple Ave	37.5	D	41.2	D	38.1	D	42.4	D

Notes:
s = Seconds, LOS = Level of Service.

As shown in **Table 5**, modifying the traffic signal to remove the eastbound right-turn overlap phase and prohibiting right-turn-on-red would not have a significant effect on traffic operations at the Grand Avenue/Temple Avenue intersection.

In addition, traffic signal timing was reviewed at the Grand Avenue/Temple Avenue-Amar Road intersection. Currently, the Grand Avenue corridor traffic signals are part of a coordinated signal system. It is recommended that the City consider "lagging" the westbound left-turn phase, resulting in the westbound through movement as the "leading" phase. This would ensure that left-turning trucks would be able to access the left-turn pocket during cycles where the westbound through movement queues extend beyond the length of the left-turn pocket. It is recommended that this adjustment to the traffic signal phasing be implemented during the 9:00 a.m. to 3:00 p.m. period, outside of the peak period timing plans. It is anticipated that this signal phasing modification would have no significant adverse impacts on the operations at this intersection. The scenario was evaluated using the Synchro software utilizing HCM 2010. The results are shown in **Table 6**.

TABLE 6: EXISTING PLUS CONSTRUCTION INTERSECTION PEAK HOUR LEVEL OF SERVICE - WITH WB LEFT-TURN SIGNAL PHASE ADJUSTMENT

Intersection		Existing Plus Construction Conditions				Existing Plus Construction Conditions (WB Left-turn Lagging)			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS
1	Grand Ave/Temple Ave	37.5	D	41.2	D	36.6	D	39.8	D

Notes:
s = Seconds, LOS = Level of Service.

As shown in **Table 6**, modifying the traffic signal phasing by lagging the westbound left-turn phase is not projected to have a significant effect on traffic operations at the intersection of Grand Avenue and Temple Avenue.

In summary, the following recommendations are proposed as a result of this evaluation:

- A maximum of 20 trucks per hour existing the site (no more than every 3 minutes);
- Separate truck ingress (north) and egress (south) driveways along Grand Avenue;
- Modification of the Grand Avenue/Temple Avenue traffic signal to include:
  - "No Right Turn on Red" for the eastbound Amar Road approach
  - Lagging the westbound Temple Avenue left-turn movement
- Addition of MUTCD C44 (CA) "Trucks Entering Exiting" Sign along Grand Avenue at the north and south driveways.

APPENDIX A – TRAFFIC COUNTS

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Walnut
N/S: Grand Avenue
E/W: Temple Avenue
Weather: Clear

File Name : WNTGRTEAM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 1

Groups Printed- Total Volume

	Grand Avenue Southbound					Temple Avenue Westbound					Grand Avenue Northbound					Amar Road Eastbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
07:00 AM	100	292	42	0	434	15	152	62	0	229	38	195	130	0	363	63	132	38	0	233	1259
07:15 AM	83	290	37	0	410	25	165	40	0	230	65	289	158	0	512	61	202	47	0	310	1462
07:30 AM	116	267	47	0	430	22	84	56	0	162	58	339	188	0	585	85	192	38	0	315	1492
07:45 AM	111	251	42	0	404	29	92	41	0	162	52	398	165	0	615	72	189	24	0	285	1466
Total	410	1100	168	0	1678	91	493	199	0	783	213	1221	641	0	2075	281	715	147	0	1143	5679
08:00 AM	102	262	61	0	425	34	105	48	0	187	61	265	117	0	443	66	174	44	0	284	1339
08:15 AM	75	238	65	0	378	27	110	42	0	179	113	266	115	0	494	67	134	62	1	264	1315
08:30 AM	72	284	57	0	413	30	78	48	0	156	47	189	89	0	325	79	130	68	0	277	1171
08:45 AM	50	243	35	0	328	18	56	28	0	102	44	190	78	0	312	72	111	47	0	230	972
Total	299	1027	218	0	1544	109	349	166	0	624	265	910	399	0	1574	284	549	221	1	1055	4797
Grand Total	709	2127	386	0	3222	200	842	365	0	1407	478	2131	1040	0	3649	565	1264	368	1	2198	10476
Apprch %	22	66	12	0		14.2	59.8	25.9	0		13.1	58.4	28.5	0		25.7	57.5	16.7	0		
Total %	6.8	20.3	3.7	0	30.8	1.9	8	3.5	0	13.4	4.6	20.3	9.9	0	34.8	5.4	12.1	3.5	0	21	

	Grand Avenue Southbound				Temple Avenue Westbound				Grand Avenue Northbound				Amar Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	83	**290**	37	410	25	**165**	40	**230**	**65**	289	158	512	61	**202**	**47**	310	1462
07:30 AM	**116**	267	47	**430**	22	84	**56**	162	58	339	**188**	585	**85**	192	38	**315**	**1492**
07:45 AM	111	251	42	404	29	92	41	162	52	**398**	165	**615**	72	189	24	285	1466
08:00 AM	102	262	**61**	425	**34**	105	48	187	61	265	117	443	66	174	44	284	1339
Total Volume	412	1070	187	1669	110	446	185	741	236	1291	628	2155	284	757	153	1194	5759
% App. Total	24.7	64.1	11.2		14.8	60.2	25		11	59.9	29.1		23.8	63.4	12.8		
PHF	.888	.922	.766	.970	.809	.676	.826	.805	.908	.811	.835	.876	.835	.937	.814	.948	.965

Counts Unlimited
PO Box 1178
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(951) 268-6268

City of Walnut
N/S: Grand Avenue
E/W: Temple Avenue
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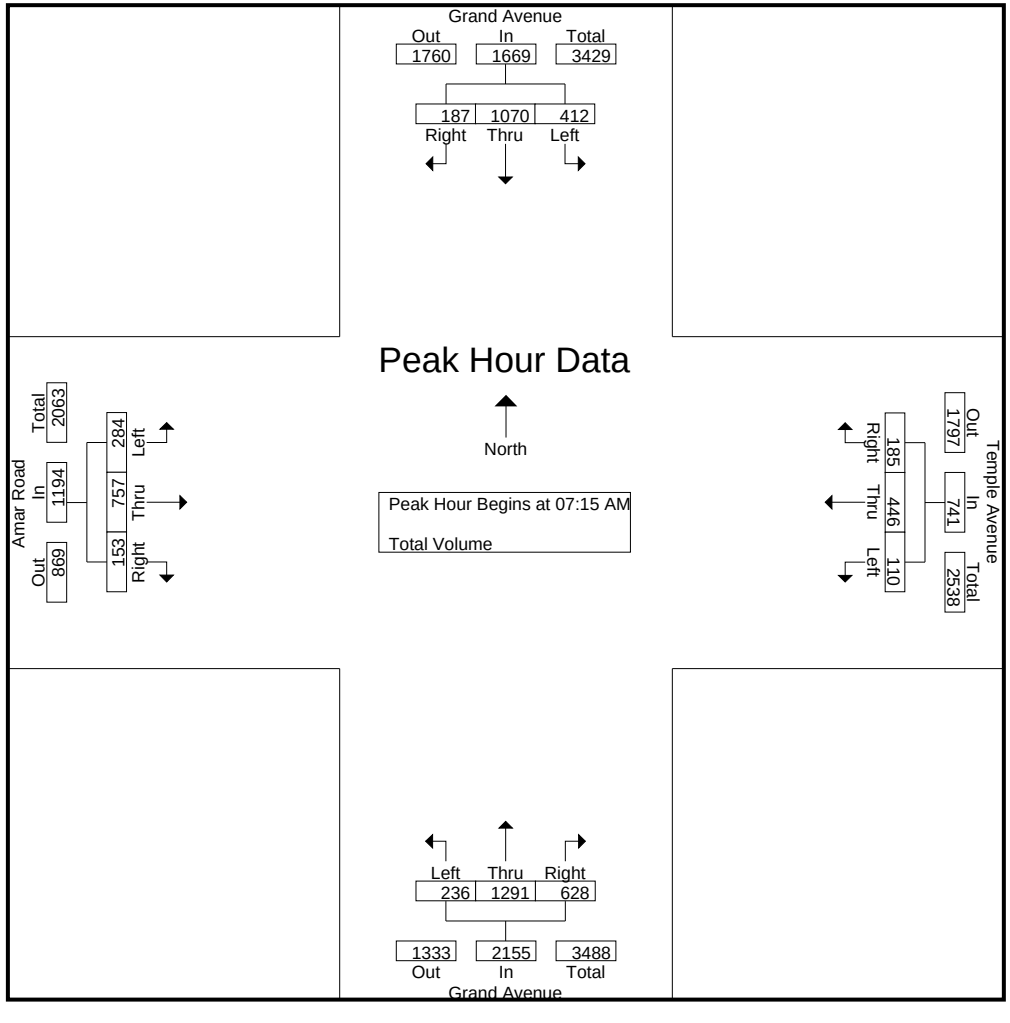
File Name : WNTGRTEAM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 2



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City of Walnut
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Start Date : 10/1/2015

	Grand Avenue Southbound				Temple Avenue Westbound				Grand Avenue Northbound				Amar Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	07:00 AM				07:00 AM				07:15 AM				07:15 AM				
+0 mins.	100	**292**	42	**434**	15	152	**62**	229	**65**	289	158	512	61	**202**	**47**	310	
+15 mins.	83	290	37	410	25	**165**	40	**230**	58	339	**188**	585	**85**	192	38	**315**	
+30 mins.	**116**	267	**47**	430	22	84	56	162	52	**398**	165	**615**	72	189	24	285	
+45 mins.	111	251	42	404	**29**	92	41	162	61	265	117	443	66	174	44	284	
Total Volume	410	1100	168	1678	91	493	199	783	236	1291	628	2155	284	757	153	1194	
% App. Total	24.4	65.6	10		11.6	63	25.4		11	59.9	29.1		23.8	63.4	12.8		
PHF	.884	.942	.894	.967	.784	.747	.802	.851	.908	.811	.835	.876	.835	.937	.814	.948	

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City of Walnut
N/S: Grand Avenue
E/W: Temple Avenue
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File Name : WNTGRTEPM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 1

Groups Printed- Total Volume

	Grand Avenue Southbound					Temple Avenue Westbound					Grand Avenue Northbound					Amar Road Eastbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
04:00 PM	61	188	50	0	299	64	112	60	0	236	62	183	74	0	319	93	134	75	0	302	1156
04:15 PM	80	206	46	0	332	86	118	71	0	275	53	228	100	0	381	71	161	88	0	320	1308
04:30 PM	84	256	73	0	413	97	147	62	0	306	47	233	56	0	336	72	149	67	2	290	1345
04:45 PM	73	204	71	0	348	89	160	57	1	307	59	266	79	0	404	71	171	68	0	310	1369
Total	298	854	240	0	1392	336	537	250	1	1124	221	910	309	0	1440	307	615	298	2	1222	5178
05:00 PM	57	230	72	0	359	98	138	75	0	311	73	238	60	0	371	94	159	74	1	328	1369
05:15 PM	50	192	50	1	293	85	157	70	0	312	91	330	79	0	500	86	165	62	0	313	1418
05:30 PM	52	206	73	0	331	99	178	95	0	372	76	293	68	0	437	91	153	81	0	325	1465
05:45 PM	50	204	67	1	322	77	186	86	1	350	87	289	81	0	457	75	174	75	0	324	1453
Total	209	832	262	2	1305	359	659	326	1	1345	327	1150	288	0	1765	346	651	292	1	1290	5705
Grand Total	507	1686	502	2	2697	695	1196	576	2	2469	548	2060	597	0	3205	653	1266	590	3	2512	10883
Apprch %	18.8	62.5	18.6	0.1		28.1	48.4	23.3	0.1		17.1	64.3	18.6	0		26	50.4	23.5	0.1		
Total %	4.7	15.5	4.6	0	24.8	6.4	11	5.3	0	22.7	5	18.9	5.5	0	29.4	6	11.6	5.4	0	23.1	

	Grand Avenue Southbound				Temple Avenue Westbound				Grand Avenue Northbound				Amar Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	**57**	**230**	72	**359**	98	138	75	311	73	238	60	371	**94**	159	74	**327**	1368
05:15 PM	50	192	50	292	85	157	70	312	**91**	**330**	79	**500**	86	165	62	313	1417
05:30 PM	52	206	**73**	331	**99**	178	**95**	**372**	76	293	68	437	91	153	**81**	325	**1465**
05:45 PM	50	204	67	321	77	**186**	86	349	87	289	**81**	457	75	**174**	75	324	1451
Total Volume	209	832	262	1303	359	659	326	1344	327	1150	288	1765	346	651	292	1289	5701
% App. Total	16	63.9	20.1		26.7	49	24.3		18.5	65.2	16.3		26.8	50.5	22.7		
PHF	.917	.904	.897	.907	.907	.886	.858	.903	.898	.871	.889	.883	.920	.935	.901	.985	.973

Counts Unlimited
PO Box 1178
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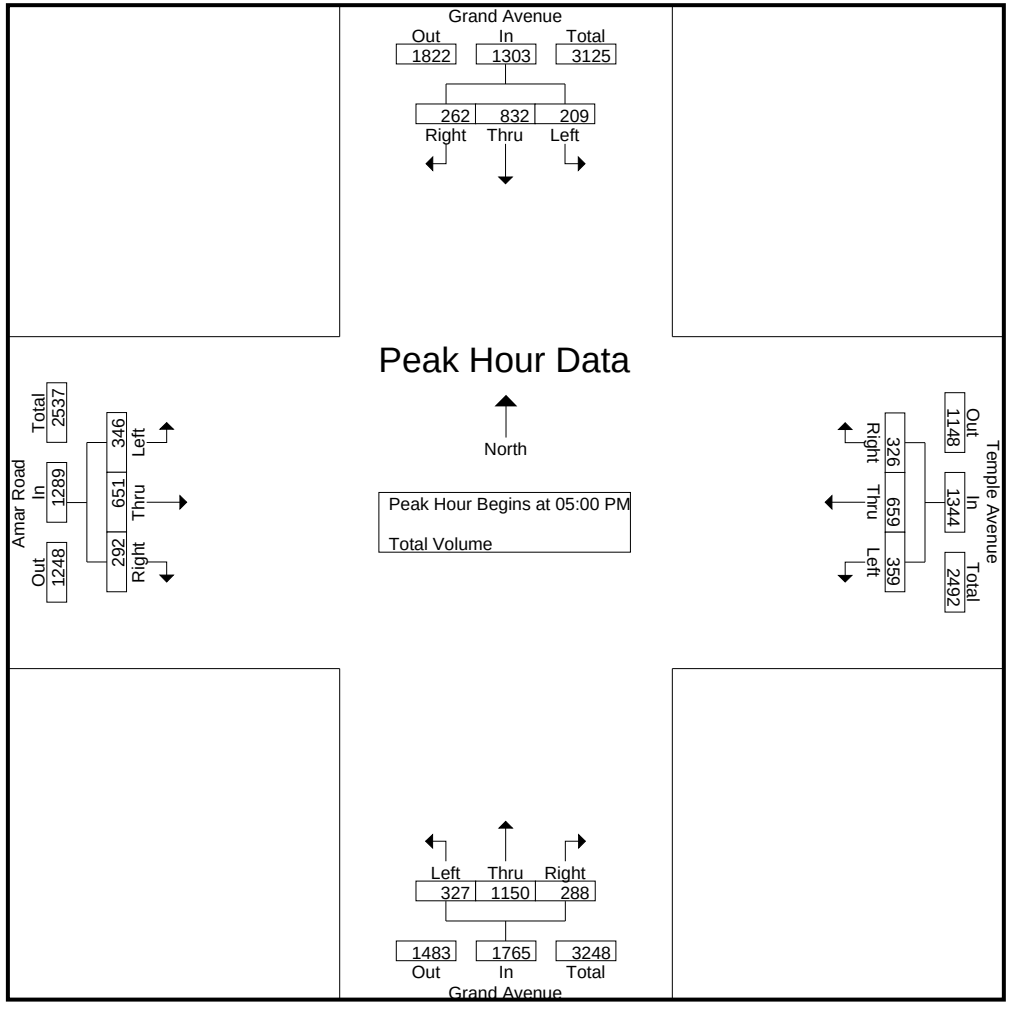
City of Walnut
N/S: Grand Avenue
E/W: Temple Avenue
Weather: Clear

File Name : WNTGRTEPM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 2



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Start Date : 10/1/2015

	Grand Avenue Southbound				Temple Avenue Westbound				Grand Avenue Northbound				Amar Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	04:15 PM				05:00 PM				05:00 PM				05:00 PM				
+0 mins.	80	206	46	332	98	138	75	311	73	238	60	371	**94**	159	74	**327**	
+15 mins.	**84**	**256**	**73**	**413**	85	157	70	312	**91**	**330**	79	**500**	86	165	62	313	
+30 mins.	73	204	71	348	**99**	178	**95**	**372**	76	293	68	437	91	153	**81**	325	
+45 mins.	57	230	72	359	77	**186**	86	349	87	289	**81**	457	75	**174**	75	324	
Total Volume	294	896	262	1452	359	659	326	1344	327	1150	288	1765	346	651	292	1289	
% App. Total	20.2	61.7	18		26.7	49	24.3		18.5	65.2	16.3		26.8	50.5	22.7		
PHF	.875	.875	.897	.879	.907	.886	.858	.903	.898	.871	.889	.883	.920	.935	.901	.985	

Counts Unlimited
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(951) 268-6268

City of Walnut
N/S: Bonita Avenue
E/W: Temple Avenue
Weather: Clear

File Name : WNTBOTEAM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 1

Groups Printed- Total Volume

	Bonita Avenue Southbound					Temple Avenue Westbound					Service Road Northbound					Temple Avenue Eastbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
07:00 AM	4	3	4	0	11	25	386	76	0	487	7	2	1	0	10	27	135	16	0	178	686
07:15 AM	9	3	13	0	25	24	291	82	0	397	3	5	17	0	25	60	207	30	0	297	744
07:30 AM	23	5	13	0	41	42	224	83	0	349	7	2	2	0	11	84	187	30	0	301	702
07:45 AM	33	8	28	0	69	22	208	124	0	354	4	3	0	0	7	104	158	31	0	293	723
Total	69	19	58	0	146	113	1109	365	0	1587	21	12	20	0	53	275	687	107	0	1069	2855
08:00 AM	15	2	20	0	37	31	229	135	0	395	7	3	2	0	12	133	173	39	0	345	789
08:15 AM	20	9	24	0	53	27	202	111	0	340	4	2	1	0	7	103	151	28	0	282	682
08:30 AM	13	7	21	0	41	15	160	58	0	233	4	5	6	0	15	68	146	16	0	230	519
08:45 AM	17	7	8	0	32	28	116	53	0	197	6	1	3	0	10	48	116	19	0	183	422
Total	65	25	73	0	163	101	707	357	0	1165	21	11	12	0	44	352	586	102	0	1040	2412
Grand Total	134	44	131	0	309	214	1816	722	0	2752	42	23	32	0	97	627	1273	209	0	2109	5267
Apprch %	43.4	14.2	42.4	0		7.8	66	26.2	0		43.3	23.7	33	0		29.7	60.4	9.9	0		
Total %	2.5	0.8	2.5	0	5.9	4.1	34.5	13.7	0	52.2	0.8	0.4	0.6	0	1.8	11.9	24.2	4	0	40	

	Bonita Avenue Southbound				Temple Avenue Westbound				Service Road Northbound				Temple Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	9	3	13	25	24	**291**	82	**397**	3	**5**	**17**	**25**	60	**207**	30	297	744
07:30 AM	23	5	13	41	**42**	224	83	349	**7**	2	2	11	84	187	30	301	702
07:45 AM	**33**	**8**	**28**	**69**	22	208	124	354	4	3	0	7	104	158	31	293	723
08:00 AM	15	2	20	37	31	229	**135**	395	7	3	2	12	**133**	173	**39**	**345**	**789**
Total Volume	80	18	74	172	119	952	424	1495	21	13	21	55	381	725	130	1236	2958
% App. Total	46.5	10.5	43		8	63.7	28.4		38.2	23.6	38.2		30.8	58.7	10.5		
PHF	.606	.563	.661	.623	.708	.818	.785	.941	.750	.650	.309	.550	.716	.876	.833	.896	.937

Counts Unlimited
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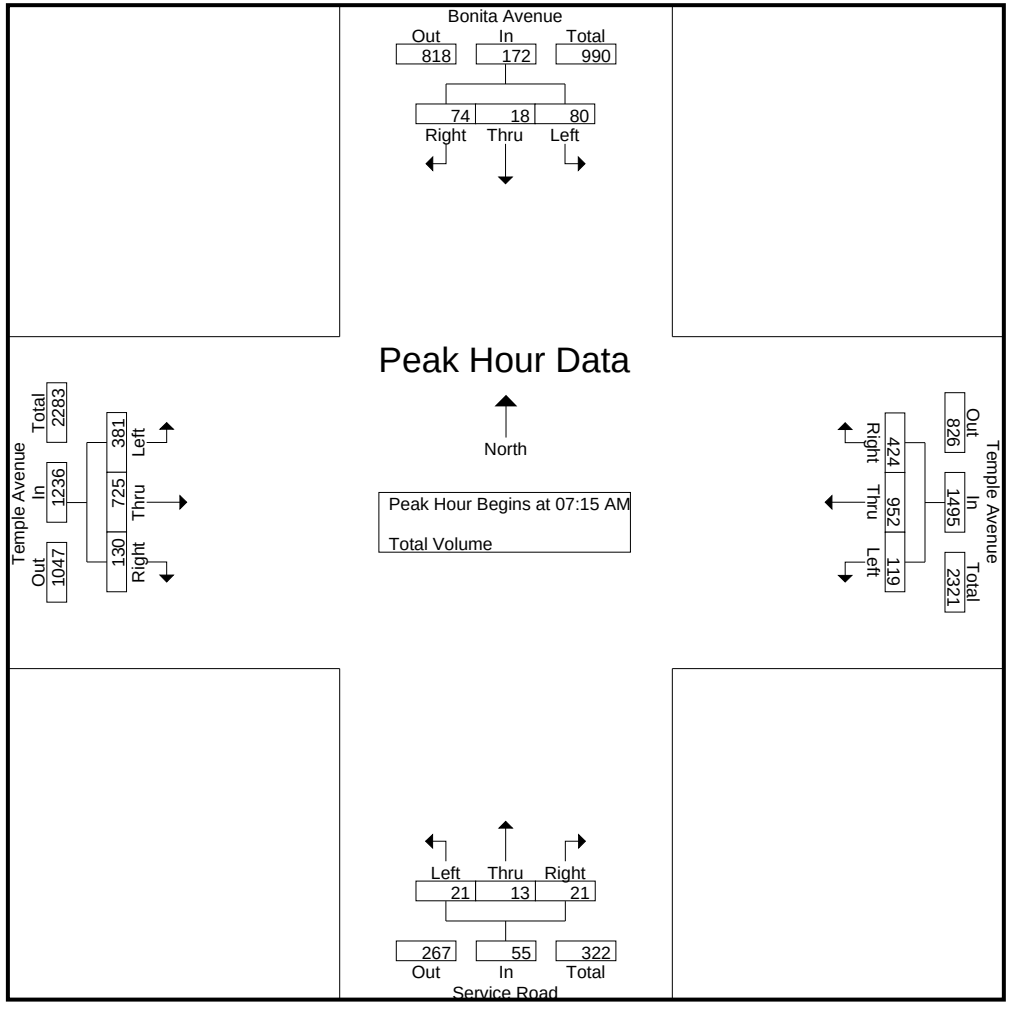
City of Walnut
N/S: Bonita Avenue
E/W: Temple Avenue
Weather: Clear

File Name : WNTBOTEAM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 2



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City of Walnut
N/S: Bonita Avenue
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Weather: Clear

File Name : WNTBOTEAM
Site Code : 04215551
Start Date : 10/1/2015

	Bonita Avenue Southbound				Temple Avenue Westbound				Service Road Northbound				Temple Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	07:30 AM				07:00 AM				07:15 AM				07:15 AM				
+0 mins.	23	5	13	41	25	**386**	76	**487**	3	**5**	**17**	**25**	60	**207**	30	297	
+15 mins.	**33**	8	**28**	**69**	24	291	82	397	**7**	2	2	11	84	187	30	301	
+30 mins.	15	2	20	37	**42**	224	83	349	4	3	0	7	104	158	31	293	
+45 mins.	20	**9**	24	53	22	208	**124**	354	7	3	2	12	**133**	173	**39**	**345**	
Total Volume	91	24	85	200	113	1109	365	1587	21	13	21	55	381	725	130	1236	
% App. Total	45.5	12	42.5		7.1	69.9	23		38.2	23.6	38.2		30.8	58.7	10.5		
PHF	.689	.667	.759	.725	.673	.718	.736	.815	.750	.650	.309	.550	.716	.876	.833	.896	

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Weather: Clear

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Groups Printed- Total Volume

	Bonita Avenue Southbound					Temple Avenue Westbound					Service Road Northbound					Temple Avenue Eastbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
04:00 PM	54	4	23	0	81	5	163	29	0	197	25	6	19	0	50	50	184	13	0	247	575
04:15 PM	82	7	56	0	145	8	147	53	0	208	18	5	29	0	52	48	210	14	0	272	677
04:30 PM	105	4	55	0	164	11	176	36	0	223	22	9	27	0	58	32	266	8	0	306	751
04:45 PM	51	2	24	0	77	3	148	36	0	187	27	6	15	0	48	44	264	11	0	319	631
Total	292	17	158	0	467	27	634	154	0	815	92	26	90	0	208	174	924	46	0	1144	2634
05:00 PM	49	4	24	0	77	5	228	40	0	273	35	6	21	0	62	34	213	16	0	263	675
05:15 PM	31	2	21	0	54	6	284	45	0	335	24	3	16	0	43	40	202	10	0	252	684
05:30 PM	38	2	18	0	58	5	285	55	0	345	31	9	26	0	66	40	176	8	0	224	693
05:45 PM	33	1	33	0	67	15	300	60	0	375	13	3	12	0	28	39	185	20	0	244	714
Total	151	9	96	0	256	31	1097	200	0	1328	103	21	75	0	199	153	776	54	0	983	2766
Grand Total	443	26	254	0	723	58	1731	354	0	2143	195	47	165	0	407	327	1700	100	0	2127	5400
Apprch %	61.3	3.6	35.1	0		2.7	80.8	16.5	0		47.9	11.5	40.5	0		15.4	79.9	4.7	0		
Total %	8.2	0.5	4.7	0	13.4	1.1	32.1	6.6	0	39.7	3.6	0.9	3.1	0	7.5	6.1	31.5	1.9	0	39.4	

	Bonita Avenue Southbound				Temple Avenue Westbound				Service Road Northbound				Temple Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	**49**	**4**	24	**77**	5	228	40	273	**35**	6	21	62	34	**213**	16	**263**	675
05:15 PM	31	2	21	54	6	284	45	335	24	3	16	43	**40**	202	10	252	684
05:30 PM	38	2	18	58	5	285	55	345	31	**9**	**26**	**66**	40	176	8	224	693
05:45 PM	33	1	**33**	67	**15**	**300**	**60**	**375**	13	3	12	28	39	185	**20**	244	**714**
Total Volume	151	9	96	256	31	1097	200	1328	103	21	75	199	153	776	54	983	2766
% App. Total	59	3.5	37.5		2.3	82.6	15.1		51.8	10.6	37.7		15.6	78.9	5.5		
PHF	.770	.563	.727	.831	.517	.914	.833	.885	.736	.583	.721	.754	.956	.911	.675	.934	.968

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City of Walnut
N/S: Bonita Avenue
E/W: Temple Avenue
Weather: Clear

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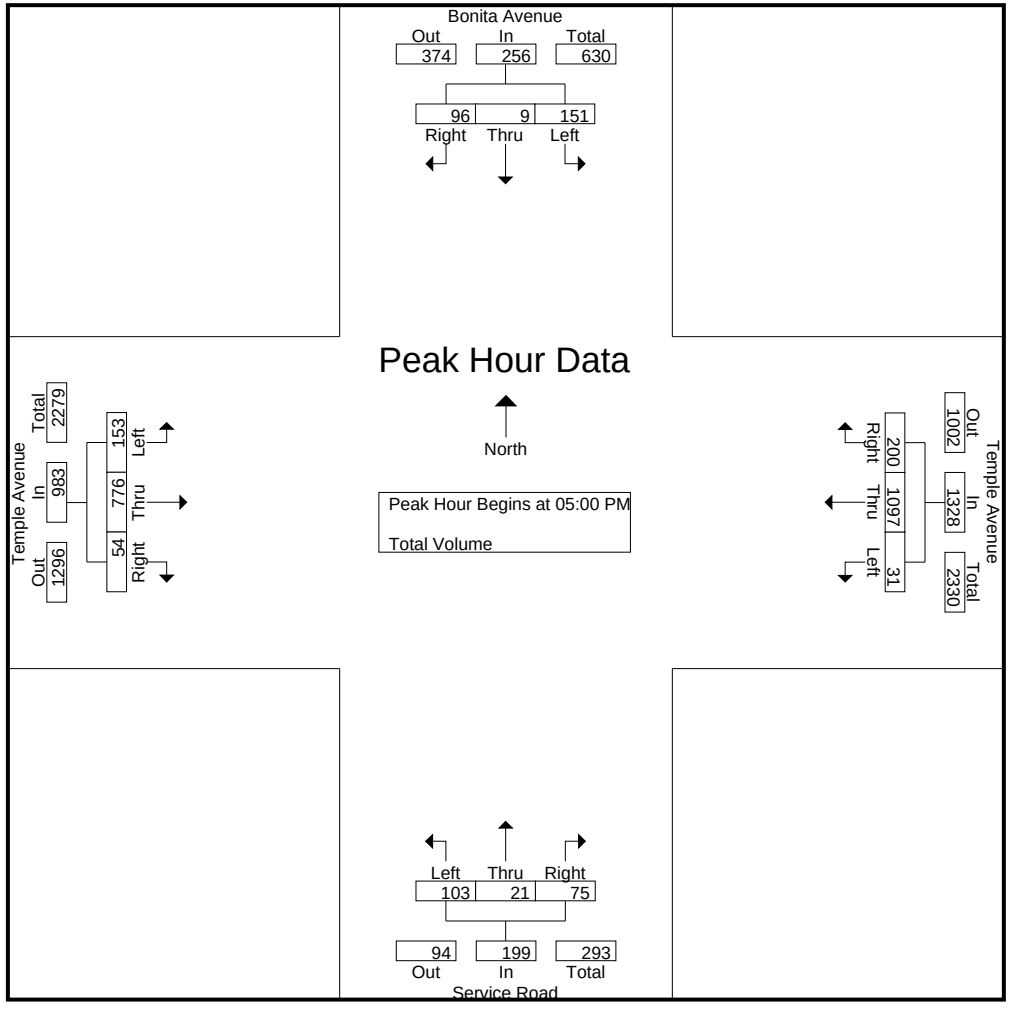
Site Code : 04215551
Start Date : 10/1/2015
Page No : 2



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City of Walnut
N/S: Bonita Avenue
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File Name : WNTBOTEPM
Site Code : 04215551
Start Date : 10/1/2015

	Bonita Avenue Southbound				Temple Avenue Westbound				Service Road Northbound				Temple Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	04:00 PM				05:00 PM				04:15 PM				04:15 PM				
+0 mins.	54	4	23	81	5	228	40	273	18	5	**29**	52	**48**	210	14	272	
+15 mins.	82	**7**	**56**	145	6	284	45	335	22	**9**	27	58	32	**266**	8	306	
+30 mins.	**105**	4	55	**164**	5	285	55	345	27	6	15	48	44	264	11	**319**	
+45 mins.	51	2	24	77	**15**	**300**	**60**	**375**	**35**	6	21	**62**	34	213	**16**	263	
Total Volume	292	17	158	467	31	1097	200	1328	102	26	92	220	158	953	49	1160	
% App. Total	62.5	3.6	33.8		2.3	82.6	15.1		46.4	11.8	41.8		13.6	82.2	4.2		
PHF	.695	.607	.705	.712	.517	.914	.833	.885	.729	.722	.793	.887	.823	.896	.766	.909	

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City of Walnut
N/S: Valley Boulevard
E/W: Temple Avenue
Weather: Clear

File Name : WNTVATEAM
Site Code : 04215551
Start Date : 10/1/2015
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Groups Printed- Total Volume

	Valley Boulevard Southbound					Temple Avenue Westbound					Valley Boulevard Northbound					Temple Avenue Eastbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
07:00 AM	15	148	98	1	262	10	394	22	0	426	64	86	10	0	160	13	36	37	1	87	935
07:15 AM	19	167	62	2	250	7	319	18	0	344	58	142	11	0	211	29	57	49	0	135	940
07:30 AM	22	125	80	2	229	8	241	21	0	270	37	186	20	0	243	28	89	41	0	158	900
07:45 AM	32	120	79	0	231	9	300	28	1	338	47	117	9	0	173	27	85	28	0	140	882
Total	88	560	319	5	972	34	1254	89	1	1378	206	531	50	0	787	97	267	155	1	520	3657
08:00 AM	26	174	67	0	267	13	319	31	0	363	30	127	5	0	162	27	96	39	0	162	954
08:15 AM	10	158	64	0	232	29	272	38	0	339	56	75	11	0	142	32	73	29	0	134	847
08:30 AM	8	120	59	0	187	15	183	28	2	228	68	92	8	0	168	20	70	20	1	111	694
08:45 AM	17	87	64	0	168	14	342	36	1	393	53	87	6	0	146	23	83	17	1	124	831
Total	61	539	254	0	854	71	1116	133	3	1323	207	381	30	0	618	102	322	105	2	531	3326
Grand Total	149	1099	573	5	1826	105	2370	222	4	2701	413	912	80	0	1405	199	589	260	3	1051	6983
Apprch %	8.2	60.2	31.4	0.3		3.9	87.7	8.2	0.1		29.4	64.9	5.7	0		18.9	56	24.7	0.3		
Total %	2.1	15.7	8.2	0.1	26.1	1.5	33.9	3.2	0.1	38.7	5.9	13.1	1.1	0	20.1	2.8	8.4	3.7	0	15.1	

	Valley Boulevard Southbound				Temple Avenue Westbound				Valley Boulevard Northbound				Temple Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	19	167	62	248	7	**319**	18	344	**58**	142	11	211	**29**	57	**49**	135	938
07:30 AM	22	125	**80**	227	8	241	21	270	37	**186**	**20**	**243**	28	89	41	158	898
07:45 AM	**32**	120	79	231	9	300	28	337	47	117	9	173	27	85	28	140	881
08:00 AM	26	**174**	67	**267**	**13**	319	**31**	**363**	30	127	5	162	27	**96**	39	**162**	**954**
Total Volume	99	586	288	973	37	1179	98	1314	172	572	45	789	111	327	157	595	3671
% App. Total	10.2	60.2	29.6		2.8	89.7	7.5		21.8	72.5	5.7		18.7	55	26.4		
PHF	.773	.842	.900	.911	.712	.924	.790	.905	.741	.769	.563	.812	.957	.852	.801	.918	.962

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Site Code : 04215551
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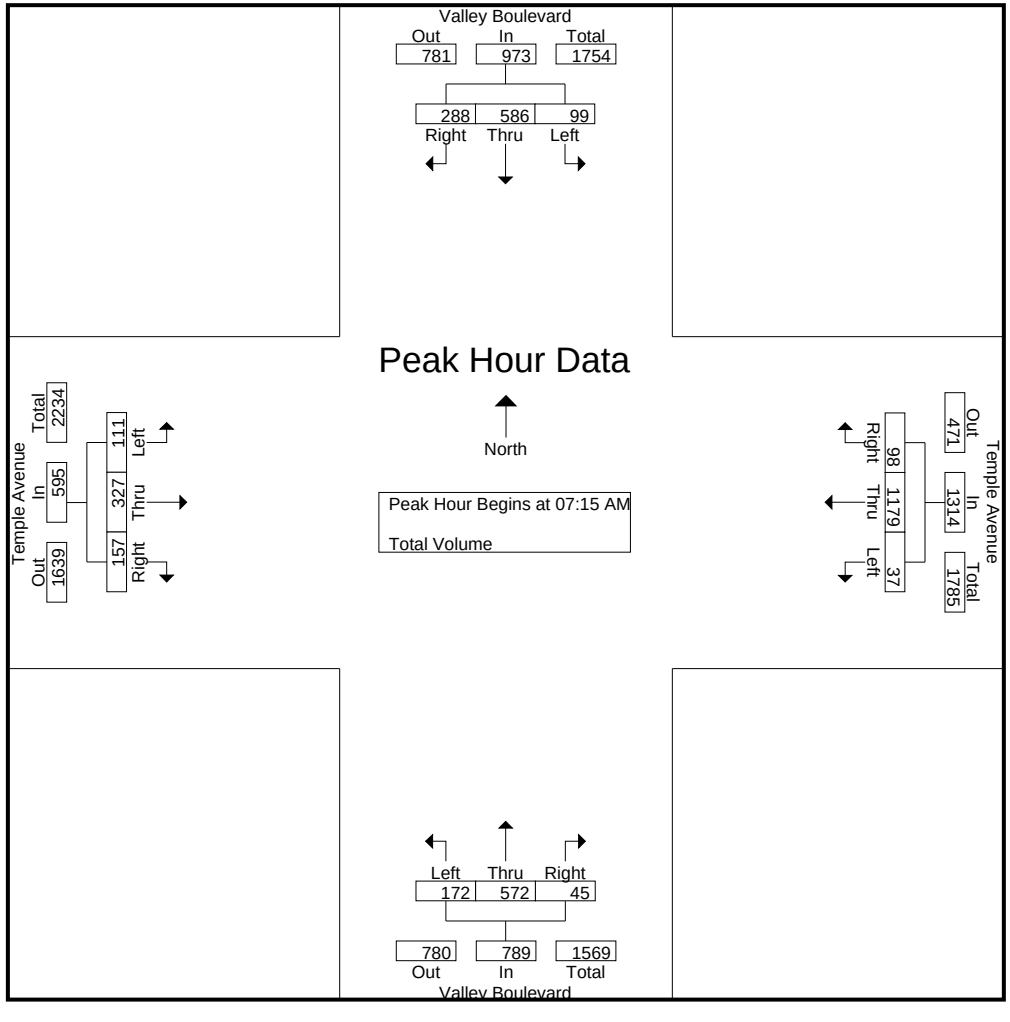

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City of Walnut
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Start Date : 10/1/2015

	Valley Boulevard Southbound				Temple Avenue Westbound				Valley Boulevard Northbound				Temple Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	07:15 AM				07:00 AM				07:15 AM				07:15 AM				
+0 mins.	19	167	62	248	**10**	**394**	22	**426**	**58**	142	11	211	**29**	57	**49**	135	
+15 mins.	22	125	**80**	227	7	319	18	344	37	**186**	**20**	**243**	28	89	41	158	
+30 mins.	**32**	120	79	231	8	241	21	270	47	117	9	173	27	85	28	140	
+45 mins.	26	**174**	67	**267**	9	300	**28**	337	30	127	5	162	27	**96**	39	**162**	
Total Volume	99	586	288	973	34	1254	89	1377	172	572	45	789	111	327	157	595	
% App. Total	10.2	60.2	29.6		2.5	91.1	6.5		21.8	72.5	5.7		18.7	55	26.4		
PHF	.773	.842	.900	.911	.850	.796	.795	.808	.741	.769	.563	.812	.957	.852	.801	.918	

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City of Walnut
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Groups Printed- Total Volume

	Valley Boulevard Southbound					Temple Avenue Westbound					Valley Boulevard Northbound					Temple Avenue Eastbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
04:00 PM	49	90	29	0	168	18	163	17	0	198	35	144	8	0	187	51	194	42	0	287	840
04:15 PM	51	71	46	0	168	20	166	31	2	219	33	162	18	0	213	45	237	41	0	323	923
04:30 PM	54	96	31	4	185	19	146	27	0	192	53	203	11	0	267	51	286	39	5	381	1025
04:45 PM	54	97	28	0	179	21	182	33	0	236	40	155	15	0	210	66	328	59	1	454	1079
Total	208	354	134	4	700	78	657	108	2	845	161	664	52	0	877	213	1045	181	6	1445	3867
05:00 PM	36	113	32	0	181	16	139	26	0	181	57	234	17	1	309	37	184	46	0	267	938
05:15 PM	36	193	49	1	279	15	186	30	0	231	65	206	13	0	284	25	206	46	3	280	1074
05:30 PM	34	147	49	0	230	32	177	23	2	234	72	180	18	0	270	35	245	63	0	343	1077
05:45 PM	48	74	37	1	160	10	209	32	0	251	40	157	15	0	212	26	305	80	3	414	1037
Total	154	527	167	2	850	73	711	111	2	897	234	777	63	1	1075	123	940	235	6	1304	4126
Grand Total	362	881	301	6	1550	151	1368	219	4	1742	395	1441	115	1	1952	336	1985	416	12	2749	7993
Apprch %	23.4	56.8	19.4	0.4		8.7	78.5	12.6	0.2		20.2	73.8	5.9	0.1		12.2	72.2	15.1	0.4		
Total %	4.5	11	3.8	0.1	19.4	1.9	17.1	2.7	0.1	21.8	4.9	18	1.4	0	24.4	4.2	24.8	5.2	0.2	34.4	

	Valley Boulevard Southbound				Temple Avenue Westbound				Valley Boulevard Northbound				Temple Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	**54**	97	28	179	21	182	**33**	**236**	40	155	15	210	**66**	**328**	59	**453**	**1078**
05:00 PM	36	113	32	181	16	139	26	181	57	**234**	17	**308**	37	184	46	267	937
05:15 PM	36	**193**	**49**	**278**	15	**186**	30	231	65	206	13	284	25	206	46	277	1070
05:30 PM	34	147	49	230	**32**	177	23	232	**72**	180	**18**	270	35	245	**63**	343	1075
Total Volume	160	550	158	868	84	684	112	880	234	775	63	1072	163	963	214	1340	4160
% App. Total	18.4	63.4	18.2		9.5	77.7	12.7		21.8	72.3	5.9		12.2	71.9	16		
PHF	.741	.712	.806	.781	.656	.919	.848	.932	.813	.828	.875	.870	.617	.734	.849	.740	.965

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City of Walnut
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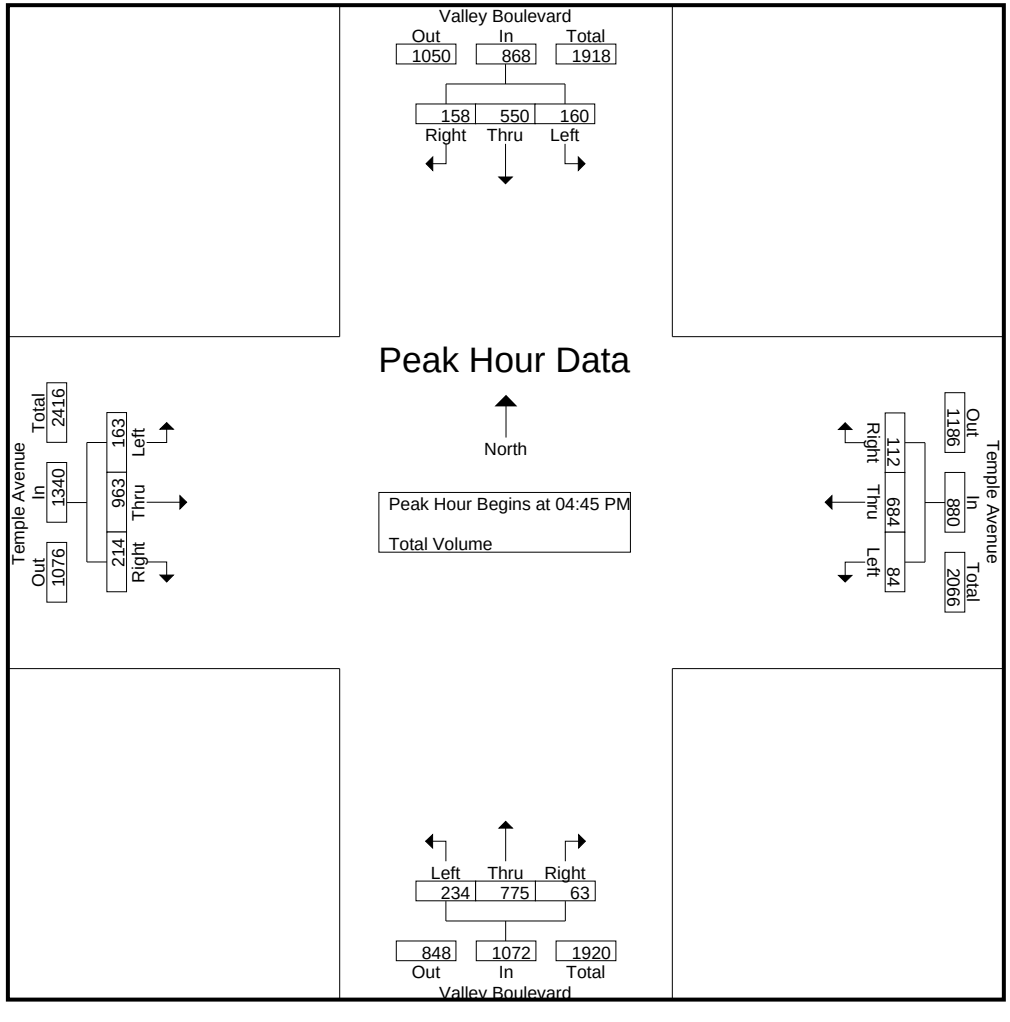

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	Valley Boulevard Southbound				Temple Avenue Westbound				Valley Boulevard Northbound				Temple Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	04:45 PM				05:00 PM				05:00 PM				04:00 PM				
+0 mins.	**54**	97	28	179	16	139	26	181	57	**234**	17	**308**	51	194	42	287	
+15 mins.	36	113	32	181	15	186	30	231	65	206	13	284	45	237	41	323	
+30 mins.	36	**193**	**49**	**278**	**32**	177	23	232	**72**	180	**18**	270	51	286	39	376	
+45 mins.	34	147	49	230	10	**209**	**32**	**251**	40	157	15	212	**66**	**328**	**59**	**453**	
Total Volume	160	550	158	868	73	711	111	895	234	777	63	1074	213	1045	181	1439	
% App. Total	18.4	63.4	18.2		8.2	79.4	12.4		21.8	72.3	5.9		14.8	72.6	12.6		
PHF	.741	.712	.806	.781	.570	.850	.867	.891	.813	.830	.875	.872	.807	.796	.767	.794	

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City of Walnut
N/S: Grand Avenue
E/W: Valley Boulevard
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File Name : WNTGRVAAM
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Start Date : 10/1/2015
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Groups Printed- Total Volume

	Grand Avenue Southbound					Valley Boulevard Westbound					Grand Avenue Northbound					Valley Boulevard Eastbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
07:00 AM	31	215	94	0	340	39	320	44	1	404	76	340	83	0	499	74	112	33	0	219	1462
07:15 AM	50	225	107	1	383	53	311	40	4	408	91	348	117	0	556	88	120	46	0	254	1601
07:30 AM	66	238	108	0	412	37	266	28	3	334	67	364	85	0	516	112	148	54	2	316	1578
07:45 AM	60	260	87	0	407	38	219	27	6	290	57	312	79	0	448	127	120	36	0	283	1428
Total	207	938	396	1	1542	167	1116	139	14	1436	291	1364	364	0	2019	401	500	169	2	1072	6069
08:00 AM	51	250	90	0	391	39	257	31	1	328	72	322	68	0	462	107	128	29	0	264	1445
08:15 AM	29	258	95	0	382	60	220	25	5	310	41	302	80	0	423	78	118	41	0	237	1352
08:30 AM	53	250	84	3	390	37	253	37	4	331	52	225	67	0	344	61	111	40	1	213	1278
08:45 AM	42	242	86	1	371	41	190	23	1	255	56	216	75	1	348	72	107	51	2	232	1206
Total	175	1000	355	4	1534	177	920	116	11	1224	221	1065	290	1	1577	318	464	161	3	946	5281
Grand Total	382	1938	751	5	3076	344	2036	255	25	2660	512	2429	654	1	3596	719	964	330	5	2018	11350
Apprch %	12.4	63	24.4	0.2		12.9	76.5	9.6	0.9		14.2	67.5	18.2	0		35.6	47.8	16.4	0.2		
Total %	3.4	17.1	6.6	0	27.1	3	17.9	2.2	0.2	23.4	4.5	21.4	5.8	0	31.7	6.3	8.5	2.9	0	17.8	

	Grand Avenue Southbound				Valley Boulevard Westbound				Grand Avenue Northbound				Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	31	215	94	340	39	**320**	**44**	403	76	340	83	499	74	112	33	219	1461
07:15 AM	50	225	107	382	**53**	311	40	**404**	**91**	348	**117**	**556**	88	120	46	254	**1596**
07:30 AM	**66**	238	**108**	**412**	37	266	28	331	67	**364**	85	516	112	**148**	**54**	**314**	1573
07:45 AM	60	**260**	87	407	38	219	27	284	57	312	79	448	**127**	120	36	283	1422
Total Volume	207	938	396	1541	167	1116	139	1422	291	1364	364	2019	401	500	169	1070	6052
% App. Total	13.4	60.9	25.7		11.7	78.5	9.8		14.4	67.6	18		37.5	46.7	15.8		
PHF	.784	.902	.917	.935	.788	.872	.790	.880	.799	.937	.778	.908	.789	.845	.782	.852	.948

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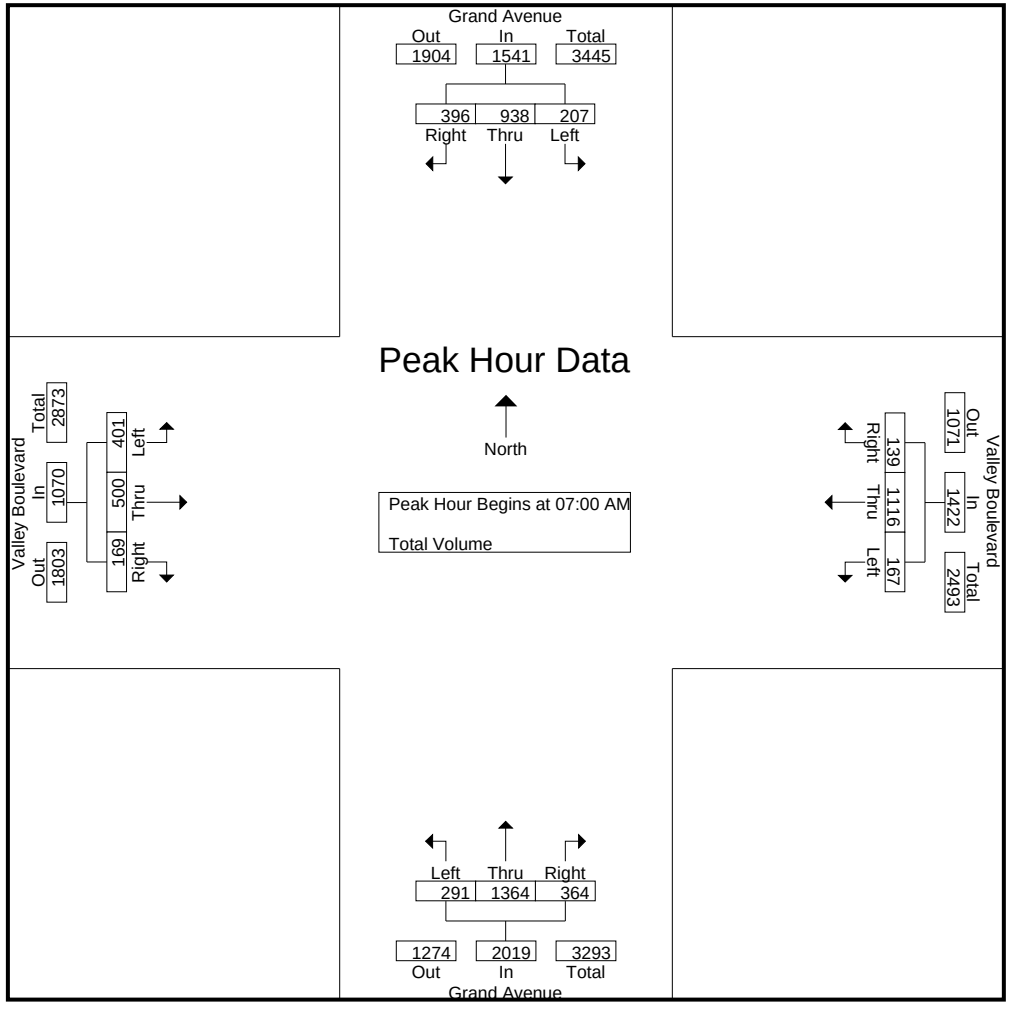

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	Grand Avenue Southbound				Valley Boulevard Westbound				Grand Avenue Northbound				Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	07:15 AM				07:00 AM				07:00 AM				07:15 AM				
+0 mins.	50	225	107	382	39	**320**	**44**	403	76	340	83	499	88	120	46	254	
+15 mins.	**66**	238	**108**	**412**	**53**	311	40	**404**	**91**	348	**117**	**556**	112	**148**	**54**	**314**	
+30 mins.	60	**260**	87	407	37	266	28	331	67	**364**	85	516	**127**	120	36	283	
+45 mins.	51	250	90	391	38	219	27	284	57	312	79	448	107	128	29	264	
Total Volume	227	973	392	1592	167	1116	139	1422	291	1364	364	2019	434	516	165	1115	
% App. Total	14.3	61.1	24.6		11.7	78.5	9.8		14.4	67.6	18		38.9	46.3	14.8		
PHF	.860	.936	.907	.966	.788	.872	.790	.880	.799	.937	.778	.908	.854	.872	.764	.888	

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City of Walnut
N/S: Grand Avenue
E/W: Valley Boulevard
Weather: Clear

File Name : WNTGRVAPM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 1

Groups Printed- Total Volume

	Grand Avenue Southbound					Valley Boulevard Westbound					Grand Avenue Northbound					Valley Boulevard Eastbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
04:00 PM	61	221	44	1	327	63	160	41	1	265	62	188	32	6	288	105	310	64	5	484	1364
04:15 PM	74	332	47	0	453	80	117	34	3	234	51	169	28	7	255	129	256	49	3	437	1379
04:30 PM	74	274	51	0	399	71	151	30	3	255	38	197	41	2	278	144	355	77	2	578	1510
04:45 PM	109	296	52	4	461	86	134	22	2	244	47	198	30	6	281	134	313	92	0	539	1525
Total	318	1123	194	5	1640	300	562	127	9	998	198	752	131	21	1102	512	1234	282	10	2038	5778
05:00 PM	81	250	52	1	384	101	176	50	2	329	61	253	37	6	357	158	396	90	1	645	1715
05:15 PM	109	280	48	2	439	110	180	64	4	358	63	268	48	8	387	167	357	63	4	591	1775
05:30 PM	84	263	45	2	394	101	212	72	5	390	54	273	54	10	391	180	397	76	0	653	1828
05:45 PM	103	249	64	3	419	102	134	58	3	297	52	246	40	7	345	154	381	58	2	595	1656
Total	377	1042	209	8	1636	414	702	244	14	1374	230	1040	179	31	1480	659	1531	287	7	2484	6974
Grand Total	695	2165	403	13	3276	714	1264	371	23	2372	428	1792	310	52	2582	1171	2765	569	17	4522	12752
Apprch %	21.2	66.1	12.3	0.4		30.1	53.3	15.6	1		16.6	69.4	12	2		25.9	61.1	12.6	0.4		
Total %	5.5	17	3.2	0.1	25.7	5.6	9.9	2.9	0.2	18.6	3.4	14.1	2.4	0.4	20.2	9.2	21.7	4.5	0.1	35.5	

	Grand Avenue Southbound					Valley Boulevard Westbound					Grand Avenue Northbound					Valley Boulevard Eastbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	81	250	52	1	384	101	176	50	2	329	61	253	37	6	357	158	396	**90**			
05:15 PM	**109**	**280**	**48**	**2**	**439**	**110**	**180**	**64**	**4**	**358**	**63**	268	48	8	387	167	357	63	**4**	591	1775
05:30 PM	84	263	45	2	394	101	**212**	**72**	**5**	**390**	54	**273**	**54**	**10**	**391**	**180**	**397**			**653**	**1828**
05:45 PM	103	249	**64**	**3**	419	102	134	58	3	297	52	246	40	7	345	154	381	58	2	595	1656
Total Volume	377	1042	209	8	1636	414	702	244	14	1374	230	1040	179	31	1480	659	1531	287	7	2484	6974
% App. Total	23	63.7	12.8	0.5		30.1	51.1	17.8	1		15.5	70.3	12.1	2.1		26.5	61.6	11.6	0.3		
PHF	.865	.930	.816	.667	.932	.941	.828	.847	.700	.881	.913	.952	.829	.775	.946	.915	.964	.797	.438	.951	.954

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City of Walnut
N/S: Grand Avenue
E/W: Valley Boulevard
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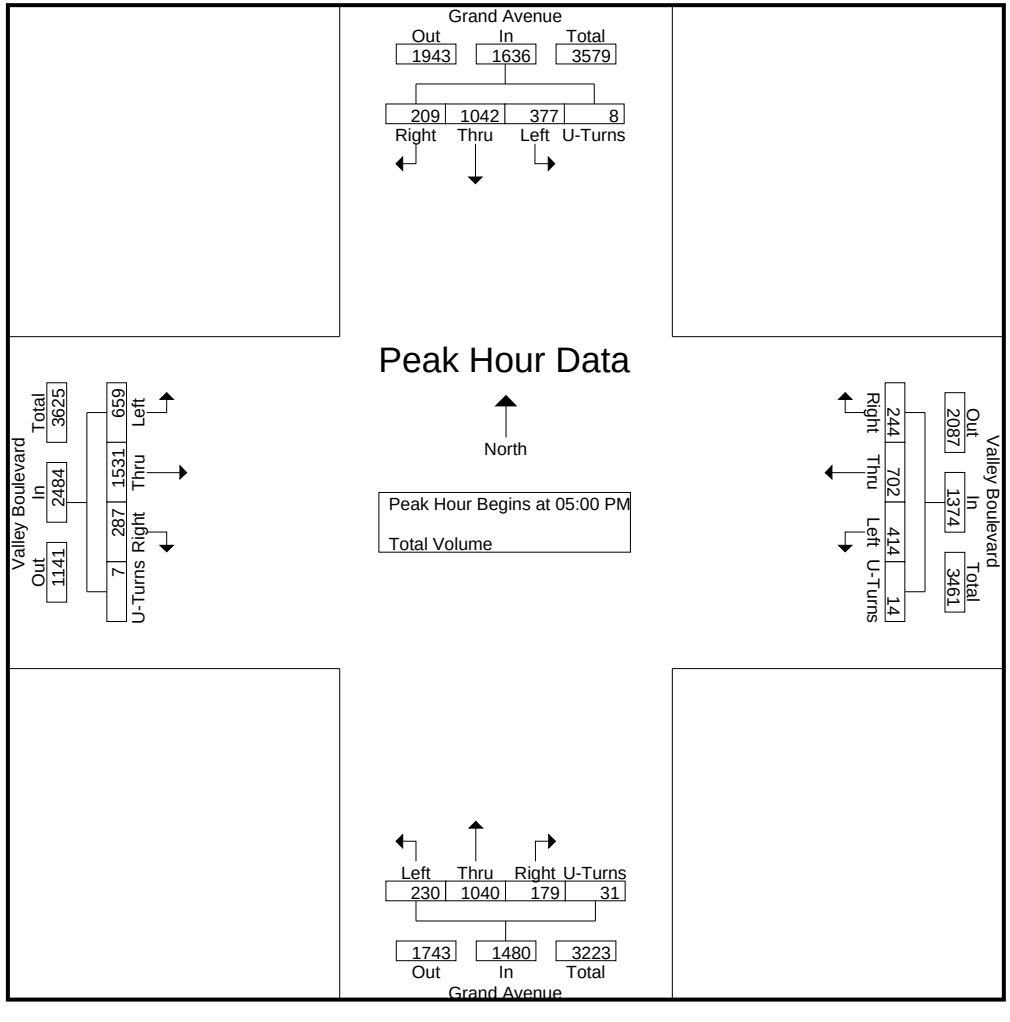
File Name : WNTGRVAPM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 2



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City of Walnut
N/S: Grand Avenue
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File Name : WNTGRVAPM
Site Code : 04215551
Start Date : 10/1/2015

	Grand Avenue Southbound					Valley Boulevard Westbound					Grand Avenue Northbound					Valley Boulevard Eastbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Each Approach Begins at:																					
	04:15 PM					05:00 PM					05:00 PM					05:00 PM					
+0 mins.	74	**332**																**90**			
+15 mins.	**74**	**274**	**51**	**0**	**399**	**110**	**180**	**64**	**4**	**358**	**63**	268	48	8	387	167	357	63	**4**	591	
+30 mins.	**109**	296	**52**	**4**	**461**	101	**212**	**72**	**5**	**390**	54	**273**	**54**	**10**	**391**	**180**	**397**			**653**	
+45 mins.	81	250	52	1	384	102	134	58	3	297	52	246	40	7	345	154	381	58	2	595	
Total Volume	338	1152	202	5	1697	414	702	244	14	1374	230	1040	179	31	1480	659	1531	287	7	2484	
% App. Total	19.9	67.9	11.9	0.3		30.1	51.1	17.8	1		15.5	70.3	12.1	2.1		26.5	61.6	11.6	0.3		
PHF	.775	.867	.971	.313	.920	.941	.828	.847	.700	.881	.913	.952	.829	.775	.946	.915	.964	.797	.438	.951	

Counts Unlimited, Inc

PO Box 1178
Corona, CA 92878
Phone: 951-268-6268
email: counts@countsunlimited.com

City of Walnut
Grand Avenue
S/ Temple Avenue
24 Hour Directional Volume Count

WNTGRSTE
Site Code: 042-15551

Start Time	08-Oct-15 Thu	Northbound Morning	Northbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Southbound Morning	Southbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		33	213			24	280				
12:15		32	206			26	256				
12:30		29	278			19	268				
12:45		22	324	116	1021	15	337	84	1141	200	2162
01:00		32	292			13	402				
01:15		14	263			16	367				
01:30		15	307			7	331				
01:45		15	244	76	1106	3	275	39	1375	115	2481
02:00		9	338			9	316				
02:15		13	290			7	329				
02:30		18	345			15	**337**				
02:45		6	346	46	1319	16	**409**	47	1391	93	2710
03:00		7	360			9	**386**				
03:15		7	306			14	**393**				
03:30		14	315			21	327				
03:45		5	317	33	1298	38	272	82	1378	115	2676
04:00		14	345			26	336				
04:15		16	339			42	337				
04:30		16	338			76	378				
04:45		32	350	78	1372	86	350	230	1401	308	2773
05:00		36	433			59	343				
05:15		52	338			114	334				
05:30		72	261			159	401				
05:45		77	**419**	237	1451	195	315	527	1393	764	2844
06:00		114	**427**			164	343				
06:15		133	**475**			173	368				
06:30		204	**407**			255	373				
06:45		297	344	748	1653	304	397	896	1481	1644	3134
07:00		395	255			317	297				
07:15		**520**	253			358	226				
07:30		**578**	232			327	210				
07:45		**527**	221	2020	961	320	198	1322	931	3342	1892
08:00		**439**	180			297	233				
08:15		352	190			327	233				
08:30		296	174			325	237				
08:45		277	162	1364	706	316	237	1265	940	2629	1646
09:00		320	154			203	229				
09:15		410	138			249	174				
09:30		333	153			372	208				
09:45		234	116	1297	561	291	259	1115	870	2412	1431
10:00		193	98			239	160				
10:15		215	89			170	105				
10:30		230	106			237	70				
10:45		264	88	902	381	199	59	845	394	1747	775
11:00		293	77			**282**	56				
11:15		323	59			**425**	41				
11:30		254	64			**382**	32				
11:45		249	55	1119	255	**310**	35	1399	164	2518	419
Total		8036	12084	8036	12084	7851	12859	7851	12859	15887	24943
Combined Total		20120		20120		20710		20710		40830	
AM Peak	-	07:15	-	-	-	11:00	-	-	-	-	-
Vol.	-	2064	-	-	-	1399	-	-	-	-	-
P.H.F.		0.893				0.823					
PM Peak	-	-	05:45	-	-	-	02:30	-	-	-	-
Vol.	-	-	1728	-	-	-	1525	-	-	-	-
P.H.F.			0.909				0.932				
Percentage		39.9%	60.1%			37.9%	62.1%				

Counts Unlimited, Inc

PO Box 1178
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Phone: 951-268-6268
email: counts@countsunlimited.com

City of Walnut
Grand Avenue
S/ Temple Avenue
24 Hour Directional Volume Count

WNTGRSTE
Site Code: 042-15551

Start Time	09-Oct-15 Fri	Northbound Morning	Northbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Southbound Morning	Southbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		44	237			22	299				
12:15		40	219			23	277				
12:30		43	223			21	259				
12:45		31	239	158	918	17	270	83	1105	241	2023
01:00		22	270			21	310				
01:15		32	224			20	311				
01:30		25	216			9	332				
01:45		17	220	96	930	16	270	66	1223	162	2153
02:00		19	307			8	298				
02:15		11	261			15	275				
02:30		16	261			20	298				
02:45		6	294	52	1123	14	282	57	1153	109	2276
03:00		12	335			12	309				
03:15		16	273			19	260				
03:30		6	299			28	272				
03:45		9	308	43	1215	33	270	92	1111	135	2326
04:00		14	260			25	289				
04:15		23	304			47	295				
04:30		12	329			61	328				
04:45		36	310	85	1203	87	281	220	1193	305	2396
05:00		37	375			58	274				
05:15		43	**402**			117	**326**				
05:30		51	**362**			153	**317**				
05:45		64	**389**	195	1528	173	**292**	501	1209	696	2737
06:00		88	**388**			161	**330**				
06:15		103	335			190	285				
06:30		140	308			267	256				
06:45		209	273	540	1304	285	255	903	1126	1443	2430
07:00		267	241			328	230				
07:15		**349**	250			367	207				
07:30		**394**	204			275	215				
07:45		**460**	201	1470	896	276	208	1246	860	2716	1756
08:00		**431**	160			**310**	150				
08:15		322	177			**346**	163				
08:30		300	178			**350**	166				
08:45		273	148	1326	663	**302**	158	1308	637	2634	1300
09:00		231	172			215	144				
09:15		236	148			218	150				
09:30		217	166			229	175				
09:45		215	143	899	629	220	120	882	589	1781	1218
10:00		195	142			225	121				
10:15		179	127			208	118				
10:30		212	114			238	80				
10:45		206	91	792	474	221	79	892	398	1684	872
11:00		207	93			282	82				
11:15		233	73			375	48				
11:30		235	92			381	66				
11:45		218	47	893	305	261	46	1299	242	2192	547
Total		6549	11188	6549	11188	7549	10846	7549	10846	14098	22034
Combined Total		17737		17737		18395		18395		36132	
AM Peak	-	07:15	-	-	-	08:00	-	-	-	-	-
Vol.	-	1634	-	-	-	1308	-	-	-	-	-
P.H.F.		0.888				0.934					
PM Peak	-	-	05:15	-	-	-	05:15	-	-	-	-
Vol.	-	-	1541	-	-	-	1265	-	-	-	-
P.H.F.			0.958				0.953				
Percentage		36.9%	63.1%			41.0%	59.0%				
ADT/AADT		ADT 38,481		AADT 38,481							

APPENDIX B – LOS CALCULATION SHEETS

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EXISTING CONDITIONS

WPS Truck Haul Congestion
Existing Conditions
AM Peak Hour

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #1 Grand/Temple

Cycle (sec):	100	Critical Vol./Cap.(X):	0.665
Loss Time (sec):	10 (Y+R=4.0 sec)	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	46	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Ovl			Include			Ovl			Ovl		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	2 0	3 0	1	2 0	2 1	0	2 0	2 0	1	2 0	2 0	1
Volume Module:												
Base Vol:	265	910	399	299	1027	218	285	549	221	109	349	166
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	265	910	399	299	1027	218	285	549	221	109	349	166
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	265	910	399	299	1027	218	285	549	221	109	349	166
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
PHF Volume:	273	938	411	308	1059	225	294	566	228	112	360	171
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	273	938	411	308	1059	225	294	566	228	112	360	171
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	273	938	411	308	1059	225	294	566	228	112	360	171
OvlAdjVol:			355						91			17
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	2.00	3.00	1.00	2.00	2.47	0.53	2.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	3200	4800	1600	3200	3960	840	3200	3200	1600	3200	3200	1600
Capacity Analysis Module:												
Vol/Sat:	0.09	0.20	0.26	0.10	0.27	0.27	0.09	0.18	0.14	0.04	0.11	0.11
OvlAdjV/S:			0.22						0.06			0.01
Crit Moves:	****			****			****			****		

WPS Truck Haul Congestion
Existing Conditions
AM Peak Hour

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #2 Bonita/Temple

Cycle (sec):	100	Critical Vol./Cap.(X):	0.570
Loss Time (sec):	10 (Y+R=4.0 sec)	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	38	Level Of Service:	A

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	T	R		L	T	R		L	T	R		L	T	R	
Control:	Protected				Protected				Protected				Protected			
Rights:	Include				Ovl				Include				Include			
Min. Green:	0	0	0		0	0	0		0	0	0		0	0	0	
Lanes:	1	0	1	0	1	2	0	1	0	1	2	0	1	1	0	
Volume Module:																
Base Vol:	21	11	12		65	25	73		352	586	102		101	707	357	
Growth Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	21	11	12		65	25	73		352	586	102		101	707	357	
Added Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
PasserByVol:	0	0	0		0	0	0		0	0	0		0	0	0	
Initial Fut:	21	11	12		65	25	73		352	586	102		101	707	357	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Volume:	21	11	12		65	25	73		352	586	102		101	707	357	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	21	11	12		65	25	73		352	586	102		101	707	357	
PCE Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
FinalVolume:	21	11	12		65	25	73		352	586	102		101	707	357	
OvlAdjVol:							0									
Saturation Flow Module:																
Sat/Lane:	1600	1600	1600		1600	1600	1600		1600	1600	1600		1600	1600	1600	
Adjustment:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Lanes:	1.00	1.00	1.00		2.00	1.00	1.00		2.00	1.70	0.30		1.00	1.33	0.67	
Final Sat.:	1600	1600	1600		3200	1600	1600		3200	2726	474		1600	2126	1074	
Capacity Analysis Module:																
Vol/Sat:	0.01	0.01	0.01		0.02	0.02	0.05		0.11	0.21	0.22		0.06	0.33	0.33	
OvlAdjV/S:							0.00									
Crit Moves:	****				****				****					****		

WPS Truck Haul Congestion
Existing Conditions
AM Peak Hour

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #3 Valley/Temple

Cycle (sec):	100	Critical Vol./Cap.(X):	0.723
Loss Time (sec):	10 (Y+R=4.0 sec)	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	53	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	2 0	1	1 0	2 0	1	1 0	2 1	0	1 0	2 1	0
Volume Module:												
Base Vol:	207	381	30	61	539	254	104	322	105	74	1116	133
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	207	381	30	61	539	254	104	322	105	74	1116	133
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	207	381	30	61	539	254	104	322	105	74	1116	133
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	207	381	30	61	539	254	104	322	105	74	1116	133
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	207	381	30	61	539	254	104	322	105	74	1116	133
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	207	381	30	61	539	254	104	322	105	74	1116	133
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.00	1.00	1.00	2.00	1.00	1.00	2.26	0.74	1.00	2.68	0.32
Final Sat.:	1600	3200	1600	1600	3200	1600	1600	3620	1180	1600	4289	511
Capacity Analysis Module:												
Vol/Sat:	0.13	0.12	0.02	0.04	0.17	0.16	0.07	0.09	0.09	0.05	0.26	0.26
Crit Moves:	****				****		****				****	

WPS Truck Haul Congestion
Existing Conditions
AM Peak Hour

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #4 Grand/Valley

Cycle (sec):	100	Critical Vol./Cap.(X):	0.670
Loss Time (sec):	10 (Y+R=4.0 sec)	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	46	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Ignore			Ignore			Ignore			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	2 0	3 0	1	2 0	3 0	1	2 0	3 0	1	2 0	3 0	1
Volume Module:												
Base Vol:	222	1065	290	179	1000	355	321	464	161	188	920	116
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	222	1065	290	179	1000	355	321	464	161	188	920	116
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	222	1065	290	179	1000	355	321	464	161	188	920	116
User Adj:	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Volume:	222	1065	0	179	1000	0	321	464	0	188	920	116
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	222	1065	0	179	1000	0	321	464	0	188	920	116
PCE Adj:	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
FinalVolume:	222	1065	0	179	1000	0	321	464	0	188	920	116
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	2.00	3.00	1.00	2.00	3.00	1.00	2.00	3.00	1.00	2.00	3.00	1.00
Final Sat.:	3200	4800	1600	3200	4800	1600	3200	4800	1600	3200	4800	1600
Capacity Analysis Module:												
Vol/Sat:	0.07	0.22	0.00	0.06	0.21	0.00	0.10	0.10	0.00	0.06	0.19	0.07
Crit Moves:	****			****			****			****		

WPS Truck Haul Congestion
Existing Conditions
PM Peak Hour

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #1 Grand/Temple

Cycle (sec):	100	Critical Vol./Cap.(X):	0.698
Loss Time (sec):	10 (Y+R=4.0 sec)	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	50	Level Of Service:	B

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	T	R		L	T	R		L	T	R		L	T	R	
Control:	Protected				Protected				Protected				Protected			
Rights:	Ovl				Include				Ovl				Ovl			
Min. Green:	0	0	0		0	0	0		0	0	0		0	0	0	
Lanes:	2 0	3 0	1		2 0	2 1	0		2 0	2 0	1		2 0	2 0	1	
Volume Module:																
Base Vol:	221	910	309		298	854	240		309	615	298		337	537	250	
Growth Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	221	910	309		298	854	240		309	615	298		337	537	250	
Added Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
PasserByVol:	0	0	0		0	0	0		0	0	0		0	0	0	
Initial Fut:	221	910	309		298	854	240		309	615	298		337	537	250	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	0.97	0.97	0.97		0.97	0.97	0.97		0.97	0.97	0.97		0.97	0.97	0.97	
PHF Volume:	228	938	319		307	880	247		319	634	307		347	554	258	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	228	938	319		307	880	247		319	634	307		347	554	258	
PCE Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
FinalVolume:	228	938	319		307	880	247		319	634	307		347	554	258	
OvlAdjVol:			145								193				104	
Saturation Flow Module:																
Sat/Lane:	1600	1600	1600		1600	1600	1600		1600	1600	1600		1600	1600	1600	
Adjustment:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Lanes:	2.00	3.00	1.00		2.00	2.34	0.66		2.00	2.00	1.00		2.00	2.00	1.00	
Final Sat.:	3200	4800	1600		3200	3747	1053		3200	3200	1600		3200	3200	1600	
Capacity Analysis Module:																
Vol/Sat:	0.07	0.20	0.20		0.10	0.23	0.23		0.10	0.20	0.19		0.11	0.17	0.16	
OvlAdjV/S:			0.09								0.12				0.07	
Crit Moves:	****				****					****			****			

WPS Truck Haul Congestion
Existing Conditions
PM Peak Hour

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #2 Bonita/Temple

Cycle (sec):	100	Critical Vol./Cap.(X):	0.568
Loss Time (sec):	10 (Y+R=4.0 sec)	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	38	Level Of Service:	A

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	T	R		L	T	R		L	T	R		L	T	R	
Control:	Protected				Protected				Protected				Protected			
Rights:	Include				Ovl				Include				Include			
Min. Green:	0	0	0		0	0	0		0	0	0		0	0	0	
Lanes:	1	0	1	0	1	2	0	1	0	1	2	0	1	1	0	
Volume Module:																
Base Vol:	92	26	90		292	17	158		174	924	46		27	634	154	
Growth Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	92	26	90		292	17	158		174	924	46		27	634	154	
Added Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
PasserByVol:	0	0	0		0	0	0		0	0	0		0	0	0	
Initial Fut:	92	26	90		292	17	158		174	924	46		27	634	154	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Volume:	92	26	90		292	17	158		174	924	46		27	634	154	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	92	26	90		292	17	158		174	924	46		27	634	154	
PCE Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
FinalVolume:	92	26	90		292	17	158		174	924	46		27	634	154	
OvlAdjVol:							71									
Saturation Flow Module:																
Sat/Lane:	1600	1600	1600		1600	1600	1600		1600	1600	1600		1600	1600	1600	
Adjustment:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Lanes:	1.00	1.00	1.00		2.00	1.00	1.00		2.00	1.91	0.09		1.00	1.61	0.39	
Final Sat.:	1600	1600	1600		3200	1600	1600		3200	3048	152		1600	2575	625	
Capacity Analysis Module:																
Vol/Sat:	0.06	0.02	0.06		0.09	0.01	0.10		0.05	0.30	0.30		0.02	0.25	0.25	
OvlAdjV/S:							0.04									
Crit Moves:			****		****					****			****			

WPS Truck Haul Congestion
Existing Conditions
PM Peak Hour

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #3 Valley/Temple

Cycle (sec):	100	Critical Vol./Cap.(X):	0.745
Loss Time (sec):	10 (Y+R=4.0 sec)	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	56	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	2 0	1	1 0	2 0	1	1 0	2 1	0	1 0	2 1	0
Volume Module:												
Base Vol:	161	664	52	212	354	134	219	1045	181	80	657	108
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	161	664	52	212	354	134	219	1045	181	80	657	108
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	161	664	52	212	354	134	219	1045	181	80	657	108
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	161	664	52	212	354	134	219	1045	181	80	657	108
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	161	664	52	212	354	134	219	1045	181	80	657	108
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	161	664	52	212	354	134	219	1045	181	80	657	108
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.00	1.00	1.00	2.00	1.00	1.00	2.56	0.44	1.00	2.58	0.42
Final Sat.:	1600	3200	1600	1600	3200	1600	1600	4091	709	1600	4122	678
Capacity Analysis Module:												
Vol/Sat:	0.10	0.21	0.03	0.13	0.11	0.08	0.14	0.26	0.26	0.05	0.16	0.16
Crit Moves:		****		****				****		****		

WPS Truck Haul Congestion
Existing Conditions
PM Peak Hour

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #4 Grand/Valley

Cycle (sec):	100	Critical Vol./Cap.(X):	0.756
Loss Time (sec):	10 (Y+R=4.0 sec)	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	58	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Ignore			Ignore			Ignore			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	2 0 3 0 1			2 0 3 0 1			2 0 3 0 1			2 0 3 0 1		
Volume Module:												
Base Vol:	219	752	131	323	1123	194	522	1234	282	309	562	127
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	219	752	131	323	1123	194	522	1234	282	309	562	127
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	219	752	131	323	1123	194	522	1234	282	309	562	127
User Adj:	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Volume:	219	752	0	323	1123	0	522	1234	0	309	562	127
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	219	752	0	323	1123	0	522	1234	0	309	562	127
PCE Adj:	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
FinalVolume:	219	752	0	323	1123	0	522	1234	0	309	562	127
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	2.00	3.00	1.00	2.00	3.00	1.00	2.00	3.00	1.00	2.00	3.00	1.00
Final Sat.:	3200	4800	1600	3200	4800	1600	3200	4800	1600	3200	4800	1600
Capacity Analysis Module:												
Vol/Sat:	0.07	0.16	0.00	0.10	0.23	0.00	0.16	0.26	0.00	0.10	0.12	0.08
Crit Moves:	****			****			****			****		

EXISTING PLUS CONSTRUCTION CONDITIONS

WPS Truck Haul Congestion
Existing With Truck Haul
AM Peak Hour

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #1 Grand/Temple

Cycle (sec):	100	Critical Vol./Cap.(X):	0.681
Loss Time (sec):	10 (Y+R=4.0 sec)	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	48	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Ovl			Include			Ovl			Ovl		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	2 0	3 0	1	2 0	2 1	0	2 0	2 0	1	2 0	2 0	1
Volume Module:												
Base Vol:	265	910	399	299	1027	218	285	549	221	109	349	166
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	265	910	399	299	1027	218	285	549	221	109	349	166
Added Vol:	0	0	0	0	0	0	0	0	0	50	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	265	910	399	299	1027	218	285	549	221	159	349	166
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
PHF Volume:	273	938	411	308	1059	225	294	566	228	164	360	171
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	273	938	411	308	1059	225	294	566	228	164	360	171
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	273	938	411	308	1059	225	294	566	228	164	360	171
OvlAdjVol:			329						91			17
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	2.00	3.00	1.00	2.00	2.47	0.53	2.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	3200	4800	1600	3200	3960	840	3200	3200	1600	3200	3200	1600
Capacity Analysis Module:												
Vol/Sat:	0.09	0.20	0.26	0.10	0.27	0.27	0.09	0.18	0.14	0.05	0.11	0.11
OvlAdjV/S:			0.21						0.06			0.01
Crit Moves:	****			****			****			****		

WPS Truck Haul Congestion
Existing With Truck Haul
AM Peak Hour

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #2 Bonita/Temple

Cycle (sec):	100	Critical Vol./Cap.(X):	0.602
Loss Time (sec):	10 (Y+R=4.0 sec)	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	40	Level Of Service:	B

Approach:	North Bound						South Bound						East Bound						West Bound					
Movement:	L	-	T	-	R		L	-	T	-	R		L	-	T	-	R		L	-	T	-	R	
Control:	Protected						Protected						Protected						Protected					
Rights:	Include						Ovl						Include						Include					
Min. Green:	0	0	0				0	0	0				0	0	0				0	0	0			
Lanes:	1	0	1	0	1		2	0	1	0	1		2	0	1	1	0		1	0	1	1	0	
Volume Module:																								
Base Vol:	21		11		12		65		25		73		352		586		102		101		707		357	
Growth Adj:	1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00
Initial Bse:	21		11		12		65		25		73		352		586		102		101		707		357	
Added Vol:	50		0		0		0		0		0		0		0		0		50		0		0	
PasserByVol:	0		0		0		0		0		0		0		0		0		0		0		0	
Initial Fut:	71		11		12		65		25		73		352		586		102		151		707		357	
User Adj:	1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00
PHF Adj:	1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00
PHF Volume:	71		11		12		65		25		73		352		586		102		151		707		357	
Reduct Vol:	0		0		0		0		0		0		0		0		0		0		0		0	
Reduced Vol:	71		11		12		65		25		73		352		586		102		151		707		357	
PCE Adj:	1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00
MLF Adj:	1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00
FinalVolume:	71		11		12		65		25		73		352		586		102		151		707		357	
OvlAdjVol:											0													
Saturation Flow Module:																								
Sat/Lane:	1600	1600		1600		1600	1600		1600		1600		1600	1600		1600		1600	1600		1600		1600	
Adjustment:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	
Lanes:	1.00	1.00		1.00		2.00	1.00		1.00		2.00		1.70	0.30		1.00		1.33	0.67					
Final Sat.:	1600	1600		1600		3200	1600		1600		3200		2726	474		1600		2126	1074					
Capacity Analysis Module:																								
Vol/Sat:	0.04	0.01		0.01		0.02	0.02		0.05		0.11	0.21		0.22		0.09	0.33		0.33					
OvlAdjV/S:											0.00													
Crit Moves:	****						****					****							****					

WPS Truck Haul Congestion
Existing With Truck Haul
AM Peak Hour

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #3 Valley/Temple

Cycle (sec):	100	Critical Vol./Cap.(X):	0.754
Loss Time (sec):	10 (Y+R=4.0 sec)	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	58	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	2 0	1	1 0	2 0	1	1 0	2 1	0	1 0	2 1	0
Volume Module:												
Base Vol:	207	381	30	61	539	254	104	322	105	74	1116	133
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	207	381	30	61	539	254	104	322	105	74	1116	133
Added Vol:	50	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	257	381	30	61	539	254	104	322	105	74	1116	133
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	257	381	30	61	539	254	104	322	105	74	1116	133
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	257	381	30	61	539	254	104	322	105	74	1116	133
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	257	381	30	61	539	254	104	322	105	74	1116	133
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.00	1.00	1.00	2.00	1.00	1.00	2.26	0.74	1.00	2.68	0.32
Final Sat.:	1600	3200	1600	1600	3200	1600	1600	3620	1180	1600	4289	511
Capacity Analysis Module:												
Vol/Sat:	0.16	0.12	0.02	0.04	0.17	0.16	0.07	0.09	0.09	0.05	0.26	0.26
Crit Moves:	****			****			****				****	

WPS Truck Haul Congestion
Existing With Truck Haul
AM Peak Hour

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #4 Grand/Valley

Cycle (sec):	100	Critical Vol./Cap.(X):	0.685
Loss Time (sec):	10 (Y+R=4.0 sec)	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	48	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Ignore			Ignore			Ignore			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	2 0	3 0	1	2 0	3 0	1	2 0	3 0	1	2 0	3 0	1
Volume Module:												
Base Vol:	222	1065	290	179	1000	355	321	464	161	188	920	116
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	222	1065	290	179	1000	355	321	464	161	188	920	116
Added Vol:	0	0	0	50	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	222	1065	290	229	1000	355	321	464	161	188	920	116
User Adj:	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Volume:	222	1065	0	229	1000	0	321	464	0	188	920	116
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	222	1065	0	229	1000	0	321	464	0	188	920	116
PCE Adj:	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
FinalVolume:	222	1065	0	229	1000	0	321	464	0	188	920	116
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	2.00	3.00	1.00	2.00	3.00	1.00	2.00	3.00	1.00	2.00	3.00	1.00
Final Sat.:	3200	4800	1600	3200	4800	1600	3200	4800	1600	3200	4800	1600
Capacity Analysis Module:												
Vol/Sat:	0.07	0.22	0.00	0.07	0.21	0.00	0.10	0.10	0.00	0.06	0.19	0.07
Crit Moves:		****			****			****			****	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	285	549	221	159	349	166	265	940	399	299	1027	218
Future Volume (veh/h)	285	549	221	159	349	166	265	940	399	299	1027	218
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	310	597	240	173	379	180	288	1022	434	325	1116	237
Adj No. of Lanes	2	2	1	2	3	1	2	3	1	2	3	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	364	876	549	230	1061	505	343	2189	788	379	1854	394
Arrive On Green	0.11	0.25	0.25	0.07	0.21	0.21	0.10	0.43	0.43	0.11	0.44	0.44
Sat Flow, veh/h	3442	3539	1583	3442	5085	1583	3442	5085	1583	3442	4203	892
Grp Volume(v), veh/h	310	597	240	173	379	180	288	1022	434	325	900	453
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1583	1721	1695	1583	1721	1695	1705
Q Serve(g_s), s	10.6	18.3	14.0	5.9	7.6	10.5	9.9	17.2	22.8	11.1	24.2	24.3
Cycle Q Clear(g_c), s	10.6	18.3	14.0	5.9	7.6	10.5	9.9	17.2	22.8	11.1	24.2	24.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.52
Lane Grp Cap(c), veh/h	364	876	549	230	1061	505	343	2189	788	379	1495	752
V/C Ratio(X)	0.85	0.68	0.44	0.75	0.36	0.36	0.84	0.47	0.55	0.86	0.60	0.60
Avail Cap(c_a), veh/h	399	888	555	511	1441	623	396	2189	788	424	1495	752
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.7	40.9	30.2	55.0	40.6	31.4	53.1	24.4	20.9	52.5	25.5	25.5
Incr Delay (d2), s/veh	13.9	2.5	0.9	1.9	0.3	0.7	11.9	0.7	2.8	13.4	1.8	3.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	9.3	6.2	2.9	3.6	4.7	5.2	8.2	10.5	6.0	11.6	12.2
LnGrp Delay(d),s/veh	66.6	43.4	31.1	56.9	40.9	32.1	65.0	25.1	23.6	65.9	27.3	29.1
LnGrp LOS	E	D	C	E	D	C	E	C	C	E	C	C
Approach Vol, veh/h		1147			732			1744			1678	
Approach Delay, s/veh		47.1			42.5			31.3			35.3	
Approach LOS		D			D			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.4	57.7	11.2	34.7	15.1	58.9	15.9	30.0
Change Period (Y+Rc), s	3.2	6.0	3.2	5.0	3.2	6.0	3.2	5.0
Max Green Setting (Gmax), s	14.8	39.9	17.8	30.1	13.8	40.9	13.9	34.0
Max Q Clear Time (g_c+I1), s	13.1	24.8	7.9	20.3	11.9	26.3	12.6	12.5
Green Ext Time (p_c), s	0.1	14.4	0.1	7.0	0.1	13.9	0.1	12.6

Intersection Summary	
HCM 2010 Ctrl Delay	37.5
HCM 2010 LOS	D

WPS Truck Haul Congestion
Existing With Truck Haul
PM Peak Hour

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #1 Grand/Temple

Cycle (sec):	100	Critical Vol./Cap.(X):	0.714
Loss Time (sec):	10 (Y+R=4.0 sec)	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	52	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Ovl			Include			Ovl			Ovl		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	2 0	3 0	1	2 0	2 1	0	2 0	2 0	1	2 0	2 0	1
Volume Module:												
Base Vol:	221	910	309	298	854	240	309	615	298	337	537	250
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	221	910	309	298	854	240	309	615	298	337	537	250
Added Vol:	0	0	0	0	0	0	0	0	0	50	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	221	910	309	298	854	240	309	615	298	387	537	250
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
PHF Volume:	228	938	319	307	880	247	319	634	307	399	554	258
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	228	938	319	307	880	247	319	634	307	399	554	258
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	228	938	319	307	880	247	319	634	307	399	554	258
OvlAdjVol:			119						193			104
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	2.00	3.00	1.00	2.00	2.34	0.66	2.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	3200	4800	1600	3200	3747	1053	3200	3200	1600	3200	3200	1600
Capacity Analysis Module:												
Vol/Sat:	0.07	0.20	0.20	0.10	0.23	0.23	0.10	0.20	0.19	0.12	0.17	0.16
OvlAdjV/S:			0.07						0.12			0.07
Crit Moves:	****			****				****		****		

WPS Truck Haul Congestion
Existing With Truck Haul
PM Peak Hour

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #2 Bonita/Temple

Cycle (sec):	100	Critical Vol./Cap.(X):	0.599
Loss Time (sec):	10 (Y+R=4.0 sec)	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	40	Level Of Service:	A

Approach:	North Bound						South Bound						East Bound						West Bound					
Movement:	L	-	T	-	R		L	-	T	-	R		L	-	T	-	R		L	-	T	-	R	
Control:	Protected						Protected						Protected						Protected					
Rights:	Include						Ovl						Include						Include					
Min. Green:	0	0	0				0	0	0				0	0	0				0	0	0			
Lanes:	1	0	1	0	1		2	0	1	0	1		2	0	1	1	0		1	0	1	1	0	
Volume Module:																								
Base Vol:	92		26		90		292		17		158		174		924		46		27		634		154	
Growth Adj:	1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00
Initial Bse:	92		26		90		292		17		158		174		924		46		27		634		154	
Added Vol:	50		0		0		0		0		0		0		0		0		50		0		0	
PasserByVol:	0		0		0		0		0		0		0		0		0		0		0		0	
Initial Fut:	142		26		90		292		17		158		174		924		46		77		634		154	
User Adj:	1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00
PHF Adj:	1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00
PHF Volume:	142		26		90		292		17		158		174		924		46		77		634		154	
Reduct Vol:	0		0		0		0		0		0		0		0		0		0		0		0	
Reduced Vol:	142		26		90		292		17		158		174		924		46		77		634		154	
PCE Adj:	1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00
MLF Adj:	1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00
FinalVolume:	142		26		90		292		17		158		174		924		46		77		634		154	
OvlAdjVol:											71													
Saturation Flow Module:																								
Sat/Lane:	1600	1600		1600		1600		1600		1600		1600		1600		1600		1600		1600		1600		1600
Adjustment:	1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00
Lanes:	1.00	1.00		1.00		2.00		1.00		1.00		2.00		1.91		0.09		1.00		1.61		0.39		
Final Sat.:	1600	1600		1600		3200		1600		1600		3200		3048		152		1600		2575		625		
Capacity Analysis Module:																								
Vol/Sat:	0.09	0.02		0.06		0.09		0.01		0.10		0.05		0.30		0.30		0.05		0.25		0.25		
OvlAdjV/S:										0.04														
Crit Moves:			****		****								****				****							

WPS Truck Haul Congestion
Existing With Truck Haul
PM Peak Hour

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #3 Valley/Temple

Cycle (sec):	100	Critical Vol./Cap.(X):	0.745	
Loss Time (sec):	10 (Y+R=4.0 sec)	Average Delay (sec/veh):	xxxxxx	
Optimal Cycle:	56	Level Of Service:	C	

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	2 0	1	1 0	2 0	1	1 0	2 1	0	1 0	2 1	0
Volume Module:												
Base Vol:	161	664	52	212	354	134	219	1045	181	80	657	108
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	161	664	52	212	354	134	219	1045	181	80	657	108
Added Vol:	50	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	211	664	52	212	354	134	219	1045	181	80	657	108
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	211	664	52	212	354	134	219	1045	181	80	657	108
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	211	664	52	212	354	134	219	1045	181	80	657	108
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	211	664	52	212	354	134	219	1045	181	80	657	108
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	2.00	1.00	1.00	2.00	1.00	1.00	2.56	0.44	1.00	2.58	0.42
Final Sat.:	1600	3200	1600	1600	3200	1600	1600	4091	709	1600	4122	678
Capacity Analysis Module:												
Vol/Sat:	0.13	0.21	0.03	0.13	0.11	0.08	0.14	0.26	0.26	0.05	0.16	0.16
Crit Moves:		****		****				****		****		

WPS Truck Haul Congestion
Existing With Truck Haul
PM Peak Hour

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #4 Grand/Valley

Cycle (sec):	100	Critical Vol./Cap.(X):	0.756
Loss Time (sec):	10 (Y+R=4.0 sec)	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	58	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Ignore			Ignore			Ignore			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	2 0	3 0	1	2 0	3 0	1	2 0	3 0	1	2 0	3 0	1
Volume Module:												
Base Vol:	219	752	131	323	1123	194	522	1234	282	309	562	127
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	219	752	131	323	1123	194	522	1234	282	309	562	127
Added Vol:	0	0	0	50	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	219	752	131	373	1123	194	522	1234	282	309	562	127
User Adj:	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Volume:	219	752	0	373	1123	0	522	1234	0	309	562	127
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	219	752	0	373	1123	0	522	1234	0	309	562	127
PCE Adj:	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
FinalVolume:	219	752	0	373	1123	0	522	1234	0	309	562	127
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	2.00	3.00	1.00	2.00	3.00	1.00	2.00	3.00	1.00	2.00	3.00	1.00
Final Sat.:	3200	4800	1600	3200	4800	1600	3200	4800	1600	3200	4800	1600
Capacity Analysis Module:												
Vol/Sat:	0.07	0.16	0.00	0.12	0.23	0.00	0.16	0.26	0.00	0.10	0.12	0.08
Crit Moves:	****			****			****			****		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	309	615	298	387	537	250	221	910	309	298	854	240
Future Volume (veh/h)	309	615	298	387	537	250	221	910	309	298	854	240
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	336	668	324	421	584	272	240	989	336	324	928	261
Adj No. of Lanes	2	2	1	2	3	1	2	3	1	2	3	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	390	873	527	475	1380	603	297	1834	789	378	1518	426
Arrive On Green	0.11	0.25	0.25	0.14	0.27	0.27	0.09	0.36	0.36	0.11	0.38	0.38
Sat Flow, veh/h	3442	3539	1583	3442	5085	1583	3442	5085	1583	3442	3950	1108
Grp Volume(v), veh/h	336	668	324	421	584	272	240	989	336	324	796	393
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1583	1721	1695	1583	1721	1695	1667
Q Serve(g_s), s	11.5	21.0	20.6	14.4	11.3	15.4	8.2	18.5	16.2	11.1	22.7	22.8
Cycle Q Clear(g_c), s	11.5	21.0	20.6	14.4	11.3	15.4	8.2	18.5	16.2	11.1	22.7	22.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.66
Lane Grp Cap(c), veh/h	390	873	527	475	1380	603	297	1834	789	378	1303	641
V/C Ratio(X)	0.86	0.77	0.61	0.89	0.42	0.45	0.81	0.54	0.43	0.86	0.61	0.61
Avail Cap(c_a), veh/h	424	905	542	519	1441	622	436	1834	789	413	1303	641
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.3	42.0	33.6	50.8	36.0	27.7	53.9	30.4	19.1	52.5	29.7	29.8
Incr Delay (d2), s/veh	14.5	4.3	2.7	15.0	0.4	0.9	4.2	1.1	1.7	14.2	2.1	4.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.2	10.8	9.4	7.8	5.3	6.9	4.1	8.9	7.4	6.0	11.0	11.3
LnGrp Delay(d),s/veh	66.7	46.3	36.2	65.8	36.3	28.7	58.1	31.6	20.8	66.7	31.9	34.1
LnGrp LOS	E	D	D	E	D	C	E	C	C	E	C	C
Approach Vol, veh/h		1328			1277			1565			1513	
Approach Delay, s/veh		49.0			44.4			33.3			39.9	
Approach LOS		D			D			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.4	49.3	19.7	34.6	13.5	52.1	16.8	37.6
Change Period (Y+Rc), s	3.2	6.0	3.2	5.0	3.2	6.0	3.2	5.0
Max Green Setting (Gmax), s	14.4	39.4	18.1	30.7	15.2	38.6	14.8	34.0
Max Q Clear Time (g_c+I1), s	13.1	20.5	16.4	23.0	10.2	24.8	13.5	17.4
Green Ext Time (p_c), s	0.1	17.1	0.1	6.6	0.1	12.8	0.1	12.9

Intersection Summary	
HCM 2010 Ctrl Delay	41.2
HCM 2010 LOS	D

EXISTING PLUS CONSTRUCTION CONDITIONS - EB TEMPLE NROR & NO OVERLAP

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	285	549	221	159	349	166	265	940	399	299	1027	218
Future Volume (veh/h)	285	549	221	159	349	166	265	940	399	299	1027	218
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	310	597	240	173	379	180	288	1022	434	325	1116	237
Adj No. of Lanes	2	2	1	2	3	1	2	3	1	2	3	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	364	876	392	230	1061	505	343	2189	788	379	1854	394
Arrive On Green	0.11	0.25	0.25	0.07	0.21	0.21	0.10	0.43	0.43	0.11	0.44	0.44
Sat Flow, veh/h	3442	3539	1583	3442	5085	1583	3442	5085	1583	3442	4203	892
Grp Volume(v), veh/h	310	597	240	173	379	180	288	1022	434	325	900	453
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1583	1721	1695	1583	1721	1695	1705
Q Serve(g_s), s	10.6	18.3	16.1	5.9	7.6	10.5	9.9	17.2	22.8	11.1	24.2	24.3
Cycle Q Clear(g_c), s	10.6	18.3	16.1	5.9	7.6	10.5	9.9	17.2	22.8	11.1	24.2	24.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.52
Lane Grp Cap(c), veh/h	364	876	392	230	1061	505	343	2189	788	379	1495	752
V/C Ratio(X)	0.85	0.68	0.61	0.75	0.36	0.36	0.84	0.47	0.55	0.86	0.60	0.60
Avail Cap(c_a), veh/h	399	888	397	511	1441	623	396	2189	788	424	1495	752
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.7	40.9	40.1	55.0	40.6	31.4	53.1	24.4	20.9	52.5	25.5	25.5
Incr Delay (d2), s/veh	13.9	2.5	3.6	1.9	0.3	0.7	11.9	0.7	2.8	13.4	1.8	3.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	9.3	7.4	2.9	3.6	4.7	5.2	8.2	10.5	6.0	11.6	12.2
LnGrp Delay(d),s/veh	66.6	43.4	43.6	56.9	40.9	32.1	65.0	25.1	23.6	65.9	27.3	29.1
LnGrp LOS	E	D	D	E	D	C	E	C	C	E	C	C
Approach Vol, veh/h		1147			732			1744			1678	
Approach Delay, s/veh		49.7			42.5			31.3			35.3	
Approach LOS		D			D			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.4	57.7	11.2	34.7	15.1	58.9	15.9	30.0
Change Period (Y+Rc), s	3.2	6.0	3.2	5.0	3.2	6.0	3.2	5.0
Max Green Setting (Gmax), s	14.8	39.9	17.8	30.1	13.8	40.9	13.9	34.0
Max Q Clear Time (g_c+I1), s	13.1	24.8	7.9	20.3	11.9	26.3	12.6	12.5
Green Ext Time (p_c), s	0.1	14.4	0.1	7.0	0.1	13.9	0.1	12.6

Intersection Summary	
HCM 2010 Ctrl Delay	38.1
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	309	615	298	387	537	250	221	910	309	298	854	240
Future Volume (veh/h)	309	615	298	387	537	250	221	910	309	298	854	240
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	336	668	324	421	584	272	240	989	336	324	928	261
Adj No. of Lanes	2	2	1	2	3	1	2	3	1	2	3	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	390	885	396	475	1398	609	297	1816	784	378	1504	422
Arrive On Green	0.11	0.25	0.25	0.14	0.27	0.27	0.09	0.36	0.36	0.11	0.38	0.38
Sat Flow, veh/h	3442	3539	1583	3442	5085	1583	3442	5085	1583	3442	3950	1108
Grp Volume(v), veh/h	336	668	324	421	584	272	240	989	336	324	796	393
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1583	1721	1695	1583	1721	1695	1667
Q Serve(g_s), s	11.5	20.9	23.2	14.4	11.3	15.3	8.2	18.6	16.3	11.1	22.8	22.9
Cycle Q Clear(g_c), s	11.5	20.9	23.2	14.4	11.3	15.3	8.2	18.6	16.3	11.1	22.8	22.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.66
Lane Grp Cap(c), veh/h	390	885	396	475	1398	609	297	1816	784	378	1291	635
V/C Ratio(X)	0.86	0.75	0.82	0.89	0.42	0.45	0.81	0.54	0.43	0.86	0.62	0.62
Avail Cap(c_a), veh/h	424	905	405	519	1441	622	436	1816	784	413	1291	635
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.3	41.6	42.4	50.8	35.6	27.4	53.9	30.8	19.4	52.5	30.1	30.1
Incr Delay (d2), s/veh	14.5	4.0	13.2	15.0	0.3	0.9	4.2	1.2	1.7	14.2	2.2	4.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.2	10.7	11.5	7.8	5.3	6.9	4.1	8.9	7.5	6.0	11.0	11.4
LnGrp Delay(d),s/veh	66.7	45.6	55.6	65.8	36.0	28.3	58.1	32.0	21.1	66.7	32.3	34.6
LnGrp LOS	E	D	E	E	D	C	E	C	C	E	C	C
Approach Vol, veh/h		1328			1277			1565			1513	
Approach Delay, s/veh		53.4			44.2			33.6			40.2	
Approach LOS		D			D			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.4	48.9	19.7	35.0	13.5	51.7	16.8	38.0
Change Period (Y+Rc), s	3.2	6.0	3.2	5.0	3.2	6.0	3.2	5.0
Max Green Setting (Gmax), s	14.4	39.4	18.1	30.7	15.2	38.6	14.8	34.0
Max Q Clear Time (g_c+I1), s	13.1	20.6	16.4	25.2	10.2	24.9	13.5	17.3
Green Ext Time (p_c), s	0.1	17.1	0.1	4.9	0.1	12.7	0.1	12.9

Intersection Summary	
HCM 2010 Ctrl Delay	42.4
HCM 2010 LOS	D

EXISTING PLUS CONSTRUCTION CONDITIONS - WB TEMPLE LAGGING PHASE

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	285	549	221	159	349	166	265	940	399	299	1027	218
Future Volume (veh/h)	285	549	221	159	349	166	265	940	399	299	1027	218
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	310	597	240	173	379	180	288	1022	434	325	1116	237
Adj No. of Lanes	2	2	1	2	3	1	2	3	1	2	3	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	364	756	496	318	1095	515	343	2155	817	379	1826	388
Arrive On Green	0.11	0.21	0.21	0.09	0.22	0.22	0.10	0.42	0.42	0.11	0.43	0.43
Sat Flow, veh/h	3442	3539	1583	3442	5085	1583	3442	5085	1583	3442	4203	892
Grp Volume(v), veh/h	310	597	240	173	379	180	288	1022	434	325	900	453
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1583	1721	1695	1583	1721	1695	1705
Q Serve(g_s), s	10.6	19.1	10.4	5.8	7.6	10.4	9.9	17.4	6.7	11.1	24.5	24.5
Cycle Q Clear(g_c), s	10.6	19.1	10.4	5.8	7.6	10.4	9.9	17.4	6.7	11.1	24.5	24.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.52
Lane Grp Cap(c), veh/h	364	756	496	318	1095	515	343	2155	817	379	1473	741
V/C Ratio(X)	0.85	0.79	0.48	0.54	0.35	0.35	0.84	0.47	0.53	0.86	0.61	0.61
Avail Cap(c_a), veh/h	399	888	555	511	1441	623	396	2155	817	424	1473	741
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.7	44.6	17.9	52.0	39.9	30.8	53.1	24.9	7.2	52.5	26.1	26.1
Incr Delay (d2), s/veh	13.9	5.0	1.3	0.5	0.3	0.7	11.9	0.8	2.5	13.4	1.9	3.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	9.9	4.7	2.8	3.6	4.6	5.2	8.3	3.4	6.0	11.9	12.3
LnGrp Delay(d),s/veh	66.6	49.6	19.1	52.6	40.2	31.5	65.0	25.7	9.6	65.9	28.0	29.9
LnGrp LOS	E	D	B	D	D	C	E	C	A	E	C	C
Approach Vol, veh/h		1147			732			1744			1678	
Approach Delay, s/veh		47.8			41.0			28.2			35.9	
Approach LOS		D			D			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.4	56.8	16.1	30.6	15.1	58.1	15.9	30.8
Change Period (Y+Rc), s	3.2	6.0	5.0	* 5	3.2	6.0	3.2	5.0
Max Green Setting (Gmax), s	14.8	39.9	17.8	* 30	13.8	40.9	13.9	34.0
Max Q Clear Time (g_c+I1), s	13.1	19.4	7.8	21.1	11.9	26.5	12.6	12.4
Green Ext Time (p_c), s	0.1	19.2	3.4	4.5	0.1	13.7	0.1	4.9

Intersection Summary	
HCM 2010 Ctrl Delay	36.6
HCM 2010 LOS	D

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	309	615	298	387	537	250	221	910	309	298	854	240
Future Volume (veh/h)	309	615	298	387	537	250	221	910	309	298	854	240
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	336	668	324	421	584	272	240	989	336	324	928	261
Adj No. of Lanes	2	2	1	2	3	1	2	3	1	2	3	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	390	820	503	503	1422	616	297	1792	789	378	1485	416
Arrive On Green	0.11	0.23	0.23	0.15	0.28	0.28	0.09	0.35	0.35	0.11	0.38	0.38
Sat Flow, veh/h	3442	3539	1583	3442	5085	1583	3442	5085	1583	3442	3950	1108
Grp Volume(v), veh/h	336	668	324	421	584	272	240	989	336	324	796	393
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1695	1583	1721	1695	1583	1721	1695	1667
Q Serve(g_s), s	11.5	21.4	13.2	14.3	11.2	15.2	8.2	18.8	4.4	11.1	23.0	23.1
Cycle Q Clear(g_c), s	11.5	21.4	13.2	14.3	11.2	15.2	8.2	18.8	4.4	11.1	23.0	23.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.66
Lane Grp Cap(c), veh/h	390	820	503	503	1422	616	297	1792	789	378	1275	627
V/C Ratio(X)	0.86	0.81	0.64	0.84	0.41	0.44	0.81	0.55	0.43	0.86	0.62	0.63
Avail Cap(c_a), veh/h	424	905	542	519	1441	622	436	1792	789	413	1275	627
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.3	43.7	16.3	49.8	35.2	27.0	53.9	31.2	7.1	52.5	30.5	30.6
Incr Delay (d2), s/veh	14.5	6.0	3.1	10.5	0.3	0.9	4.2	1.2	1.7	14.2	2.3	4.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.2	11.2	6.1	7.5	5.3	6.7	4.1	9.0	4.1	6.0	11.1	11.4
LnGrp Delay(d),s/veh	66.7	49.7	19.5	60.4	35.5	27.9	58.1	32.5	8.8	66.7	32.8	35.3
LnGrp LOS	E	D	B	E	D	C	E	C	A	E	C	D
Approach Vol, veh/h		1328			1277			1565			1513	
Approach Delay, s/veh		46.6			42.1			31.3			40.7	
Approach LOS		D			D			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.4	48.3	22.5	32.8	13.5	51.1	16.8	38.5
Change Period (Y+Rc), s	3.2	6.0	5.0	* 5	3.2	6.0	3.2	5.0
Max Green Setting (Gmax), s	14.4	39.4	18.1	* 31	15.2	38.6	14.8	34.0
Max Q Clear Time (g_c+I1), s	13.1	20.8	16.3	23.4	10.2	25.1	13.5	17.2
Green Ext Time (p_c), s	0.1	16.9	1.2	4.4	0.1	12.5	0.1	7.1

Intersection Summary	
HCM 2010 Ctrl Delay	39.8
HCM 2010 LOS	D

Notes

Memorandum

Date: July 20, 2017

To: Ms. Rebecca Mitchell, Mt. San Antonio College

From: Fred Greve, Greve & Associates, LLC

Subject: West Parcel Solar Project – Truck Haul Plan (Report #17-041a)

The truck haul assumptions used in the previous analysis for the West Parcel Solar Project ("West Parcel Solar Project – Air Quality Construction Analysis," Report #15-104C, by Greve and Associates, August 30, 2015) have been revised. Updated truck traffic are provided in the "West Parcel Solar CEQA Initial Study (Truck Haul Plan)," by Iteris, July 11, 2017. This report looks at potential changes in impacts for air quality, greenhouse gas, and noise.

AIR QUALITY

In general, truck hauling was reduced to 139,000 cubic yards of dirt, 9,929 truck loads, and 160 truck loads per day. The grading with import period was reduced to 62 days, down from an estimated 130 days previously. Since the air quality analysis focus is on peak daily emissions, shortening the work period can increase daily emissions.

It should be noted that the project will need to comply with the air quality measures adopted in the 2016 Mitigation Monitoring Program (MMP) for the 2015 Facilities Master Plan/PEP Final EIR. Measures 3a through 3j of the MMP identify a spectrum of air quality mitigation with Measures 3a, 3b, 3c, 3f, 3g, 3h, and 3i are aimed specifically at reducing quality emissions. Most significant are the requirements to use Tier IV construction equipment and to water the site three times per day during grading activities.

In their "1993 CEQA Air Quality Handbook", the South Coast Air Quality Management District (SCAQMD) established significance thresholds to assess the impact of project related air pollutant emissions. Table 1 presents the significance thresholds for construction. There are separate thresholds for short-term construction and long-term operational emissions. A

2915 CALLE FRONTERA, SAN CLEMENTE, CA 92673
VOICE: 949•466•2967 EMAIL: fred@greveandassociates.com

project with daily emission rates below these thresholds are considered to have a less than significant effect on regional air quality.

Table 1 Regional Pollutant Emission Thresholds of Significance

	Pollutant Emissions (lbs./day)					
	CO	**VOC**	**NOx**	**PM10**	**PM2.5**	**SOx**
Construction	550	75	100	150	55	150

Emissions during all phases of construction were calculated using the California Emissions Estimator Model (CalEEMod). CalEEMod is a computer program developed by the SCAQMD in conjunction with the California Air Resources Board (CARB). The model calculates emissions for construction and operation of various projects. The previous analysis used version CalEEMod 2013.2.2. Since that time CalEEMod 2016.3.1 was released and contains new features including revised construction equipment emission rates. The newer version of CalEEMod was used for this analysis. CalEEMod printouts are included in the Appendix.

Two tables are presented below. Table 2 presents the results for the unmitigated case, and Table 3 presents the results for the mitigated situation. Specifically, use of Tier IV equipment and watering during grading were included in the calculations.

Table 2 Peak Construction Emissions – Not Mitigated

	Pollutant Emissions (lbs./day)					
Activity	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
Collection, Clear & Grub	5.4	54.6	26.4	0.0	21.3	12.8
Grading with Import	6.7	98.2	46.9	0.1	15.9	7.2
Final Grading	6.4	76.5	42.1	0.1	11.9	6.5
Solar Installation	0.3	2.6	2.3	0.0	0.2	0.2
Restoration	0.2	1.5	1.4	0.0	0.1	0.1
Landscaping	0.2	1.5	1.4	0.0	1.4	0.3
Solar Install+Restoration +Landscaping	0.6	5.6	5.0	0.0	1.8	0.5
SCQAMD Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Exceed Threshold?	***No***	***No***	***No***	***No***	***No***	***No***

Table 3 Peak Construction Emissions – With Required Mitigation

	Pollutant Emissions (lbs./day)					
Activity	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
Collection, Clear & Grub	0.6	2.2	23.7	0.0	18.4	10.1
Grading with Import	1.4	29.0	35.2	0.1	12.7	4.3
Final Grading	1.0	4.1	34.8	0.1	9.0	3.8
Solar Installation	0.1	0.4	2.3	0.0	0.1	0.0
Restoration	0.0	0.1	1.3	0.0	0.0	0.0
Landscaping	0.0	0.1	1.3	0.0	1.3	0.2
Solar Install+Restoration +Landscaping	0.1	0.6	5.0	0.0	1.4	0.2
SCQAMD Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Exceed Threshold?	***No***	***No***	***No***	***No***	***No***	***No***

The NOx emissions for grading with import and for final grading are just below the significance threshold for the unmitigated case, but are well below the significance threshold with the required mitigation. All projected construction emissions are below the significance thresholds established by the SCAQMD. In all cases the peak daily emissions with require mitigation are well below the thresholds.

Roads with substantial diesel truck volumes have the potential to result in particulate hot spots. The FHWA has published guidance on performing a qualitative analysis of particulate hot spots and established a screening threshold for potential impacts. The FHWA guidance suggests that a road with an average daily diesel truck volume of 10,000 or less does not have the potential to result in a particulate hot-spot.

None of the roadways in the project area will have close to 10,000 trucks per day. There are no truck counts for the roadways of concern. However, the roadways in the area; specifically Temple Avenue, Grand Avenue, and Valley Boulevard, have typical levels of heavy truck traffic which generally runs around 0.74% of total traffic. The arterial traffic distribution estimate used for the roadways was compiled by the Orange County Environmental Management Agency, and is based on traffic counts at 31 intersections throughout the Orange County area. Arterial traffic distribution estimates can be considered typical for arterials in Southern California. Therefore, the heavy truck traffic on Temple Avenue, Grand Avenue, and Valley Boulevard would be expected to be roughly 196, 271, and 248 per day, respectively. The proposed project would add 160 heavy trucks per day, and the combined

total is well below the guidance of 10,000 trucks per day provided by the FHWA. Therefore, the project will not result in a significant impact due to particulate hotspots and would not significantly increase the health risk.

GREENHOUSE GAS

The SCAQMD has not officially adopted significance thresholds for greenhouse gas emissions. However, their draft recommendations use a 3,500 MT CO_2EQ/yr. threshold for residential projects, a 1,400 MT CO_2EQ/yr. (metric ton of equivalent carbon dioxide per year) threshold for commercial projects, and a 3,000 MT CO_2 EQ/yr. for mixed-use projects. This project does not fall into any of these categories.

Construction emissions are amortized over the life of the project, defined by SCAQMD as 30 years, and are added to the annual operation emissions. The greenhouse gas emissions for construction are very small when amortized over a 30 year period. The CalEEMod analysis (see Appendix) shows that the total greenhouse gas emissions from the project will be 480 metric tons equivalent carbon dioxide (MTCO2EQ), or amortized over 30 years it is 16 MTCO2EQ per year. The construction emissions are well below any SCAQMD recommended threshold. Since the project will generate electricity from solar power, it will reduce GHG emissions during the operational phase. Therefore, the project will not have a significant impact on greenhouse gas emissions.

NOISE

The haul trucks will travel on Temple Avenue, Grand Avenue, and Valley Boulevard. Peak hour traffic data was provided in the traffic report referenced above. The p.m. peak hour traffic data was assumed to be 8% of the daily traffic. The values in Table 4 below represent the noise level at 50 feet from the roadway centerline with and without the truck traffic. The difference between the two conditions will be the same for any distance from the roadway. (Spreadsheets provided in the Appendix.)

Table 4 CNEL Noise Level With and Without Haul Trucks at 50 Feet

Roadway	No Haul Trucks	With Haul Trucks	Difference
Temple Avenue	70.8	71.0	0.2
Grand Avenue	72.2	72.3	0.1
Valley Boulevard	71.8	72.0	0.2

The noise increase due to truck hauling for export of earth from the stadium site to the West Parcel along the affected roadways range from 0.1 to 0.2 dB. This level of increase is not

perceptible. Since the truck traffic will occur during daytime hours, there will not be any sleep disturbance for normal nighttime sleepers.

Appendix

CalEEMod Output for Winter

CalEEMod Output for Annual

Haul Route Noise Calculations

West Parcel Solar With New Truck Haul Plan

South Coast AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	10.00	1000sqft	17.70	10,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	9			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Acreage of site.

Construction Phase - Based on construction schedule provided.

Off-road Equipment - Equipment provided.

Off-road Equipment - Equipment provided.

Off-road Equipment - Equipment provided

Off-road Equipment - Equipment provided.

Off-road Equipment - Equipment provided.

Off-road Equipment - Equipment provided.

Trips and VMT - Haul trips from Iteris report.

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Construction Off-road Equipment Mitigation - Tier IV required mitigation.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	0
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	10.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	300.00	76.00

tblConstructionPhase	NumDays	30.00	62.00
tblConstructionPhase	NumDays	30.00	20.00
tblConstructionPhase	NumDays	10.00	21.00
tblConstructionPhase	NumDays	10.00	62.00
tblConstructionPhase	NumDays	10.00	62.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	PhaseEndDate	11/7/2018	3/30/2018
tblConstructionPhase	PhaseEndDate	7/18/2018	12/6/2017
tblConstructionPhase	PhaseEndDate	8/10/2018	12/29/2017
tblConstructionPhase	PhaseEndDate	12/6/2017	3/14/2018
tblConstructionPhase	PhaseEndDate	2/16/2018	3/14/2018
tblConstructionPhase	PhaseStartDate	8/11/2018	1/2/2018
tblConstructionPhase	PhaseStartDate	2/17/2018	9/26/2017
tblConstructionPhase	PhaseStartDate	7/19/2018	12/7/2017
tblConstructionPhase	PhaseStartDate	9/26/2017	1/2/2018
tblConstructionPhase	PhaseStartDate	12/7/2017	1/2/2018
tblGrading	AcresOfGrading	186.00	325.00
tblGrading	AcresOfGrading	90.00	50.00
tblGrading	AcresOfGrading	0.00	75.00
tblLandUse	LotAcreage	0.23	17.70
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblProjectCharacteristics	OperationalYear	2018	2019
tblTripsAndVMT	HaulingTripLength	20.00	6.60
tblTripsAndVMT	HaulingTripNumber	0.00	9,929.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2017	7.1482	98.2059	48.8348	0.1140	18.2898	3.5622	21.3436	9.9900	3.2772	12.8133	0.0000	11,931.6746	11,931.6746	2.5015	0.0000	11,994.2120

2018	0.5664	5.2158	4.9025	7.4700e-003	1.4074	0.3520	1.7594	0.1719	0.3239	0.4958	0.0000	754.6741	754.6741	0.1906	0.0000	759.4376
Maximum	**7.1482**	**98.2059**	**48.8348**	**0.1140**	**18.2898**	**3.5622**	**21.3436**	**9.9900**	**3.2772**	**12.8133**	**0.0000**	**11,931.6746**	**11,931.6746**	**2.5015**	**0.0000**	**11,994.2120**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2017	1.3692	28.9725	35.2158	0.1140	18.2898	0.0333	17.8750	9.9900	0.0429	9.6145	0.0000	11,931.6746	11,931.6746	2.5015	0.0000	11,994.2120
2018	0.0916	0.1664	4.9136	7.4700e-003	1.4074	-0.0109	1.3822	0.1719	-0.0095	0.1496	0.0000	754.6741	754.6741	0.1906	0.0000	759.4376
Maximum	**1.3692**	**28.9725**	**35.2158**	**0.1140**	**18.2898**	**0.0333**	**17.8750**	**9.9900**	**0.0429**	**9.6145**	**0.0000**	**11,931.6746**	**11,931.6746**	**2.5015**	**0.0000**	**11,994.2120**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**81.06**	**71.83**	**25.32**	**0.00**	**0.00**	**99.43**	**16.65**	**0.00**	**99.07**	**26.64**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.2235	1.0000e-005	1.0300e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.1900e-003	2.1900e-003	1.0000e-005		2.3400e-003

Energy	5.3700e-003	0.0488	0.0410	2.9000e-004		3.7100e-003	3.7100e-003		3.7100e-003	3.7100e-003		58.5334	58.5334	1.1200e-003	1.0700e-003	58.8813
Mobile	0.1663	0.9398	2.4108	8.0800e-003	0.6563	9.4900e-003	0.6658	0.1756	8.9400e-003	0.1846		820.1193	820.1193	0.0433		821.2007
Total	**0.3951**	**0.9886**	**2.4528**	**8.3700e-003**	**0.6563**	**0.0132**	**0.6695**	**0.1756**	**0.0127**	**0.1883**		**878.6549**	**878.6549**	**0.0444**	**1.0700e-003**	**880.0843**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.2235	1.0000e-005	1.0300e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.1900e-003	2.1900e-003	1.0000e-005		2.3400e-003
Energy	5.3700e-003	0.0488	0.0410	2.9000e-004		3.7100e-003	3.7100e-003		3.7100e-003	3.7100e-003		58.5334	58.5334	1.1200e-003	1.0700e-003	58.8813
Mobile	0.1663	0.9398	2.4108	8.0800e-003	0.6563	9.4900e-003	0.6658	0.1756	8.9400e-003	0.1846		820.1193	820.1193	0.0433		821.2007
Total	**0.3951**	**0.9886**	**2.4528**	**8.3700e-003**	**0.6563**	**0.0132**	**0.6695**	**0.1756**	**0.0127**	**0.1883**		**878.6549**	**878.6549**	**0.0444**	**1.0700e-003**	**880.0843**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Prep	Site Preparation	9/1/2017	9/25/2017	6	21	
2	Landscaping	Site Preparation	1/2/2018	3/14/2018	6	62	
3	Restoration	Site Preparation	1/2/2018	3/14/2018	6	62	

4	Grading Including Import	Grading	9/26/2017	12/6/2017	6	62	
5	Finish Grading	Grading	12/7/2017	12/29/2017	6	20	
6	Solar Panel Installation	Building Construction	1/2/2018	3/30/2018	6	76	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating –

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Prep	Air Compressors	1	6.00	78	0.48
Site Prep	Rubber Tired Dozers	3	8.00	247	0.40
Site Prep	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading Including Import	Cranes	0	7.00	231	0.29
Grading Including Import	Excavators	0	8.00	158	0.38
Grading Including Import	Forklifts	0	8.00	89	0.20
Grading Including Import	Generator Sets	0	8.00	84	0.74
Grading Including Import	Graders	0	8.00	187	0.41
Grading Including Import	Rubber Tired Dozers	1	8.00	247	0.40
Grading Including Import	Scrapers	3	8.00	367	0.48
Grading Including Import	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading Including Import	Welders	0	8.00	46	0.45
Finish Grading	Concrete/Industrial Saws	0	8.00	81	0.73
Finish Grading	Excavators	0	8.00	158	0.38
Finish Grading	Graders	1	8.00	187	0.41
Finish Grading	Rubber Tired Dozers	1	8.00	247	0.40
Finish Grading	Scrapers	4	8.00	367	0.48

Finish Grading	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Landscaping	Excavators	0	8.00	158	0.38
Landscaping	Graders	0	8.00	187	0.41
Landscaping	Rubber Tired Dozers	0	8.00	247	0.40
Landscaping	Scrapers	0	8.00	367	0.48
Landscaping	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Restoration	Pavers	0	8.00	130	0.42
Restoration	Paving Equipment	0	8.00	132	0.36
Restoration	Rollers	0	8.00	80	0.38
Restoration	Rubber Tired Dozers	0	8.00	247	0.40
Restoration	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Solar Panel Installation	Cranes	0	7.00	231	0.29
Solar Panel Installation	Forklifts	0	8.00	89	0.20
Solar Panel Installation	Generator Sets	0	8.00	84	0.74
Solar Panel Installation	Rubber Tired Dozers	0	8.00	247	0.40
Solar Panel Installation	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Solar Panel Installation	Welders	0	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Prep	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading Including Import	6	15.00	0.00	9,929.00	14.70	6.90	6.60	LD_Mix	HDT_Mix	HHDT
Finish Grading	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Landscaping	1	3.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Restoration	1	3.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Solar Panel Installation	1	4.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

3.2 Site Prep - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	5.2931	54.4604	25.3235	0.0410		3.0519	3.0519		2.8216	2.8216		4,176.3981	4,176.3981	1.2231		4,206.9761
Total	**5.2931**	**54.4604**	**25.3235**	**0.0410**	**18.0663**	**3.0519**	**21.1182**	**9.9307**	**2.8216**	**12.7523**		**4,176.3981**	**4,176.3981**	**1.2231**		**4,206.9761**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1316	0.0972	1.0367	2.3600e-003	0.2236	1.8400e-003	0.2254	0.0593	1.7000e-003	0.0610		234.7296	234.7296	8.8800e-003		234.9514
Total	**0.1316**	**0.0972**	**1.0367**	**2.3600e-003**	**0.2236**	**1.8400e-003**	**0.2254**	**0.0593**	**1.7000e-003**	**0.0610**		**234.7296**	**234.7296**	**8.8800e-003**		**234.9514**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	-0.3034	-6.8688	22.2028	0.0410		-0.4167	-0.4167		-0.3772	-0.3772	0.0000	4,176.3981	4,176.3981	1.2231		4,206.9761
Total	**-0.3034**	**-6.8688**	**22.2028**	**0.0410**	**18.0663**	**-0.4167**	**17.6496**	**9.9307**	**-0.3772**	**9.5535**	**0.0000**	**4,176.3981**	**4,176.3981**	**1.2231**		**4,206.9761**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1316	0.0972	1.0367	2.3600e-003	0.2236	1.8400e-003	0.2254	0.0593	1.7000e-003	0.0610		234.7296	234.7296	8.8800e-003		234.9514
Total	**0.1316**	**0.0972**	**1.0367**	**2.3600e-003**	**0.2236**	**1.8400e-003**	**0.2254**	**0.0593**	**1.7000e-003**	**0.0610**		**234.7296**	**234.7296**	**8.8800e-003**		**234.9514**

3.3 Landscaping - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.2829	0.0000	1.2829	0.1385	0.0000	0.1385			0.0000			0.0000
Off-Road	0.1331	1.3149	1.1684	1.5500e-003		0.0932	0.0932		0.0857	0.0857		156.3880	156.3880	0.0487		157.6051
Total	**0.1331**	**1.3149**	**1.1684**	**1.5500e-003**	**1.2829**	**0.0932**	**1.3760**	**0.1385**	**0.0857**	**0.2242**		**156.3880**	**156.3880**	**0.0487**		**157.6051**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0176	0.0127	0.1362	3.4000e-004	0.0335	2.7000e-004	0.0338	8.8900e-003	2.5000e-004	9.1400e-003		34.2204	34.2204	1.1700e-003		34.2496
Total	**0.0176**	**0.0127**	**0.1362**	**3.4000e-004**	**0.0335**	**2.7000e-004**	**0.0338**	**8.8900e-003**	**2.5000e-004**	**9.1400e-003**		**34.2204**	**34.2204**	**1.1700e-003**		**34.2496**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Fugitive Dust					1.2829	0.0000	1.2829	0.1385	0.0000	0.1385			0.0000			0.0000
Off-Road	6.4400e-003	-0.0533	1.1713	1.5500e-003		-0.0074	-0.0074		-0.0066	-0.0066	0.0000	156.3880	156.3880	0.0487		157.6051
Total	**6.4400e-003**	**-0.0533**	**1.1713**	**1.5500e-003**	**1.2829**	**-0.0074**	**1.2754**	**0.1385**	**-0.0066**	**0.1319**	**0.0000**	**156.3880**	**156.3880**	**0.0487**		**157.6051**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0176	0.0127	0.1362	3.4000e-004	0.0335	2.7000e-004	0.0338	8.8900e-003	2.5000e-004	9.1400e-003		34.2204	34.2204	1.1700e-003		34.2496
Total	**0.0176**	**0.0127**	**0.1362**	**3.4000e-004**	**0.0335**	**2.7000e-004**	**0.0338**	**8.8900e-003**	**2.5000e-004**	**9.1400e-003**		**34.2204**	**34.2204**	**1.1700e-003**		**34.2496**

3.4 Restoration - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.1331	1.3149	1.1684	1.5500e-003		0.0932	0.0932		0.0857	0.0857		156.3880	156.3880	0.0487		157.6051

Total	**0.1331**	**1.3149**	**1.1684**	**1.5500e-003**	**0.0000**	**0.0932**	**0.0932**	**0.0000**	**0.0857**	**0.0857**		**156.3880**	**156.3880**	**0.0487**		**157.6051**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0176	0.0127	0.1362	3.4000e-004	0.0335	2.7000e-004	0.0338	8.8900e-003	2.5000e-004	9.1400e-003		34.2204	34.2204	1.1700e-003		34.2496
Total	**0.0176**	**0.0127**	**0.1362**	**3.4000e-004**	**0.0335**	**2.7000e-004**	**0.0338**	**8.8900e-003**	**2.5000e-004**	**9.1400e-003**		**34.2204**	**34.2204**	**1.1700e-003**		**34.2496**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	6.4400e-003	-0.0533	1.1713	1.5500e-003		-0.0074	-0.0074		-0.0066	-0.0066	0.0000	156.3880	156.3880	0.0487		157.6051
Total	**6.4400e-003**	**-0.0533**	**1.1713**	**1.5500e-003**	**0.0000**	**-0.0074**	**-0.0074**	**0.0000**	**-0.0066**	**-0.0066**	**0.0000**	**156.3880**	**156.3880**	**0.0487**		**157.6051**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0176	0.0127	0.1362	3.4000e-004	0.0335	2.7000e-004	0.0338	8.8900e-003	2.5000e-004	9.1400e-003		34.2204	34.2204	1.1700e-003		34.2496
Total	**0.0176**	**0.0127**	**0.1362**	**3.4000e-004**	**0.0335**	**2.7000e-004**	**0.0338**	**8.8900e-003**	**2.5000e-004**	**9.1400e-003**		**34.2204**	**34.2204**	**1.1700e-003**		**34.2496**

3.5 Grading Including Import - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					11.5812	0.0000	11.5812	3.9105	0.0000	3.9105			0.0000			0.0000
Off-Road	5.8268	69.2229	40.5178	0.0602		3.1093	3.1093		2.8605	2.8605		6,156.5082	6,156.5082	1.8863		6,203.6668
Total	**5.8268**	**69.2229**	**40.5178**	**0.0602**	**11.5812**	**3.1093**	**14.6905**	**3.9105**	**2.8605**	**6.7710**		**6,156.5082**	**6,156.5082**	**1.8863**		**6,203.6668**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.8175	28.9102	5.5848	0.0521	0.9258	0.1106	1.0364	0.2539	0.1058	0.3597		5,599.1192	5,599.1192	0.6085		5,614.3316
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0987	0.0729	0.7775	1.7700e-003	0.1677	1.3800e-003	0.1691	0.0445	1.2800e-003	0.0457		176.0472	176.0472	6.6600e-003		176.2136
Total	**0.9161**	**28.9831**	**6.3623**	**0.0538**	**1.0935**	**0.1120**	**1.2055**	**0.2984**	**0.1071**	**0.4055**		**5,775.1664**	**5,775.1664**	**0.6152**		**5,790.5452**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					11.5812	0.0000	11.5812	3.9105	0.0000	3.9105			0.0000			0.0000
Off-Road	0.4531	-0.0105	28.8534	0.0602		-0.0787	-0.0787		-0.0642	-0.0642	0.0000	6,156.5082	6,156.5082	1.8863		6,203.6668
Total	**0.4531**	**-0.0105**	**28.8534**	**0.0602**	**11.5812**	**-0.0787**	**11.5025**	**3.9105**	**-0.0642**	**3.8463**	**0.0000**	**6,156.5082**	**6,156.5082**	**1.8863**		**6,203.6668**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.8175	28.9102	5.5848	0.0521	0.9258	0.1106	1.0364	0.2539	0.1058	0.3597		5,599.1192	5,599.1192	0.6085		5,614.3316
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0987	0.0729	0.7775	1.7700e-003	0.1677	1.3800e-003	0.1691	0.0445	1.2800e-003	0.0457		176.0472	176.0472	6.6600e-003		176.2136
Total	**0.9161**	**28.9831**	**6.3623**	**0.0538**	**1.0935**	**0.1120**	**1.2055**	**0.2984**	**0.1071**	**0.4055**		**5,775.1664**	**5,775.1664**	**0.6152**		**5,790.5452**

3.6 Finish Grading - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	7.0496	87.1955	48.0573	0.0758		3.5608	3.5608		3.2759	3.2759		7,749.9052	7,749.9052	2.3746		7,809.2691
Total	**7.0496**	**87.1955**	**48.0573**	**0.0758**	**8.6733**	**3.5608**	**12.2341**	**3.5965**	**3.2759**	**6.8724**		**7,749.9052**	**7,749.9052**	**2.3746**		**7,809.2691**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Worker	0.0987	0.0729	0.7775	1.7700e-003	0.1677	1.3800e-003	0.1691	0.0445	1.2800e-003	0.0457		176.0472	176.0472	6.6600e-003		176.2136
Total	**0.0987**	**0.0729**	**0.7775**	**1.7700e-003**	**0.1677**	**1.3800e-003**	**0.1691**	**0.0445**	**1.2800e-003**	**0.0457**		**176.0472**	**176.0472**	**6.6600e-003**		**176.2136**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	0.7060	1.4531	33.9908	0.0758		-0.0039	-0.0039		6.5800e-003	6.5800e-003	0.0000	7,749.9052	7,749.9052	2.3746		7,809.2691
Total	**0.7060**	**1.4531**	**33.9908**	**0.0758**	**8.6733**	**-0.0039**	**8.6695**	**3.5965**	**6.5800e-003**	**3.6031**	**0.0000**	**7,749.9052**	**7,749.9052**	**2.3746**		**7,809.2691**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0987	0.0729	0.7775	1.7700e-003	0.1677	1.3800e-003	0.1691	0.0445	1.2800e-003	0.0457		176.0472	176.0472	6.6600e-003		176.2136
Total	**0.0987**	**0.0729**	**0.7775**	**1.7700e-003**	**0.1677**	**1.3800e-003**	**0.1691**	**0.0445**	**1.2800e-003**	**0.0457**		**176.0472**	**176.0472**	**6.6600e-003**		**176.2136**

3.7 Solar Panel Installation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2328	2.3010	2.0446	2.7200e-003		0.1630	0.1630		0.1500	0.1500		273.6790	273.6790	0.0852		275.8090
Total	**0.2328**	**2.3010**	**2.0446**	**2.7200e-003**		**0.1630**	**0.1630**		**0.1500**	**0.1500**		**273.6790**	**273.6790**	**0.0852**		**275.8090**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	8.8800e-003	0.2428	0.0670	5.1000e-004	0.0128	1.8000e-003	0.0146	3.6900e-003	1.7200e-003	5.4100e-003		54.1513	54.1513	4.0700e-003		54.2532
Worker	0.0234	0.0169	0.1816	4.6000e-004	0.0447	3.6000e-004	0.0451	0.0119	3.3000e-004	0.0122		45.6272	45.6272	1.5600e-003		45.6661
Total	**0.0323**	**0.2597**	**0.2486**	**9.7000e-004**	**0.0575**	**2.1600e-003**	**0.0597**	**0.0156**	**2.0500e-003**	**0.0176**		**99.7785**	**99.7785**	**5.6300e-003**		**99.9193**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0113	-0.0933	2.0498	2.7200e-003		-0.0130	-0.0130		-0.0116	-0.0116	0.0000	273.6790	273.6790	0.0852		275.8090
Total	**0.0113**	**-0.0933**	**2.0498**	**2.7200e-003**		**-0.0130**	**-0.0130**		**-0.0116**	**-0.0116**	**0.0000**	**273.6790**	**273.6790**	**0.0852**		**275.8090**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	8.8800e-003	0.2428	0.0670	5.1000e-004	0.0128	1.8000e-003	0.0146	3.6900e-003	1.7200e-003	5.4100e-003		54.1513	54.1513	4.0700e-003		54.2532
Worker	0.0234	0.0169	0.1816	4.6000e-004	0.0447	3.6000e-004	0.0451	0.0119	3.3000e-004	0.0122		45.6272	45.6272	1.5600e-003		45.6661
Total	**0.0323**	**0.2597**	**0.2486**	**9.7000e-004**	**0.0575**	**2.1600e-003**	**0.0597**	**0.0156**	**2.0500e-003**	**0.0176**		**99.7785**	**99.7785**	**5.6300e-003**		**99.9193**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.1663	0.9398	2.4108	8.0800e-003	0.6563	9.4900e-003	0.6658	0.1756	8.9400e-003	0.1846		820.1193	820.1193	0.0433		821.2007
Unmitigated	0.1663	0.9398	2.4108	8.0800e-003	0.6563	9.4900e-003	0.6658	0.1756	8.9400e-003	0.1846		820.1193	820.1193	0.0433		821.2007

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	69.70	13.20	6.80	233,117	233,117
Total	69.70	13.20	6.80	233,117	233,117

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	16.60	8.40	6.90	59.00	28.00	13.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.546418	0.044132	0.199182	0.124467	0.017484	0.005870	0.020172	0.031831	0.001999	0.002027	0.004724	0.000704	0.000991

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	5.3700e-003	0.0488	0.0410	2.9000e-004		3.7100e-003	3.7100e-003		3.7100e-003	3.7100e-003		58.5334	58.5334	1.1200e-003	1.0700e-003	58.8813
NaturalGas Unmitigated	5.3700e-003	0.0488	0.0410	2.9000e-004		3.7100e-003	3.7100e-003		3.7100e-003	3.7100e-003		58.5334	58.5334	1.1200e-003	1.0700e-003	58.8813

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	497.534	5.3700e-003	0.0488	0.0410	2.9000e-004		3.7100e-003	3.7100e-003		3.7100e-003	3.7100e-003		58.5334	58.5334	1.1200e-003	1.0700e-003	58.8813
Total		**5.3700e-003**	**0.0488**	**0.0410**	**2.9000e-004**		**3.7100e-003**	**3.7100e-003**		**3.7100e-003**	**3.7100e-003**		**58.5334**	**58.5334**	**1.1200e-003**	**1.0700e-003**	**58.8813**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	0.497534	5.3700e-003	0.0488	0.0410	2.9000e-004		3.7100e-003	3.7100e-003		3.7100e-003	3.7100e-003		58.5334	58.5334	1.1200e-003	1.0700e-003	58.8813
Total		**5.3700e-003**	**0.0488**	**0.0410**	**2.9000e-004**		**3.7100e-003**	**3.7100e-003**		**3.7100e-003**	**3.7100e-003**		**58.5334**	**58.5334**	**1.1200e-003**	**1.0700e-003**	**58.8813**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.2235	1.0000e-005	1.0300e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.1900e-003	2.1900e-003	1.0000e-005		2.3400e-003
Unmitigated	0.2235	1.0000e-005	1.0300e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.1900e-003	2.1900e-003	1.0000e-005		2.3400e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0254					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.1980					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-004	1.0000e-005	1.0300e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.1900e-003	2.1900e-003	1.0000e-005		2.3400e-003
Total	**0.2235**	**1.0000e-005**	**1.0300e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.1900e-003**	**2.1900e-003**	**1.0000e-005**		**2.3400e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0254					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.1980					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-004	1.0000e-005	1.0300e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.1900e-003	2.1900e-003	1.0000e-005		2.3400e-003
Total	**0.2235**	**1.0000e-005**	**1.0300e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.1900e-003**	**2.1900e-003**	**1.0000e-005**		**2.3400e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

West Parcel Solar With New Truck Haul Plan

South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	10.00	1000sqft	17.70	10,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	9			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Acreage of site.

Construction Phase - Based on construction schedule provided.

Off-road Equipment - Equipment provided.

Off-road Equipment - Equipment provided.

Off-road Equipment - Equipment provided

Off-road Equipment - Equipment provided.

Off-road Equipment - Equipment provided.

Off-road Equipment - Equipment provided.

Trips and VMT - Haul trips from Iteris report.

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Construction Off-road Equipment Mitigation - Tier IV required mitigation.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	0
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	10.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final

tblConstructionPhase	NumDays	300.00	76.00
tblConstructionPhase	NumDays	30.00	62.00
tblConstructionPhase	NumDays	30.00	20.00
tblConstructionPhase	NumDays	10.00	21.00
tblConstructionPhase	NumDays	10.00	62.00
tblConstructionPhase	NumDays	10.00	62.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	PhaseEndDate	11/7/2018	3/30/2018
tblConstructionPhase	PhaseEndDate	7/18/2018	12/6/2017
tblConstructionPhase	PhaseEndDate	8/10/2018	12/29/2017
tblConstructionPhase	PhaseEndDate	12/6/2017	3/14/2018
tblConstructionPhase	PhaseEndDate	2/16/2018	3/14/2018
tblConstructionPhase	PhaseStartDate	8/11/2018	1/2/2018
tblConstructionPhase	PhaseStartDate	2/17/2018	9/26/2017
tblConstructionPhase	PhaseStartDate	7/19/2018	12/7/2017
tblConstructionPhase	PhaseStartDate	9/26/2017	1/2/2018
tblConstructionPhase	PhaseStartDate	12/7/2017	1/2/2018
tblGrading	AcresOfGrading	186.00	325.00
tblGrading	AcresOfGrading	90.00	50.00
tblGrading	AcresOfGrading	0.00	75.00
tblLandUse	LotAcreage	0.23	17.70
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblProjectCharacteristics	OperationalYear	2018	2019
tblTripsAndVMT	HaulingTripLength	20.00	6.60
tblTripsAndVMT	HaulingTripNumber	0.00	9,929.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					

2017	0.3362	4.5088	2.2051	4.8100e-003	0.6727	0.1675	0.8402	0.2716	0.1543	0.4260	0.0000	453.5408	453.5408	0.1030	0.0000	456.1155
2018	0.0192	0.1798	0.1683	2.6000e-004	0.0440	0.0121	0.0560	5.4200e-003	0.0111	0.0165	0.0000	23.6865	23.6865	5.9300e-003	0.0000	23.8348
Maximum	**0.3362**	**4.5088**	**2.2051**	**4.8100e-003**	**0.6727**	**0.1675**	**0.8402**	**0.2716**	**0.1543**	**0.4260**	**0.0000**	**453.5408**	**453.5408**	**0.1030**	**0.0000**	**456.1155**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2017	0.0474	0.8612	1.6700	4.8100e-003	0.6727	-0.0034	0.6693	0.2716	-0.0026	0.2690	0.0000	453.5404	453.5404	0.1030	0.0000	456.1151
2018	2.9500e-003	4.0200e-003	0.1687	2.6000e-004	0.0440	-0.0009	0.0431	5.4200e-003	-0.0008	4.6600e-003	0.0000	23.6865	23.6865	5.9300e-003	0.0000	23.8348
Maximum	**0.0474**	**0.8612**	**1.6700**	**4.8100e-003**	**0.6727**	**-0.0009**	**0.6693**	**0.2716**	**-0.0008**	**0.2690**	**0.0000**	**453.5404**	**453.5404**	**0.1030**	**0.0000**	**456.1151**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**85.83**	**81.55**	**22.53**	**0.00**	**0.00**	**102.39**	**20.51**	**0.00**	**102.04**	**38.15**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**9-1-2017**	**9-30-2017**	0.2252	0.0653
		Highest	0.2252	0.0653

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0408	0.0000	1.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.5000e-004	2.5000e-004	0.0000	0.0000	2.6000e-004
Energy	9.8000e-004	8.9000e-003	7.4800e-003	5.0000e-005		6.8000e-004	6.8000e-004		6.8000e-004	6.8000e-004	0.0000	45.7270	45.7270	1.6700e-003	4.9000e-004	45.9135
Mobile	0.0225	0.1316	0.3376	1.1300e-003	0.0886	1.3000e-003	0.0899	0.0237	1.2200e-003	0.0250	0.0000	103.7053	103.7053	5.3800e-003	0.0000	103.8398
Waste						0.0000	0.0000		0.0000	0.0000	2.5171	0.0000	2.5171	0.1488	0.0000	6.2360
Water						0.0000	0.0000		0.0000	0.0000	0.7337	9.5940	10.3277	0.0758	1.8600e-003	12.7760
Total	**0.0642**	**0.1405**	**0.3452**	**1.1800e-003**	**0.0886**	**1.9800e-003**	**0.0906**	**0.0237**	**1.9000e-003**	**0.0256**	**3.2507**	**159.0266**	**162.2773**	**0.2316**	**2.3500e-003**	**168.7656**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0408	0.0000	1.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.5000e-004	2.5000e-004	0.0000	0.0000	2.6000e-004
Energy	9.8000e-004	8.9000e-003	7.4800e-003	5.0000e-005		6.8000e-004	6.8000e-004		6.8000e-004	6.8000e-004	0.0000	45.7270	45.7270	1.6700e-003	4.9000e-004	45.9135
Mobile	0.0225	0.1316	0.3376	1.1300e-003	0.0886	1.3000e-003	0.0899	0.0237	1.2200e-003	0.0250	0.0000	103.7053	103.7053	5.3800e-003	0.0000	103.8398
Waste						0.0000	0.0000		0.0000	0.0000	2.5171	0.0000	2.5171	0.1488	0.0000	6.2360
Water						0.0000	0.0000		0.0000	0.0000	0.7337	9.5940	10.3277	0.0758	1.8600e-003	12.7760
Total	**0.0642**	**0.1405**	**0.3452**	**1.1800e-003**	**0.0886**	**1.9800e-003**	**0.0906**	**0.0237**	**1.9000e-003**	**0.0256**	**3.2507**	**159.0266**	**162.2773**	**0.2316**	**2.3500e-003**	**168.7656**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Prep	Site Preparation	9/1/2017	9/25/2017	6	21	
2	Landscaping	Site Preparation	1/2/2018	3/14/2018	6	62	
3	Restoration	Site Preparation	1/2/2018	3/14/2018	6	62	
4	Grading Including Import	Grading	9/26/2017	12/6/2017	6	62	
5	Finish Grading	Grading	12/7/2017	12/29/2017	6	20	
6	Solar Panel Installation	Building Construction	1/2/2018	3/30/2018	6	76	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating –

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Prep	Air Compressors	1	6.00	78	0.48
Site Prep	Rubber Tired Dozers	3	8.00	247	0.40
Site Prep	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading Including Import	Cranes	0	7.00	231	0.29
Grading Including Import	Excavators	0	8.00	158	0.38
Grading Including Import	Forklifts	0	8.00	89	0.20

Grading Including Import	Generator Sets	0	8.00	84	0.74
Grading Including Import	Graders	0	8.00	187	0.41
Grading Including Import	Rubber Tired Dozers	1	8.00	247	0.40
Grading Including Import	Scrapers	3	8.00	367	0.48
Grading Including Import	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading Including Import	Welders	0	8.00	46	0.45
Finish Grading	Concrete/Industrial Saws	0	8.00	81	0.73
Finish Grading	Excavators	0	8.00	158	0.38
Finish Grading	Graders	1	8.00	187	0.41
Finish Grading	Rubber Tired Dozers	1	8.00	247	0.40
Finish Grading	Scrapers	4	8.00	367	0.48
Finish Grading	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Landscaping	Excavators	0	8.00	158	0.38
Landscaping	Graders	0	8.00	187	0.41
Landscaping	Rubber Tired Dozers	0	8.00	247	0.40
Landscaping	Scrapers	0	8.00	367	0.48
Landscaping	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Restoration	Pavers	0	8.00	130	0.42
Restoration	Paving Equipment	0	8.00	132	0.36
Restoration	Rollers	0	8.00	80	0.38
Restoration	Rubber Tired Dozers	0	8.00	247	0.40
Restoration	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Solar Panel Installation	Cranes	0	7.00	231	0.29
Solar Panel Installation	Forklifts	0	8.00	89	0.20
Solar Panel Installation	Generator Sets	0	8.00	84	0.74
Solar Panel Installation	Rubber Tired Dozers	0	8.00	247	0.40
Solar Panel Installation	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Solar Panel Installation	Welders	0	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Prep	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading Including Import	6	15.00	0.00	9,929.00	14.70	6.90	6.60	LD_Mix	HDT_Mix	HHDT
Finish Grading	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Landscaping	1	3.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Restoration	1	3.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Solar Panel Installation	1	4.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

3.2 Site Prep - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1897	0.0000	0.1897	0.1043	0.0000	0.1043	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0556	0.5718	0.2659	4.3000e-004		0.0320	0.0320		0.0296	0.0296	0.0000	39.7820	39.7820	0.0117	0.0000	40.0733
Total	**0.0556**	**0.5718**	**0.2659**	**4.3000e-004**	**0.1897**	**0.0320**	**0.2217**	**0.1043**	**0.0296**	**0.1339**	**0.0000**	**39.7820**	**39.7820**	**0.0117**	**0.0000**	**40.0733**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2600e-003	1.0500e-003	0.0112	3.0000e-005	2.3000e-003	2.0000e-005	2.3200e-003	6.1000e-004	2.0000e-005	6.3000e-004	0.0000	2.2740	2.2740	9.0000e-005	0.0000	2.2762
Total	**1.2600e-003**	**1.0500e-003**	**0.0112**	**3.0000e-005**	**2.3000e-003**	**2.0000e-005**	**2.3200e-003**	**6.1000e-004**	**2.0000e-005**	**6.3000e-004**	**0.0000**	**2.2740**	**2.2740**	**9.0000e-005**	**0.0000**	**2.2762**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1897	0.0000	0.1897	0.1043	0.0000	0.1043	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	-0.0032	-0.0721	0.2331	4.3000e-004		-0.0044	-0.0044		-0.0040	-0.0040	0.0000	39.7820	39.7820	0.0117	0.0000	40.0733
Total	**-0.0032**	**-0.0721**	**0.2331**	**4.3000e-004**	**0.1897**	**-0.0044**	**0.1853**	**0.1043**	**-0.0040**	**0.1003**	**0.0000**	**39.7820**	**39.7820**	**0.0117**	**0.0000**	**40.0733**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2600e-003	1.0500e-003	0.0112	3.0000e-005	2.3000e-003	2.0000e-005	2.3200e-003	6.1000e-004	2.0000e-005	6.3000e-004	0.0000	2.2740	2.2740	9.0000e-005	0.0000	2.2762
Total	**1.2600e-003**	**1.0500e-003**	**0.0112**	**3.0000e-005**	**2.3000e-003**	**2.0000e-005**	**2.3200e-003**	**6.1000e-004**	**2.0000e-005**	**6.3000e-004**	**0.0000**	**2.2740**	**2.2740**	**9.0000e-005**	**0.0000**	**2.2762**

3.3 Landscaping - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0398	0.0000	0.0398	4.2900e-003	0.0000	4.2900e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.1200e-003	0.0408	0.0362	5.0000e-005		2.8900e-003	2.8900e-003		2.6600e-003	2.6600e-003	0.0000	4.3981	4.3981	1.3700e-003	0.0000	4.4323
Total	**4.1200e-003**	**0.0408**	**0.0362**	**5.0000e-005**	**0.0398**	**2.8900e-003**	**0.0427**	**4.2900e-003**	**2.6600e-003**	**6.9500e-003**	**0.0000**	**4.3981**	**4.3981**	**1.3700e-003**	**0.0000**	**4.4323**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.9000e-004	4.0000e-004	4.3400e-003	1.0000e-005	1.0200e-003	1.0000e-005	1.0300e-003	2.7000e-004	1.0000e-005	2.8000e-004	0.0000	0.9788	0.9788	3.0000e-005	0.0000	0.9797
Total	**4.9000e-004**	**4.0000e-004**	**4.3400e-003**	**1.0000e-005**	**1.0200e-003**	**1.0000e-005**	**1.0300e-003**	**2.7000e-004**	**1.0000e-005**	**2.8000e-004**	**0.0000**	**0.9788**	**0.9788**	**3.0000e-005**	**0.0000**	**0.9797**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0398	0.0000	0.0398	4.2900e-003	0.0000	4.2900e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.0000e-004	-0.0017	0.0363	5.0000e-005		-0.0002	-0.0002		-0.0002	-0.0002	0.0000	4.3981	4.3981	1.3700e-003	0.0000	4.4323
Total	**2.0000e-004**	**-0.0017**	**0.0363**	**5.0000e-005**	**0.0398**	**-0.0002**	**0.0395**	**4.2900e-003**	**-0.0002**	**4.0800e-003**	**0.0000**	**4.3981**	**4.3981**	**1.3700e-003**	**0.0000**	**4.4323**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.9000e-004	4.0000e-004	4.3400e-003	1.0000e-005	1.0200e-003	1.0000e-005	1.0300e-003	2.7000e-004	1.0000e-005	2.8000e-004	0.0000	0.9788	0.9788	3.0000e-005	0.0000	0.9797

Total	**4.9000e-004**	**4.0000e-004**	**4.3400e-003**	**1.0000e-005**	**1.0200e-003**	**1.0000e-005**	**1.0300e-003**	**2.7000e-004**	**1.0000e-005**	**2.8000e-004**	**0.0000**	**0.9788**	**0.9788**	**3.0000e-005**	**0.0000**	**0.9797**

3.4 Restoration - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.1200e-003	0.0408	0.0362	5.0000e-005		2.8900e-003	2.8900e-003		2.6600e-003	2.6600e-003	0.0000	4.3981	4.3981	1.3700e-003	0.0000	4.4323
Total	**4.1200e-003**	**0.0408**	**0.0362**	**5.0000e-005**	**0.0000**	**2.8900e-003**	**2.8900e-003**	**0.0000**	**2.6600e-003**	**2.6600e-003**	**0.0000**	**4.3981**	**4.3981**	**1.3700e-003**	**0.0000**	**4.4323**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.9000e-004	4.0000e-004	4.3400e-003	1.0000e-005	1.0200e-003	1.0000e-005	1.0300e-003	2.7000e-004	1.0000e-005	2.8000e-004	0.0000	0.9788	0.9788	3.0000e-005	0.0000	0.9797
Total	**4.9000e-004**	**4.0000e-004**	**4.3400e-003**	**1.0000e-005**	**1.0200e-003**	**1.0000e-005**	**1.0300e-003**	**2.7000e-004**	**1.0000e-005**	**2.8000e-004**	**0.0000**	**0.9788**	**0.9788**	**3.0000e-005**	**0.0000**	**0.9797**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.0000e-004	-0.0017	0.0363	5.0000e-005		-0.0002	-0.0002		-0.0002	-0.0002	0.0000	4.3981	4.3981	1.3700e-003	0.0000	4.4323
Total	**2.0000e-004**	**-0.0017**	**0.0363**	**5.0000e-005**	**0.0000**	**-0.0002**	**-0.0002**	**0.0000**	**-0.0002**	**-0.0002**	**0.0000**	**4.3981**	**4.3981**	**1.3700e-003**	**0.0000**	**4.4323**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.9000e-004	4.0000e-004	4.3400e-003	1.0000e-005	1.0200e-003	1.0000e-005	1.0300e-003	2.7000e-004	1.0000e-005	2.8000e-004	0.0000	0.9788	0.9788	3.0000e-005	0.0000	0.9797
Total	**4.9000e-004**	**4.0000e-004**	**4.3400e-003**	**1.0000e-005**	**1.0200e-003**	**1.0000e-005**	**1.0300e-003**	**2.7000e-004**	**1.0000e-005**	**2.8000e-004**	**0.0000**	**0.9788**	**0.9788**	**3.0000e-005**	**0.0000**	**0.9797**

3.5 Grading Including Import - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3590	0.0000	0.3590	0.1212	0.0000	0.1212	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1806	2.1459	1.2561	1.8700e-003		0.0964	0.0964		0.0887	0.0887	0.0000	173.1378	173.1378	0.0531	0.0000	174.4640
Total	**0.1806**	**2.1459**	**1.2561**	**1.8700e-003**	**0.3590**	**0.0964**	**0.4554**	**0.1212**	**0.0887**	**0.2099**	**0.0000**	**173.1378**	**173.1378**	**0.0531**	**0.0000**	**174.4640**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0246	0.9150	0.1586	1.6500e-003	0.0282	3.3500e-003	0.0316	7.7600e-003	3.2000e-003	0.0110	0.0000	161.3813	161.3813	0.0164	0.0000	161.7915
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.7800e-003	2.3200e-003	0.0248	6.0000e-005	5.1000e-003	4.0000e-005	5.1400e-003	1.3500e-003	4.0000e-005	1.3900e-003	0.0000	5.0354	5.0354	1.9000e-004	0.0000	5.0401
Total	**0.0273**	**0.9173**	**0.1834**	**1.7100e-003**	**0.0333**	**3.3900e-003**	**0.0367**	**9.1100e-003**	**3.2400e-003**	**0.0124**	**0.0000**	**166.4167**	**166.4167**	**0.0166**	**0.0000**	**166.8316**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Fugitive Dust					0.3590	0.0000	0.3590	0.1212	0.0000	0.1212	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0141	-0.0003	0.8945	1.8700e-003		-0.0024	-0.0024		-0.0020	-0.0020	0.0000	173.1376	173.1376	0.0531	0.0000	174.4638
Total	**0.0141**	**-0.0003**	**0.8945**	**1.8700e-003**	**0.3590**	**-0.0024**	**0.3566**	**0.1212**	**-0.0020**	**0.1192**	**0.0000**	**173.1376**	**173.1376**	**0.0531**	**0.0000**	**174.4638**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0246	0.9150	0.1586	1.6500e-003	0.0282	3.3500e-003	0.0316	7.7600e-003	3.2000e-003	0.0110	0.0000	161.3813	161.3813	0.0164	0.0000	161.7915
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.7800e-003	2.3200e-003	0.0248	6.0000e-005	5.1000e-003	4.0000e-005	5.1400e-003	1.3500e-003	4.0000e-005	1.3900e-003	0.0000	5.0354	5.0354	1.9000e-004	0.0000	5.0401
Total	**0.0273**	**0.9173**	**0.1834**	**1.7100e-003**	**0.0333**	**3.3900e-003**	**0.0367**	**9.1100e-003**	**3.2400e-003**	**0.0124**	**0.0000**	**166.4167**	**166.4167**	**0.0166**	**0.0000**	**166.8316**

3.6 Finish Grading - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0867	0.0000	0.0867	0.0360	0.0000	0.0360	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0705	0.8720	0.4806	7.6000e-004		0.0356	0.0356		0.0328	0.0328	0.0000	70.3060	70.3060	0.0215	0.0000	70.8445

Total	**0.0705**	**0.8720**	**0.4806**	**7.6000e-004**	**0.0867**	**0.0356**	**0.1223**	**0.0360**	**0.0328**	**0.0687**	**0.0000**	**70.3060**	**70.3060**	**0.0215**	**0.0000**	**70.8445**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.0000e-004	7.5000e-004	7.9800e-003	2.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.6243	1.6243	6.0000e-005	0.0000	1.6259
Total	**9.0000e-004**	**7.5000e-004**	**7.9800e-003**	**2.0000e-005**	**1.6500e-003**	**1.0000e-005**	**1.6600e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**	**0.0000**	**1.6243**	**1.6243**	**6.0000e-005**	**0.0000**	**1.6259**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0867	0.0000	0.0867	0.0360	0.0000	0.0360	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.0600e-003	0.0145	0.3399	7.6000e-004		0.0000	0.0000		7.0000e-005	7.0000e-005	0.0000	70.3059	70.3059	0.0215	0.0000	70.8444
Total	**7.0600e-003**	**0.0145**	**0.3399**	**7.6000e-004**	**0.0867**	**0.0000**	**0.0867**	**0.0360**	**7.0000e-005**	**0.0360**	**0.0000**	**70.3059**	**70.3059**	**0.0215**	**0.0000**	**70.8444**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.0000e-004	7.5000e-004	7.9800e-003	2.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.6243	1.6243	6.0000e-005	0.0000	1.6259
Total	**9.0000e-004**	**7.5000e-004**	**7.9800e-003**	**2.0000e-005**	**1.6500e-003**	**1.0000e-005**	**1.6600e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**	**0.0000**	**1.6243**	**1.6243**	**6.0000e-005**	**0.0000**	**1.6259**

3.7 Solar Panel Installation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.8500e-003	0.0874	0.0777	1.0000e-004		6.1900e-003	6.1900e-003		5.7000e-003	5.7000e-003	0.0000	9.4345	9.4345	2.9400e-003	0.0000	9.5080
Total	**8.8500e-003**	**0.0874**	**0.0777**	**1.0000e-004**		**6.1900e-003**	**6.1900e-003**		**5.7000e-003**	**5.7000e-003**	**0.0000**	**9.4345**	**9.4345**	**2.9400e-003**	**0.0000**	**9.5080**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.3000e-004	9.4000e-003	2.4200e-003	2.0000e-005	4.8000e-004	7.0000e-005	5.5000e-004	1.4000e-004	6.0000e-005	2.0000e-004	0.0000	1.8984	1.8984	1.4000e-004	0.0000	1.9017
Worker	8.1000e-004	6.6000e-004	7.0900e-003	2.0000e-005	1.6700e-003	1.0000e-005	1.6800e-003	4.4000e-004	1.0000e-005	4.6000e-004	0.0000	1.5998	1.5998	5.0000e-005	0.0000	1.6012
Total	**1.1400e-003**	**0.0101**	**9.5100e-003**	**4.0000e-005**	**2.1500e-003**	**8.0000e-005**	**2.2300e-003**	**5.8000e-004**	**7.0000e-005**	**6.6000e-004**	**0.0000**	**3.4982**	**3.4982**	**1.9000e-004**	**0.0000**	**3.5029**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.3000e-004	-0.0035	0.0779	1.0000e-004		-0.0005	-0.0005		-0.0004	-0.0004	0.0000	9.4345	9.4345	2.9400e-003	0.0000	9.5080
Total	**4.3000e-004**	**-0.0035**	**0.0779**	**1.0000e-004**		**-0.0005**	**-0.0005**		**-0.0004**	**-0.0004**	**0.0000**	**9.4345**	**9.4345**	**2.9400e-003**	**0.0000**	**9.5080**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.3000e-004	9.4000e-003	2.4200e-003	2.0000e-005	4.8000e-004	7.0000e-005	5.5000e-004	1.4000e-004	6.0000e-005	2.0000e-004	0.0000	1.8984	1.8984	1.4000e-004	0.0000	1.9017
Worker	8.1000e-004	6.6000e-004	7.0900e-003	2.0000e-005	1.6700e-003	1.0000e-005	1.6800e-003	4.4000e-004	1.0000e-005	4.6000e-004	0.0000	1.5998	1.5998	5.0000e-005	0.0000	1.6012
Total	**1.1400e-003**	**0.0101**	**9.5100e-003**	**4.0000e-005**	**2.1500e-003**	**8.0000e-005**	**2.2300e-003**	**5.8000e-004**	**7.0000e-005**	**6.6000e-004**	**0.0000**	**3.4982**	**3.4982**	**1.9000e-004**	**0.0000**	**3.5029**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0225	0.1316	0.3376	1.1300e-003	0.0886	1.3000e-003	0.0899	0.0237	1.2200e-003	0.0250	0.0000	103.7053	103.7053	5.3800e-003	0.0000	103.8398
Unmitigated	0.0225	0.1316	0.3376	1.1300e-003	0.0886	1.3000e-003	0.0899	0.0237	1.2200e-003	0.0250	0.0000	103.7053	103.7053	5.3800e-003	0.0000	103.8398

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	69.70	13.20	6.80	233,117	233,117
Total	69.70	13.20	6.80	233,117	233,117

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	16.60	8.40	6.90	59.00	28.00	13.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.546418	0.044132	0.199182	0.124467	0.017484	0.005870	0.020172	0.031831	0.001999	0.002027	0.004724	0.000704	0.000991

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	36.0361	36.0361	1.4900e-003	3.1000e-004	36.1650
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	36.0361	36.0361	1.4900e-003	3.1000e-004	36.1650
NaturalGas Mitigated	9.8000e-004	8.9000e-003	7.4800e-003	5.0000e-005		6.8000e-004	6.8000e-004		6.8000e-004	6.8000e-004	0.0000	9.6909	9.6909	1.9000e-004	1.8000e-004	9.7485
NaturalGas Unmitigated	9.8000e-004	8.9000e-003	7.4800e-003	5.0000e-005		6.8000e-004	6.8000e-004		6.8000e-004	6.8000e-004	0.0000	9.6909	9.6909	1.9000e-004	1.8000e-004	9.7485

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	181600	9.8000e-004	8.9000e-003	7.4800e-003	5.0000e-005		6.8000e-004	6.8000e-004		6.8000e-004	6.8000e-004	0.0000	9.6909	9.6909	1.9000e-004	1.8000e-004	9.7485
Total		**9.8000e-004**	**8.9000e-003**	**7.4800e-003**	**5.0000e-005**		**6.8000e-004**	**6.8000e-004**		**6.8000e-004**	**6.8000e-004**	**0.0000**	**9.6909**	**9.6909**	**1.9000e-004**	**1.8000e-004**	**9.7485**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	181600	9.8000e-004	8.9000e-003	7.4800e-003	5.0000e-005		6.8000e-004	6.8000e-004		6.8000e-004	6.8000e-004	0.0000	9.6909	9.6909	1.9000e-004	1.8000e-004	9.7485
Total		**9.8000e-004**	**8.9000e-003**	**7.4800e-003**	**5.0000e-005**		**6.8000e-004**	**6.8000e-004**		**6.8000e-004**	**6.8000e-004**	**0.0000**	**9.6909**	**9.6909**	**1.9000e-004**	**1.8000e-004**	**9.7485**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	113100	36.0361	1.4900e-003	3.1000e-004	36.1650

Total		**36.0361**	**1.4900e-003**	**3.1000e-004**	**36.1650**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	113100	36.0361	1.4900e-003	3.1000e-004	36.1650
Total		**36.0361**	**1.4900e-003**	**3.1000e-004**	**36.1650**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0408	0.0000	1.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.5000e-004	2.5000e-004	0.0000	0.0000	2.6000e-004
Unmitigated	0.0408	0.0000	1.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.5000e-004	2.5000e-004	0.0000	0.0000	2.6000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	4.6400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0361					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	1.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.5000e-004	2.5000e-004	0.0000	0.0000	2.6000e-004
Total	**0.0408**	**0.0000**	**1.3000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.5000e-004**	**2.5000e-004**	**0.0000**	**0.0000**	**2.6000e-004**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	4.6400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0361					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	1.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.5000e-004	2.5000e-004	0.0000	0.0000	2.6000e-004
Total	**0.0408**	**0.0000**	**1.3000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.5000e-004**	**2.5000e-004**	**0.0000**	**0.0000**	**2.6000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	10.3277	0.0758	1.8600e-003	12.7760
Unmitigated	10.3277	0.0758	1.8600e-003	12.7760

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	2.3125 / 0	10.3277	0.0758	1.8600e-003	12.7760
Total		**10.3277**	**0.0758**	**1.8600e-003**	**12.7760**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	2.3125 / 0	10.3277	0.0758	1.8600e-003	12.7760
Total		**10.3277**	**0.0758**	**1.8600e-003**	**12.7760**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	2.5171	0.1488	0.0000	6.2360
Unmitigated	2.5171	0.1488	0.0000	6.2360

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	12.4	2.5171	0.1488	0.0000	6.2360
Total		**2.5171**	**0.1488**	**0.0000**	**6.2360**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	12.4	2.5171	0.1488	0.0000	6.2360
Total		**2.5171**	**0.1488**	**0.0000**	**6.2360**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Traffic Haul Plan

Roadway Name:	*Temple*
Vehicles per day	*26,513*
Speed (mph)	*45*
Grade Adj. (dB)	*0*
Vehicle Noise Red (dB)	*0*

	Day	Eve	Night	Equiv.
Auto	75.51%	12.57%	9.34%	208.6%
MT	1.56%	0.09%	0.19%	3.7%
HT	0.64%	0.02%	0.08%	1.5%

This is the CNEL at 15 m.

	Soft CNEL(15m)	Hard CNEL(15m)
Auto	69.9	71.1
Medium Trk.	60.7	61.9
Heavy Truck	61.3	62.5
Total	70.9	72.1

To get other noise levels, Put in other distances (ft).

Dist.	Soft	Hard
100	66.3	69.0
250	60.3	65.0
300	59.1	64.2
1000	51.3	59.0

To get other distances, Put in other noise levels.

CNEL	Soft	Hard
57	416	1,592
60	262	798
65	122	252
70	57	80

Lot	Road Elevation	Distance To Wall	Base Of Wall	Dist. To Observer	Pad Elevation	Observer Height	Wall Height	***Barrier Reduction*** Auto	MT	HT	Temple CNEL	Truck CNEL	Total CNEL	Delta
at 50 feet	*0*	*25*	*0*	*50*	*0*	*5*	*0.0*	0.0	0.0	0.0	**70.8**	**57.2**	**71.0**	**0.2**

Traffic Haul Plan

Roadway Name:	*Grand*
Vehicles per day	*36,613*
Speed (mph)	*45*
Grade Adj. (dB)	*0*
Vehicle Noise Red (dB)	*0*

	Day	Eve	Night	Equiv.
Auto	75.51%	12.57%	9.34%	208.6%
MT	1.56%	0.09%	0.19%	3.7%
HT	0.64%	0.02%	0.08%	1.5%

This is the CNEL at 15 m.

	Soft CNEL(15m)	Hard CNEL(15m)
Auto	71.3	72.5
Medium Trk.	62.1	63.3
Heavy Truck	62.7	63.9
Total	72.3	73.5

To get other noise levels, Put in other distances (ft).

Dist.	Soft	Hard
100	67.7	70.4
250	61.7	66.4
300	60.5	65.7
1000	52.7	60.4

To get other distances, Put in other noise levels.

CNEL	Soft	Hard
57	515	2,199
60	325	1,102
65	151	349
70	70	110

Lot	Road Elevation	Distance To Wall	Base Of Wall	Dist. To Observer	Pad Elevation	Observer Height	Wall Height	***Barrier Reduction*** Auto	MT	HT	Grand CNEL	Truck CNEL	Total CNEL	Delta
at 50 feet	*0*	*25*	*0*	*50*	*0*	*5*	*0.0*	0.0	0.0	0.0	**72.2**	**57.2**	**72.3**	**0.1**

Traffic Haul Plan

Roadway Name:	*Valley*
Vehicles per day	*33,575*
Speed (mph)	*45*
Grade Adj. (dB)	*0*
Vehicle Noise Red (dB)	*0*

	Day	Eve	Night	Equiv.
Auto	75.51%	12.57%	9.34%	208.6%
MT	1.56%	0.09%	0.19%	3.7%
HT	0.64%	0.02%	0.08%	1.5%

This is the CNEL at 15 m.

	Soft CNEL(15m)	Hard CNEL(15m)
Auto	70.9	72.1
Medium Trk.	61.7	62.9
Heavy Truck	62.3	63.5
Total	71.9	73.1

To get other noise levels, Put in other distances (ft).

Dist.	Soft	Hard
100	67.3	70.0
250	61.3	66.1
300	60.1	65.3
1000	52.3	60.0

To get other distances, Put in other noise levels.

CNEL	Soft	Hard
57	487	2,017
60	307	1,011
65	142	320
70	66	101

Lot	Road Elevation	Distance To Wall	Base Of Wall	Dist. To Observer	Pad Elevation	Observer Height	Wall Height	***Barrier Reduction*** Auto	MT	HT	Valley CNEL	Truck CNEL	Total CNEL	Delta
at 50 feet	*0*	*25*	*0*	*50*	*0*	*5*	*0.0*	0.0	0.0	0.0	**71.8**	**57.2**	**72.0**	**0.1**

TRUCKS ONLY

Roadway Name:	*Trucks*
Vehicles per day	*160*
Speed (mph)	*45*
Grade Adj. (dB)	*0*
Vehicle Noise Red (dB)	*0*

MT (%)	*0.00%*
HT(%)	*100.00%*
Day	*100%*
Evening	*0%*
Night	*0%*

	Day	Eve	Night	Equiv.
Auto	0.00%	0.00%	0.00%	0.0%
MT	0.00%	0.00%	0.00%	0.0%
HT	100.00%	0.00%	0.00%	100.0%

This is the CNEL at 15 m.

	Soft CNEL(15m)	Hard CNEL(15m)
Auto	0.0	0.0
Medium Trk.	0.0	0.0
Heavy Truck	57.3	58.5
Total	57.3	58.5

To get other noise levels, Put in other distances (ft).

Dist.	Soft	Hard
100	52.7	55.4
250	46.7	51.5
500	42.2	48.4
1000	37.7	45.4

To get other distances, Put in other noise levels.

CNEL	Soft	Hard
57	52	70
60	33	35
65	15	11
70	7	3

Lot	Road Elevation	Distance To Wall	Base Of Wall	Dist. To Observer	Pad Elevation	Observer Height	Wall Height	***Barrier Reduction*** Auto	MT	HT	*Trucks* CNEL
At 50 feet	*0*	*25*	*0*	*50*	*0*	*5*	*0.0*	0.0	0.0	0.0	**57.2**

Converse Consultants
Geotechnical Engineering, Environmental & Groundwater Science, Inspection & Testing Services

GEOTECHNICAL STUDY REPORT
Proposed Fill Placement at the West Parcel
Mount San Antonio College
Walnut, California

Converse Project No. 13-31-339-01

December 19, 2014

Prepared For:

Mount San Antonio College
Facilities Planning & Management
1100 North Grand Avenue, Building No. 23
Walnut, California 91789

Prepared By:

Converse Consultants
222 East Huntington Drive, Suite 211
Monrovia, California 91016

Converse Consultants
Geotechnical Engineering, Environmental & Groundwater Science, Inspection & Testing Services

December 19, 2014

Ms. Mikaela (Mika) Klein, AIA, LEED AP
Facilities Planner
Mt. San Antonio College
Facilities Planning & Management
1100 North Grand Avenue, Building 23
Walnut, California 91789

Subject: **GEOTECHNICAL STUDY REPORT**
Proposed Fill Placement for the West Parcel
Mount San Antonio College
Walnut, California
Converse Project No. 13-31-339-01

Dear Ms. Klein:

Converse Consultants (Converse) has prepared this geotechnical study report to present the findings, conclusions and recommendations of our geotechnical investigation for the proposed placement of fill to create a large pad area at elevation 761 feet within the west parcel on the campus of Mt. San Antonio College, in Walnut, California. The purpose of this study was to explore and evaluate the soil, bedrock and groundwater conditions beneath the project area of the proposed west parcel, with the ultimate objective of creating large buildable pads for possible solar arrays. It should be advised that this report is not intended for DSA and CGS review submittal and not for design of future structures. Our services were performed in accordance with our proposal dated December 6, 2013.

Based on our field exploration, laboratory testing, geologic evaluation, and geotechnical analysis, the site is suitable from a geotechnical standpoint for the site grading and earthwork proposed projects, provided our conclusions and recommendations are implemented during construction.

We appreciate the opportunity to be of continued service to Mt. San Antonio College. If you should have any questions, please do not hesitate to contact us at (626) 930-1200.

Sincerely,

CONVERSE CONSULTANTS

William H. Chu, P.E., G.E.
Senior Vice President/Principal Engineer

Dist: 5/Addressee
MM/MBS/SKS/WHC/jjl

222 East Huntington Drive, Suite 211, Monrovia, California 91016
Telephone: (626) 930-1200 ♦ Facsimile: (626) 930-1212 ♦ e-mail: converse@converseconsultants.com

PROFESSIONAL CERTIFICATION

This report has been prepared for Mount San Antonio College for the Proposed Fill Placement at the West Parcel by the staff of Converse under the professional supervision of the individuals whose seals and signatures appear hereon.

The findings, recommendations, specifications or professional opinions contained in this report were prepared in accordance with generally-accepted professional engineering and engineering geologic principles and practice in this area of Southern California. There is no warranty, either expressed or implied.

Mohammad-Saad Malim, E.I.T.
Staff Engineer

Mark B. Schluter, C.E.G.
Senior Engineering Geologist

William H. Chu, P.E., G.E.
Senior Vice President/Principal Engineer

Siva K. Sivathasan, PhD, PE, GE, DGE, QSD, F. ASCE
Vice President/Principal Engineer

EXECUTIVE SUMMARY

The following is a summary of our geotechnical investigation, conclusions and recommendations, as presented in the body of this report. Please refer to the appropriate sections of the report for complete conclusions and recommendations. In the event of a conflict between this summary and the report, or an omission in the summary, the report shall prevail.

- The proposed developments for the West Parcel consists of the removal of approximately the top 55 feet of the hillside, canyon cleanouts and placement of fill in the areas between the hillsides to create a large pad area at elevation 761 feet to be used for proposed solar arrays. Fill soils from proposed development areas on campus (hilltop removal on west side of track stadium, parking structure excavation, etc.) are planned be imported and used to raise the West Parcel to create a building pad for the future solar arrays.
- Our subsurface exploration consisted of drilling, logging and sampling twenty-one (21) hollow-stem auger borings from May 5 to May 9, 2014 extending between depths of approximately 10 to 51.5 feet below the existing ground surface (bgs), and one (1) bucket auger boring (BH-13) on May 19, 2014 to a depth of 31 feet (bgs).
- The earth materials encountered during our investigation consist of existing fill soils in the northernmost portion of the project site at the Christmas Tree Lot, natural alluvial and colluvial soils, and sedimentary bedrock of the Sycamore Formation.
- Undocumented fill was encountered during exploration of the West Parcel site, to a depth of five (5) feet in Boring BH-3 in the area of the Christmas Tree lot. Deeper fill may occur elsewhere on the site. The fill at the site consists of primarily silty sand with some gravels.
- The project site is not located within a currently designated State of California Earthquake Fault Zone (formerly Alquist-Priolo Special Studies Zones) for surface fault rupture.
- The sites are partially located within potential liquefaction zones per the State of California Seismic Hazard Zones Map for the San Dimas Quadrangle. Based on our liquefaction potential analyses, the project sites are not susceptible to liquefaction and seismically-induced settlement is considered to be negligible.
- Localized zones of groundwater were encountered during subsurface exploration, ranging in depths at approximately 16 feet bgs in boring BH-15 to 44 feet bgs in Boring BH-14. Localized perched groundwater seepage should be anticipated during excavation in these locations.

- Based on our field exploration, laboratory testing, and analyses of subsurface conditions at the site, remedial grading, including cut-and-fill operations, is required to prepare the planned fill pads for support of the future developments.
- The fill slope on the east side of the site along Grand Avenue will include a maximum proposed fill height of approximately 80 feet. Existing slopes within the project area will be completely removed or reduced to a 2:1 (H:V) gradient during the proposed grading operations placed over underlying hard sandstone pebble conglomerate bedrock. In the absence of significantly steep slopes, the potential for seismically-induced landslides to affect the proposed site is considered to be very low.
- The earth materials at the site consisting of soil should be excavatable with conventional heavy-duty earth moving and trenching equipment. Earth materials consisting of conglomerate bedrock will be considerably harder to excavate. The on-site materials contain about 5 to 30 percent gravel up to 3 inches in maximum dimension. Larger gravels, cobbles and possible boulders may exist at the site. Earthwork should be performed with suitable equipment for gravelly materials.

Results of our investigation indicate that the site is suitable from a geotechnical standpoint for the proposed development, provided that the recommendations contained in this report are incorporated into the design and construction of the project.

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1.0 INTRODUCTION

This report contains the findings and recommendations of our geotechnical study performed at the site of the proposed *Fill Placement at West Parcel Project*, located west of Grand Avenue on the campus of Mount San Antonio College, in the City of Walnut, California, as shown on Drawing No. 1, *Site Location Map*.

The purpose of this investigation was to explore and evaluate the soil, bedrock, and groundwater conditions of the existing West Parcel hillside site with soil borings to further determine the excavatability, rippability, and grading considerations for removal of approximately the top 55 feet of the hillside and placement of fill in the canyon areas between the hillsides to create a large pad area at elevation 761 feet to be used for future solar arrays. Conditions of particular concern include the depth of groundwater, the liquefaction potential of natural soils and the stability of the proposed fill slope on the east side along Grand Avenue with a maximum proposed fill height of approximately 80 feet.

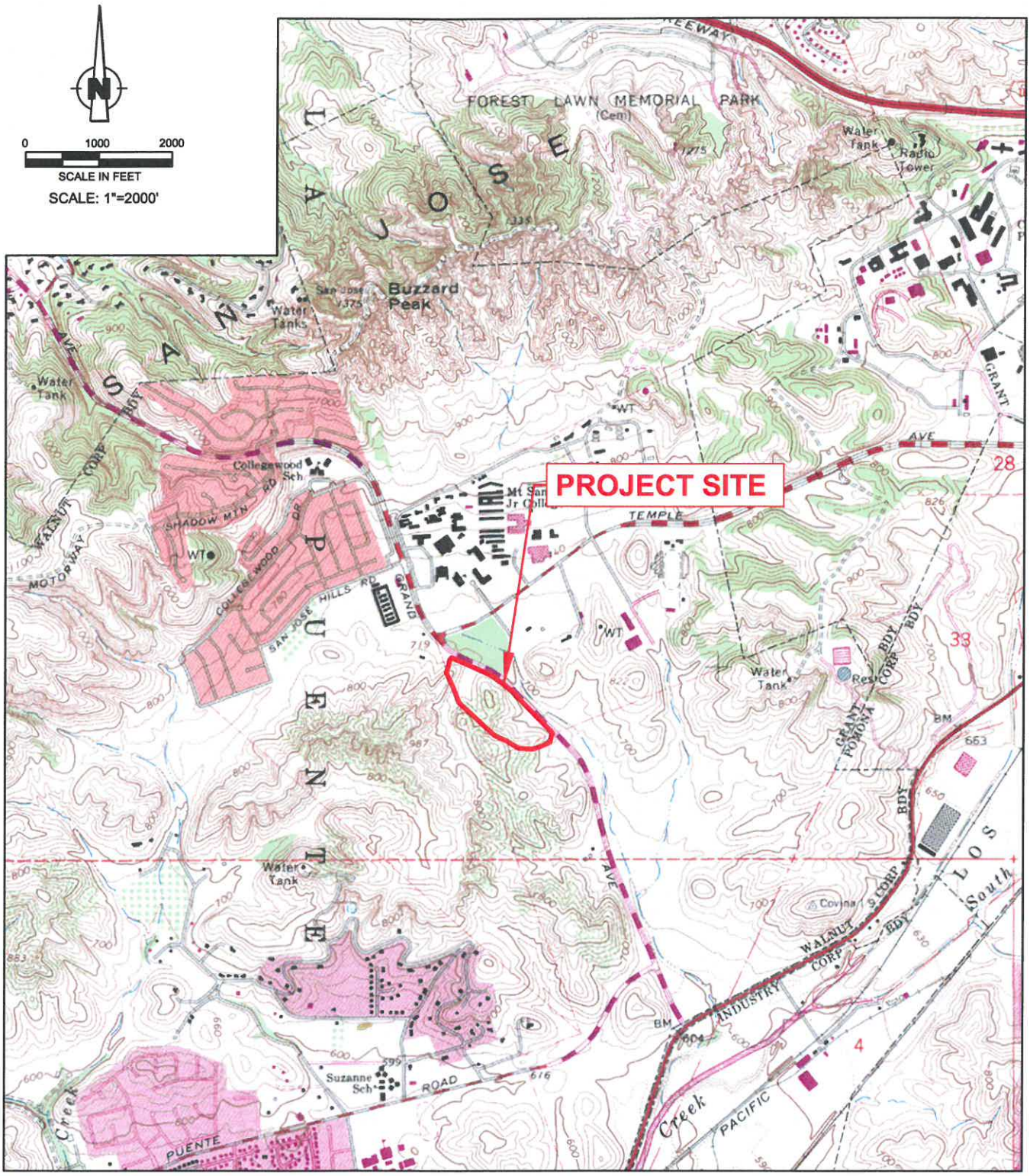
We have used proposed preliminary site plans provided to us by your office, titled "Grand Avenue Parcel Earthwork, Exhibit D-5" dated 11/04/13 and a revised drawing annotated by Necomb/Anderson/McCormick dated 01/07/14 as references for this project. The site plan is included in this report as Drawing No. 2, *Site Plan and Approximate Locations of Borings*. Plans for the proposed future buildings and structures were not available or reviewed in the preparation of this geotechnical study. When such plans are made available, additional geotechnical studies, reviews and recommendations may be warranted.

This report is written for the project described herein and is intended for use solely by Mount San Antonio College and its design team. This report is not intended for submittal to the Department of the State Architect (DSA) or the California Geological Survey (CGS). It should not be used as a bidding document but may be made available to the potential contractors for information on factual data only. For bidding purposes, the contractors should be responsible for making their own interpretation of the data contained in this report.

2.0 SITE AND PROJECT DESCRIPTION

2.1 Site Description

The project site for the proposed West Parcel is primarily located within a natural drainage area and includes four gentle bedrock hilltops located at the southwest portion of the campus as shown on Drawing No. 2, *Site Plan and Approximate Locations of Borings*. The West Parcel is located southwest of Amar Road/Temple Avenue and Grand Avenue. The site dimensions are approximately 1100 feet east-west by 1900 feet



REFERENCE: USGS MAP
SAN DIMAS QUADRANGLE 1966 PHOTO REVISED 1981

SITE LOCATION MAP

MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No.
13-31-339-01

Drawing No.
1

Converse Consultants

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north-south. The site is bordered by Amar Road to the north, Grand Avenue to the east, and single family residential housing tracts to the west and south. The top of the hilltop in the central portion of the site is at an elevation of approximately 815 feet relative to mean-sea-level (MSL) and rises about 105 feet above the road along Grand Avenue. The site coordinates are: North latitude: 34.0398 degrees, West longitude: 117.8452 degrees.

The geographic coordinates provided herein were centered on the subject sites and were used to calculate the earthquake ground motions. Review of the Engineering Geology and Seismology for Public Schools and Hospitals in California, dated August 9, 2005 (page 35) indicates that accuracy to within a few hundred meters of these coordinates is sufficient for the computation of the earthquake ground motion of the project site.

Historical and modern aerial imagery for the project site were reviewed from Google Earth (2013) and the website www.HistoricAerials.com (2009). The aerial imagery shows hillside ridges with interving canyons that drained eastward through the project site toward Grand Avenue, located along the southwestern property boundary. A roadway that eventually became Grand Avenue cut through the northern portion of the site (in what is known as the Christmas Tree Lot) as early as 1948. Besides this, the project site was generally undisturbed until 1980, when grading of the slope along the eastern portion of the site was conducted during the widening of Grand Avenue. Sometime after this time, the hilltops along the western portion of the site were flattened to an elevation of approximately 795 feet MSL and 815 feet MSL for the hilltop on the north and central portion of the site respectively, possibly as a result of grading operations for the housing tract west of the site. Currently, the site has been used for cattle grazing lands.

2.2 Project Description

The proposed developments for the West Parcel consists of the removal of approximately the top 55 feet of the hillside and placement of fill in the areas between the hillsides to create a large pad area at elevation 761 feet to be used for proposed solar arrays. Fill soils from proposed development areas on campus (proposed hilltop removal on west side of track stadium, parking structure excavation, etc.) are planned be imported and used to raise the West Parcel to create a building pad for future solar arrays. The structural information for the future development is unknown at this time.

The planned fill pad at the project site is expected to be up to approximately 60 feet in thickness above the existing grade. The slopes along the western portion of the proposed fill pad are planned to be placed in a 2:1 (H:V) step-like fashion as depicted in Drawing No. 2, *Site Plan and Approximate Locations of Borings*.

3.0 SCOPE OF WORK

Our scope of work consists of the tasks described in the following subsections.

3.1 Site Reconnaissance

A site reconnaissance was conducted on April 02, 2014, during which the surface conditions were noted and the locations of the borings were determined. The borings were located using existing boundary features as a guide and should be considered accurate only to the degree implied by the method used. Underground Service Alert (USA) of Southern California was notified of our proposed drilling locations at least 48 hours prior to initiation of the subsurface field work.

3.2 Subsurface Exploration and Access Road Grading

Our subsurface exploration consisted of drilling, logging and sampling twenty-one (21) hollow-stem auger borings from May 5 to May 9, 2014 extending between depths of approximately 10 to 51.5 feet below the existing ground surface (bgs), and one (1) bucket auger boring on May 19, 2014 with downhole observations to a depth of 31 feet (bgs). The borings were advanced using a truck-mounted drill rig with an 8-inch-diameter hollow-stem auger and 24-inch bucket auger drilled within or adjacent to the accessible areas of the planned pad locations.

The grading of a temporary dirt access road was required to provide drill rig access to the proposed boring locations on top of the bedrock hilltop just south of the Christmas Tree Lot and across the hillside to the southern portion of the site. The access road was cut into the sides of the hill, gradually working its way up the slope to the top of the hill. Converse had a representative onsite to observe the access road grading, which was done using a track-mounted dozer (John Deere 650J dozer with sideboard). The access road will be removed during hillside grading.

Subsurface conditions encountered in the borings were continuously logged and classified in the field by visual/manual examination by a Converse engineer and geologist in accordance with the Unified Soil Classification System (USCS). California Modified Sampler (“ring samples”), Standard Penetration Test (SPT) samples, and bulk soil samples were obtained from the borings and were delivered to the laboratory for testing. The bucket auger boring location (BH-13) was utilized for downhole logging. A geologist downhole logged the boring to identify bedrock materials and bedding structure. The bore holes were backfilled with soil cuttings following the completion of drilling.

The approximate locations of the exploratory borings are shown in Drawing No. 2, *Site Plan and Approximate Locations of Borings*. A description of the field exploration and sampling program are presented in Appendix A, *Field Exploration*.

3.3 Laboratory Testing

Representative samples of the site soils were tested in the laboratory to aid in the classification and to evaluate relevant engineering properties. The tests performed included:

- *In Situ* Moisture Contents and Dry Densities (ASTM Standard D2216)
- Grain Size Distribution (ASTM Standard C136)
- Maximum Dry Density and Optimum-Moisture Content Relationship (ASTM Standard D1557)
- Direct Shear (ASTM Standard D3080)
- Consolidation (ASTM Standard D2435)
- Expansion Index (ASTM Standard D4829)

A detailed description of the laboratory test methods and test results are presented in Appendix B, *Laboratory Testing Program*.

3.4 Analyses and Report

Data obtained from the exploratory fieldwork and laboratory-testing program were analyzed and evaluated. This report was prepared to provide the findings, conclusions and recommendations developed during our investigation and evaluation.

3.5 Locating High-Pressure Gas Line

As requested, Converse retained a subcontractor to detect the existing high pressure gas line along the eastern property boundary by using ground penetration radar devices. The location of the referenced high-pressure gas line has been delineated with approximate depths of the line as shown on Drawing No. 2, *Site Plan and Approximate Locations of Borings*.

4.0 GEOLOGIC CONDITIONS

4.1 Regional Geology

The proposed project sites are located in the San Jose Hills along the western edge of the Pomona Valley within the Transverse Ranges geomorphic province of California near the northern terminus of the Peninsular Ranges Province.

The Pomona Valley is situated at the junction of two major convergent fault systems: 1) the northwest-trending, high-angle strike-slip faults of the San Andreas Fault System projecting from the northern terminus of the Peninsular Ranges Province, and 2) east-trending, low-angle reverse or reverse-oblique faults bounding the southern margin of the Transverse Ranges. Faults in the first group include the Palos Verdes, Newport-Inglewood, Whittier-Elsinore, and San Jacinto fault zones. Faults in the second group include the Malibu-Santa Monica, Hollywood, Raymond, Sierra Madre, and Cucamonga fault zones.

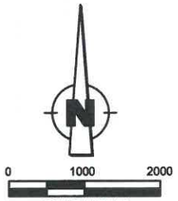
The *Geologic Map of the San Dimas and Ontario Quadrangles* prepared by Thomas W. Dibblee, Jr. (DF-91, dated July, 2002) was reviewed during this study. The map shows the location of Mount San Antonio College campus within an alluvial basin surrounded by hillsides consisting of sedimentary bedrock of the Monterey (Puente) and Sycamore Canyon Formations. No faults are shown running through or projecting toward the project sites. The location of the proposed West Parcel is mapped as underlain by the Sycamore Canyon Formation (Tscs). The Sycamore Canyon Formation consists of light gray sandstone and includes some conglomerate consisting of plutonic-derived cobbles and boulders in a light gray sandstone matrix. A portion of the map by Thomas W. Dibblee has been reproduced and is shown as Drawing No. 3, *Regional Geologic Map*.

Durham and Yerkes (1964) attribute the Sycamore Canyon Formation to the upper member of the Monterey (Puente) Formation. For the purposes of this report, the bedrock underlying both project sites will be considered as belonging to the Puente Formation.

4.2 Subsurface Profile of Subject Site

The earth materials encountered during our study consist of existing fill soils in the northernmost portion of the project site at the Christmas Tree Lot, natural alluvial and colluvial soils, and sedimentary bedrock of the Sycamore Formation. Existing soil and bedrock materials exhibited moisture contents ranging from as low as 3% up to 55% during the field exploration, while the optimum moisture contents for purposes of compaction range from 9.2% to 16.8%. Thorough moisture conditioning and mixing of soils should be performed to meet the requirements of acceptable fill materials prior to placing as engineered fill.

For the proposed West Parcel, much of the site exposes natural materials at the surface, generally consisting of colluvial soil over bedrock on the hilltop and alluvial soils over bedrock on the gentle swales below. The surficial geologic conditions and locations of borings performed for Site A are shown on Drawing No. 2, *Site Plan and Approximate Locations of Borings.*



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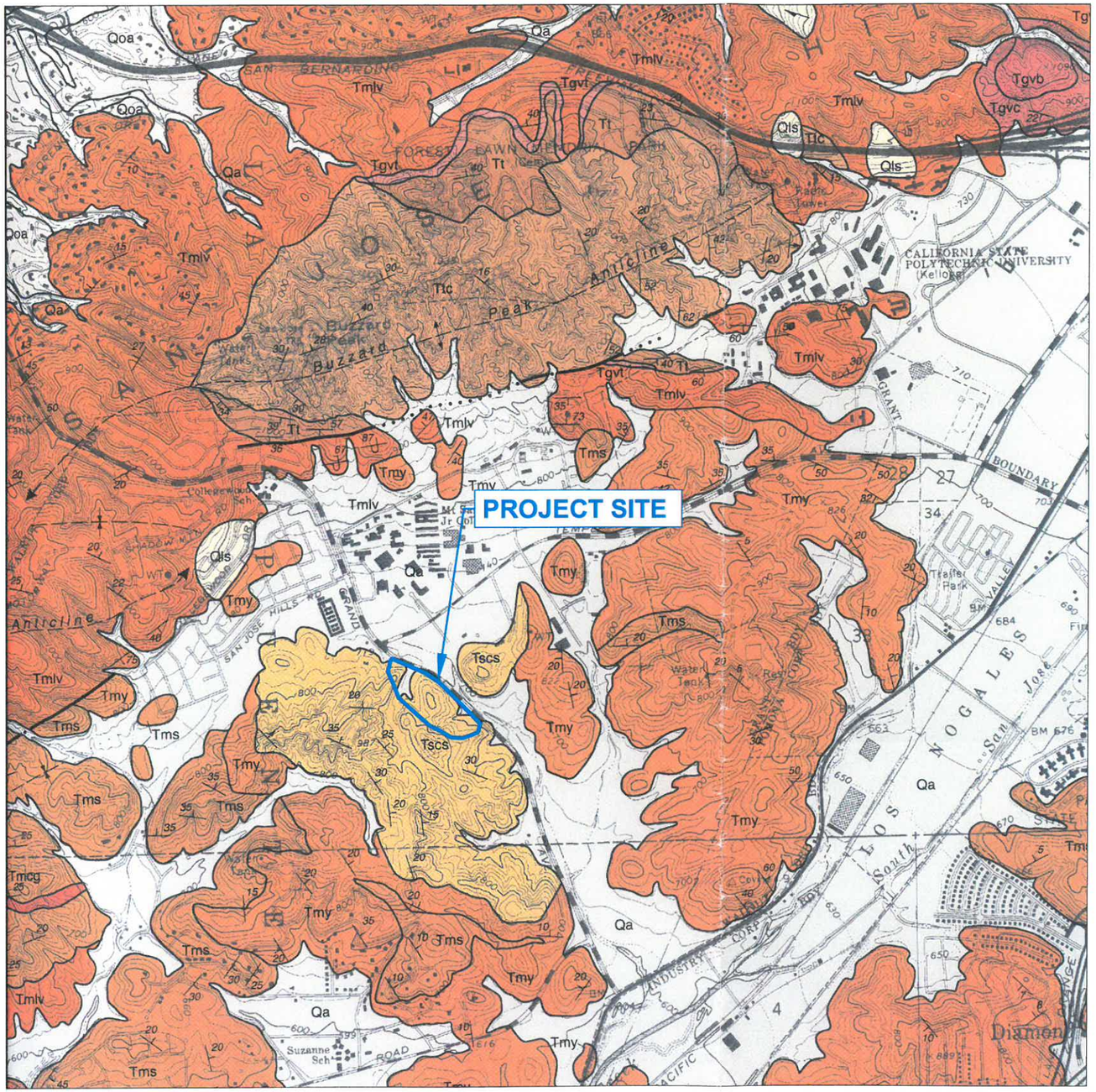

SAN DIMAS AND ONTARIO MAP (DF-91)

LEGEND

af / Qa / Qg — SURFICIAL SEDIMENTS

af artificial fill
Qg alluvial gravel and sand of stream channels, some artificially channelized
Qa alluvial gravel and sand of valley areas

Qls — LANDSLIDE AND TALUS RUBBLE

— UNCONFORMITY —

Qoa / Qog — OLDER, DISSECTED SURFICIAL SEDIMENTS

Qoa low remnants of elevated alluvial gravel
Qog high remnants of elevated older alluvial gravel, including coarse boulder gravel

— UNCONFORMITY —

SEDIMENTARY AND VOLCANIC ROCKS

Tscg | Tscs — SYCAMORE CANYON FORMATION

Sycamore Canyon Formation (uppermost member of Puente Formation of Durham & Yerkes 1964, Tan 1986) shallow marine clastic; latest Miocene age.
Tscg conglomerate, light gray, of cobbles and pebbles of plutonic rocks in sandstone matrix.
Tscs sandstone, light gray, similar to *Tms*. Includes some conglomerate similar to *Tscg*, and siltstone.

Tm | Tmy | Tmcg | Tms | Tmlv — MONTEREY (PUENTE) FORMATION

Monterey Formation (Puente form of Eldridge & Arnold, 1907, Durham & Yerkes 1964: Tan 1998, marine biogenic & clastic late Miocene age, (Mohnian Stage))
Tm unassigned shale; similar to *Tmlv & Tmly*.
Tmy Yorba shale Member – light gray, thin bedded, diatomaceous, semi-siliceous to clay shale, siltstone, minor sandstone; fish scales.
Tmcg conglomerate facies of cobbles & pebbles of plutonic rocks in sandstone matrix lenses in unit *Tms*, deposited as submarine deltas.
Tms Soquel sandstone facies, partly interlongued into *Tmy & Tmlv*, light gray to tan, moderately lithified, bedded, arkosic, contains concretions, some interbedded silty shale, derived from plutonic terrane & deposited as submarine fans, unfossiliferous
Tmlv La Vida Shale Member, white, weathered; thin bedded, platy, siliceous shale, clay shale, and siltstone, some strata of tan dolomite and sandstone; fish scales, foraminifera

Tt | Ttc — TOPANGA FORMATION

(of Shelton, 1955; Tan, 1998; marine clastic; middle Miocene age, unfossiliferous, locally interlongued into Glendora volcanics). age late ? Miocene
Tt sandstone, light gray to tan, moderately lithified, bedded, arkosic, locally pebbly; includes interbedded siltstone or clay shale.
Ttc conglomerate (Buzzard Peak Conglomerate member of Woodford et al 1946, light gray to tan, semi-lithified, vaguely bedded, composed of cobbles and pebbles of mostly plutonic rocks in sandstone matrix.

Tgv | Tgvc | Tgvb | Tgvp | Tgvt | Tgva | Tgvr | Tgvp — GLENDORA VOLCANIC ROCKS

Glendora Volcanics (of Shelton, 1955, Tan, 1999; extrusive volcanic rocks; middle Miocene age locally interlongued into Topanga Formation). radiometric age ±16 MA (Weigand, P.W., oral communication 2001)
Tgv undifferentiated volcanic rock, mostly brown andesitic flows and breccias
Tgvc volcanic conglomerate, gray to brown, of volcanic detritus.
Tgvb basalt flows, gray to black, massive to vesicular.
Tgvp basaltic pelagonitic tuff & pillow lavas.
Tgvt rhyolitic tuff breccia, tan to white
Tgva andesite flows and flow breccias, brown, porphyritic, massive.
Tgvr rhyolitic-dacitic flows, tan to light brown, aphanitic, massive to flow-banded, hard, fractured
Tgvp rhyolite-dacite breccia exposed only at Elephant Hill.

— UNCONFORMITY —

CRYSTALLINE BASEMENT ROCKS

GRANITIC ROCKS

Tmda — MOUNTAIN MEADOWS DACITE

Mountain Meadows dacite (of Shelton 1955, Tan, 1999 intrusive into qd; early Miocene? Age)
Mda dacite light gray, hard, massive, fine grained, contains small feldspar phenocrysts and biotite flakes.

qd | qdb — QUARTZ DIORITIC PLUTONIC ROCKS

quartz diorite; plutonic igneous rock, late Mesozoic - Cretaceous age
qd biotite quartz diorite, light gray, massive.
qdb Bonsall Tonalite of Larsen 1948 similar to *qd*, but slightly gneissoid & contains dark gray fine grained xenoliths elongated parallel to gneissoid structure up to 9 in. long.

Holocene / Pleistocene — QUATERNARY
Miocene — TERTIARY
CENOZOIC
CEOUS
ZOIC

REFERENCE: THOMAS W. DIBBLE, Jr. (DF-91)
SAN DIMAS QUADRANGLE
AND ONTARIO QUADRANGLE (2002)

REGIONAL GEOLOGIC MAP

Converse Consultants

MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No.	Drawing No.
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Fill Soils

Undocumented fill was encountered during exploration of the West Parcel site, to a depth of five (5) feet in Boring BH-3 in the area of the Christmas Tree lot. Deeper fill may occur elsewhere on the site. The fill at the site consists of primarily silty sand with some gravels.

Alluvium

Alluvial soil was encountered overlying the bedrock at the project site varying in thickness from approximately five (5) feet in Boring BH-7, BH-16, and BH-17 to twenty (20) feet in Boring BH-3. The alluvial soil encountered in the borings consists primarily of mixtures of silty sand and gravelly sand with variable amounts of clay, gravel, and cobbles. The soils also include occasional fragments of weathered bedrock. We expect that cobbles are larger in size than the largest observed, approximately three (3) inches in the maximum dimension, in the hollow-stem-auger soil cuttings. Based on our previous experience and knowledge of the area, and materials encountered during subsurface exploration, cobbles greater than eight (8) inches and occasional boulders may also be buried below the site (Converse 2007). The full thickness of the alluvial soils in the northern portion of the site near the gate and well (Borings BH-1 and BH-2) was not determined, as the full thickness and bottom of the alluvium was not penetrated in the borings.

Colluvium

Residual colluvial soil overlies the bedrock knolls throughout the subject site and was encountered to depths of two (2) feet in Borings BH-5 and BH-6 to five (5) feet in Boring BH-4. The colluvium consists of silty sand with variable amounts of clay, gravel, and cobbles.

Sandstone and Pebble Conglomerate Bedrock of the Sycamore Canyon Formation (Tscg)

The majority of the proposed West Parcel site is underlain by hard, cemented sandstone pebble conglomerate bedrock. The harder conglomerate bedrock consists of gravel and cobble-sized rocks in a cemented sand matrix. The conglomerate is massive and may contain boulder-sized hard rock material. The conglomerate bedrock materials were observed to be very hard during the exploration and will be more difficult to excavate during construction.

For additional information on the subsurface conditions, see the Logs of Boring data in Appendix A, *Field Exploration*.

Subsurface geologic conditions beneath the subject site are depicted on *Geologic Cross-Sections A-A', B-B', C-C' and D-D'* for the site as shown on Drawing No. 4. The geologic

cross-sections show the proposed developments (building pads for solar arrays) and the interpreted extent and limits of the different earth materials encountered during our study.

Downhole geologic observations were performed by an engineering geologist in Boring BH-13. A limited access 24-inch diameter bucket auger was used to drill the boring to a depth of thirty-one (31) feet. Boring BH-13 encountered moderately hard to hard conglomerate bedrock that required coring bits to drill the boring to a depth of thirty-one (31) feet. Bedding attitudes ranged from north 10 to 30 degrees east with bedding dips of 8 to 25 degrees northwest. These bedding attitudes will produce neutral to favorable orientations with respect to proposed cut slopes.

4.3 Groundwater

The West Parcel site is situated within the Puente Basin portion of the larger San Gabriel Valley Groundwater Basin. Localized zones of groundwater were encountered during subsurface exploration, ranging in depths at approximately 16 feet bgs in boring BH-15 to 44 feet bgs in Boring BH-14.

Higher groundwater levels at the south eastern portion of the site are likely attributed to the existing drainage channel, which still transmits water along its historical drainage axis towards Grand Avenue to the existing Snow Creek stream channel located east of Grand Avenue. It appears the groundwater encountered during the current exploration is localized within the axes of historical drainages and is not likely to be encountered in areas away from the drainage channels. Canyon bottom subdrain devices should be installed along the bottom axes of the drainage channels during grading operations, as described herein, to transmit the subsurface water to approved outlet locations.

It should be noted that wet weather periods may produce groundwater seepage in the bedrock fractures and along less permeable layers from infiltration of rainfall. Surface flow and runoff and should be anticipated during grading and construction. In general, groundwater levels fluctuate with the seasons. Groundwater conditions below any given site vary depending on numerous factors including seasonal rainfall, local irrigation, and groundwater pumping.

4.4 Subsurface Variations

Based on results of the subsurface exploration and our experience with the subject area, some variations in the continuity and nature of subsurface conditions within the project site are anticipated. Because of the uncertainties involved in the nature and depositional characteristics of the earth material at the site, care should be exercised in interpolating or extrapolating subsurface conditions between or beyond the boring locations. If, during construction, subsurface conditions different from those presented in this report are encountered, this office should be notified immediately so that recommendations can be modified, if necessary.

5.0 FAULTING AND SEISMIC HAZARDS

The project site is not located within a currently designated State of California Earthquake Fault Zone (formerly Alquist-Priolo Special Studies Zones) for surface fault rupture. The Alquist-Priolo Earthquake Fault Zoning Act requires the California Geological Survey to zone "active faults" within the State of California. An "active fault" has exhibited surface displacement with Holocene time (within the last 11,000 years) hence constituting a potential hazard to structures that may be located across it. Public school structures are required to be set-back at least 50 feet from an active fault. The active fault set-back distance is measured perpendicular from the dip of the fault plane.

5.1 Seismic Characteristics of Nearby Faults

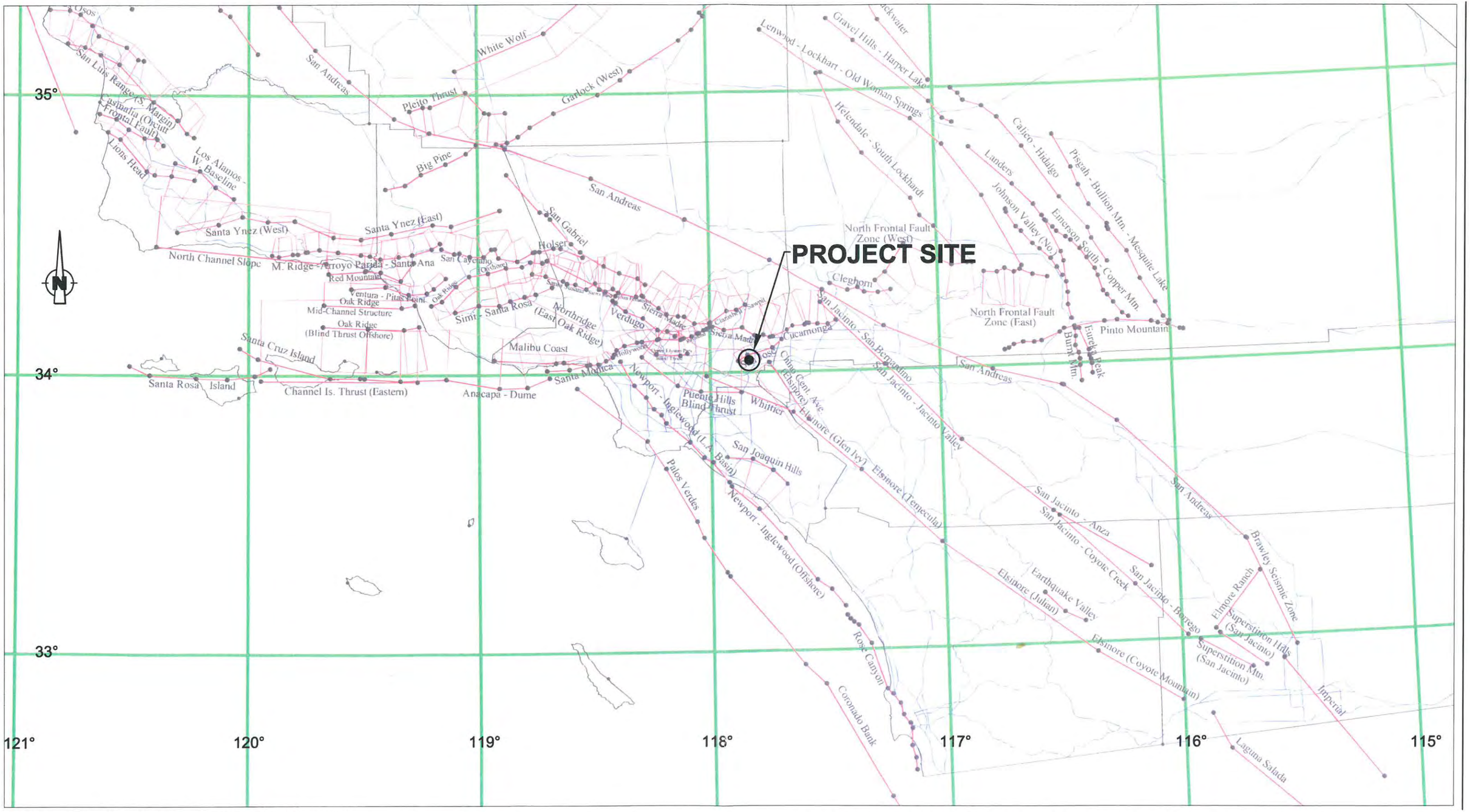
No surface faults are known to project through or towards the site. The closest known faults to the project site with mappable surface expressions are the San Jose Fault (3.9 kilometers to the north) and Chino-Central Avenue (Elsinore) Fault (8.2 kilometers to the east/ southeast). The concealed Puente Hills Blind Thrust Fault (Coyote Hills segment) along with other regional faults was included as active fault sources for the probabilistic seismic hazard analysis for the site. The approximate locations of these local active faults with respect to the project site are tabulated on Table No. 1, *Summary of Regional Faults,* and are shown on Drawing No. 5, *Southern California Regional Fault Map*.

The Pomona Valley Basin is bounded to the north by the San Jose Fault and to the southwest by the Chino-Central Avenue faults. These two fault systems do not exhibit evidence of surface movement within Holocene time and are not considered active based on current geologic information. The San Jose and Chino-Central Avenue faults are considered Late Quaternary, having exhibited displacement and movement within the past 130,000 years.

<u>San Jose Fault</u>

The San Jose Fault lies along the southern flank of the northeast trending San Jose Hills. The fault trends northeast and dips to the north. The mapped trace of the San Jose Fault is located approximately 3.9 kilometer north of the project.

Geotechnical investigations performed on the campus of California State Polytechnic University at Pomona (Geocon, 2001) indicated that the San Jose is an active reverse-separation fault. Because of the lack of success in previous fault trench excavations, Geocon based its conclusions on a series of closely spaced boreholes along several traverses across a subtle topographic bench on the campus. They discovered two shallowly to moderately north-dipping thrust faults with the most recent displacement



REFERENCE: PORTION OF CGS 2002 CALIFORNIA FAULT MODEL MODIFIED FOR USE WITH FRISKSP AND EQFAULT BY THOMAS F. BLAKE, AUGUST 2004

FAULT SOURCES

BLIND THRUST FAULT, POLYGONS INDICATE RUPTURE PLANES AND DIP DIRECTION

SOUTHERN CALIFORNIA REGIONAL FAULT MAP

Converse Consultants

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Project No.
13-31339-01

Drawing No.
5

being about 1 meter and occurred since 3500 yrs. B.P. on the basis of radiocarbon dating of faulted alluvium. These findings would show this segment of the fault is active, but is a reverse separation fault south of the San Jose Hills (Yeats, 2004).

Chino-Central Avenue Faults

The Chino and Central Avenue faults trend northwest along the southwest portion of the Chino Basin. The fault ties along the northeast edge of the Puente Hills. The Chino and Central Avenue faults are considered part of the Elsinore fault which is one of the major right-lateral, strike-slip faults of the Peninsular Ranges geomorphic province. The Elsinore fault splits near Prado Dam into the Chino-Central Avenue and Whittier faults. The Chino-Central Avenue faults are two separate fault strands that strike northwest. The Chino fault dips southwest and is at least 18 km in length. The Central Avenue fault is about 8 km in length and concealed by younger alluvial deposits.

As is the case for most areas of Southern California, ground-shaking resulting from earthquakes associated with nearby and more distant faults may occur at the project site. During the life of the project, seismic activity associated with active faults can be expected to generate moderate to strong ground shaking at the site.

Table No. 1, *Summary of Regional Faults,* summarizes selected data of known faults capable of seismic activity within 50 kilometers of the site. The data presented below was calculated using EQFAULT Version 3.0 with updated fault data from "The Revised 2002 California Probabilistic Seismic Hazard Maps (Cao et al., 2003)", Appendix A, and other published geologic data.

Table No. 1, *Summary of Regional Faults*

Fault Name and Section	Approximate * Distance to Site (kilometers)	Max. Moment Magnitude (Mmax)	Slip Rate (mm/yr)
San Jose*	3.9	6.4	0.50
Chino-Central Ave. (Elsinore)	8.2	6.7	1.00
Whittier	12.6	6.8	2.50
Sierra Madre*	13.5	7.2	2.00
Puente Hills Blind Thrust**	14.1	7.3	0.70
Cucamonga*	15.1	6.9	5.00
Elysian Park Blind Thrust*	17.1	6.7	1.50
Raymond	21.6	6.5	1.50
Clamshell-Sawpit	23.6	6.5	0.50
Elsinore-Glen Ivy	28.2	6.8	5.00
Verdugo*	30.1	6.9	0.50
Compton Thrust	31.4	6.8	1.50
Hollywood	37.6	6.4	1.00

Fault Name and Section	Approximate * Distance to Site (kilometers)	Max. Moment Magnitude (Mmax)	Slip Rate (mm/yr)
San Jacinto – San Bernardino	38.0	6.7	12.00
San Andreas – 1857 Rupture*	39.5	7.4	30.00
San Andreas – Mojave*	39.5	7.4	30.00
Newport-Inglewood (L.A. Basin)*	39.7	7.1	1.00
San Andreas – San Bernardino*	41.1	7.5	24.00
San Andreas – Southern*	41.1	7.2	25.00
Cleghorn*	45.7	6.7	2.00

*****Review of published geologic data and mapping including Appendix A of the 2002 California Fault Parameters Report (Cao et al., 2003). Distance from the site to nearest subsurface projection, per Shaw et al., 2002.

5.2 Seismic History

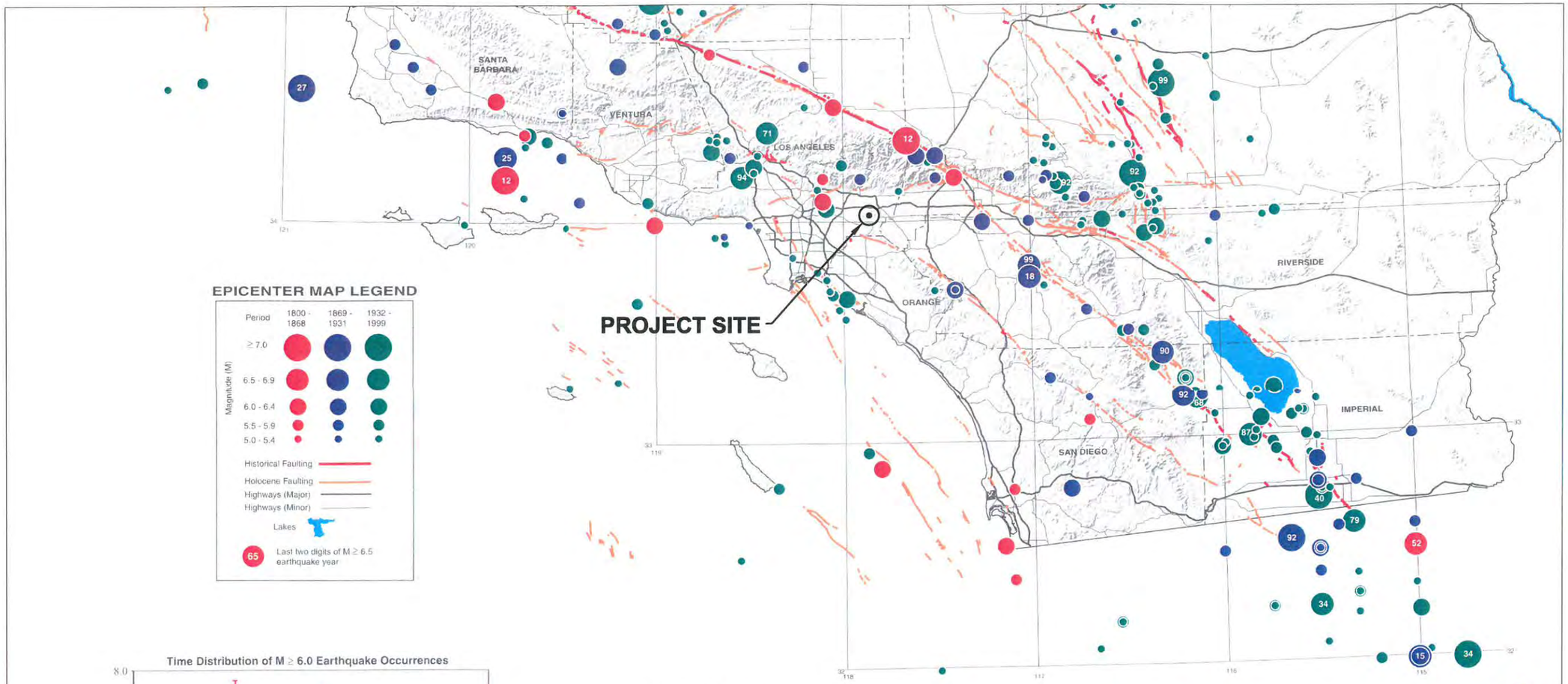
An analysis of the seismic history of the site was conducted using the computer program EQSEARCH, (Blake, 2000, updated 2010), and attenuation relationships proposed by Bozorgnia, et al. (1999) for soft rock conditions. The Southern California Earthquake Catalog with the Southern California Earthquake Center was also utilized (SCEC, 2013).

Based on the analysis of seismic history, the number of earthquakes with a moment magnitude of 5.0 or greater occurring within a distance of 100 kilometers was 81 since the year 1800. Based on the analysis, the largest earthquake-induced ground acceleration affecting the site since the year 1800 is a 7.0 magnitude earthquake in 1858 with a calculated ground acceleration of 0.18g at the site.

Review of recent seismological and geophysical publications indicates that the seismic hazard for the Pomona Basin is high. The Pomona Basin is bounded by active regional faults on all sides and underlain by alluvial sediments and buried thrust faults. The seismic hazard for the heavily populated Pomona Basin was illustrated by the 1971 San Fernando, 1987 Whittier Narrows, 1991 Sierra Madre and 1994 Northridge earthquakes. The epicenters for these earthquakes are shown on Drawing No. 6, *Epicenters Map of Southern California Earthquakes (1800-1999).*

5.3 Seismic Hazards

In addition to direct effects on structures, strong ground shaking from earthquakes can also produce other side effects that include surface fault rupture, soil liquefaction, lateral spreading, seismically-induced settlement, ground lurching, landsliding, earthquake-induced flooding, seiches, and tsunamis. Drawing No. 7, *Seismic Hazard Zones Map*, has been prepared to show the mapped location of potential liquefaction and earthquake-induced landslide areas near the project site. The State of California

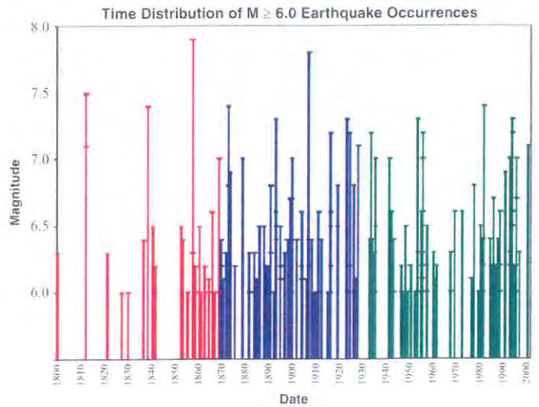


EPICENTER MAP LEGEND

Period	1800 - 1868	1869 - 1931	1932 - 1999
Magnitude (M) ≥ 7.0			
6.5 - 6.9			
6.0 - 6.4			
5.5 - 5.9			
5.0 - 5.4			

Historical Faulting
Holocene Faulting
Highways (Major)
Highways (Minor)
Lakes
65 Last two digits of M ≥ 6.5 earthquake year

Time Distribution of M ≥ 6.0 Earthquake Occurrences



Main Sources of Information

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Toppozada, T.R. and Branum, D.M. (in press). California M ≥ 5.5 earthquakes, history and areas damaged, *in* Lee, W.H., Kanamori, H. and Jennings, P., International Handbook of Earthquake and Engineering Seismology, International Association of Seismology and Physics of the Earth's Interior.

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UC Berkeley/USGS earthquake catalog, http://quake.geo.berkeley.edu/needc/catalog-search.html. Northern California earthquake catalog and phase data, Northern California Seismic Network, U.S. Geological Survey, Menlo Park; Berkeley Seismological Laboratory, University of California, Berkeley, California.

0 10 20 30 40 50 60 70 80 Miles
0 10 20 30 40 50 60 70 80 90 100 Kilometers

DEM modified from U.S.G.S. digital file

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MINES AND GEOLOGY
CALIFORNIA CONSERVATION

REFERENCE: PORTION OF EPICENTERS AND AREAS DAMAGED BY M≥5 CALIFORNIA EARTHQUAKES, 1800-1999 CALIFORNIA DEPARTMENT OF CONSERVATION, MAP SHEET 49 DATED 2000.

EPICENTER MAP OF SOUTHERN CALIFORNIA EARTHQUAKES (1800-1999)

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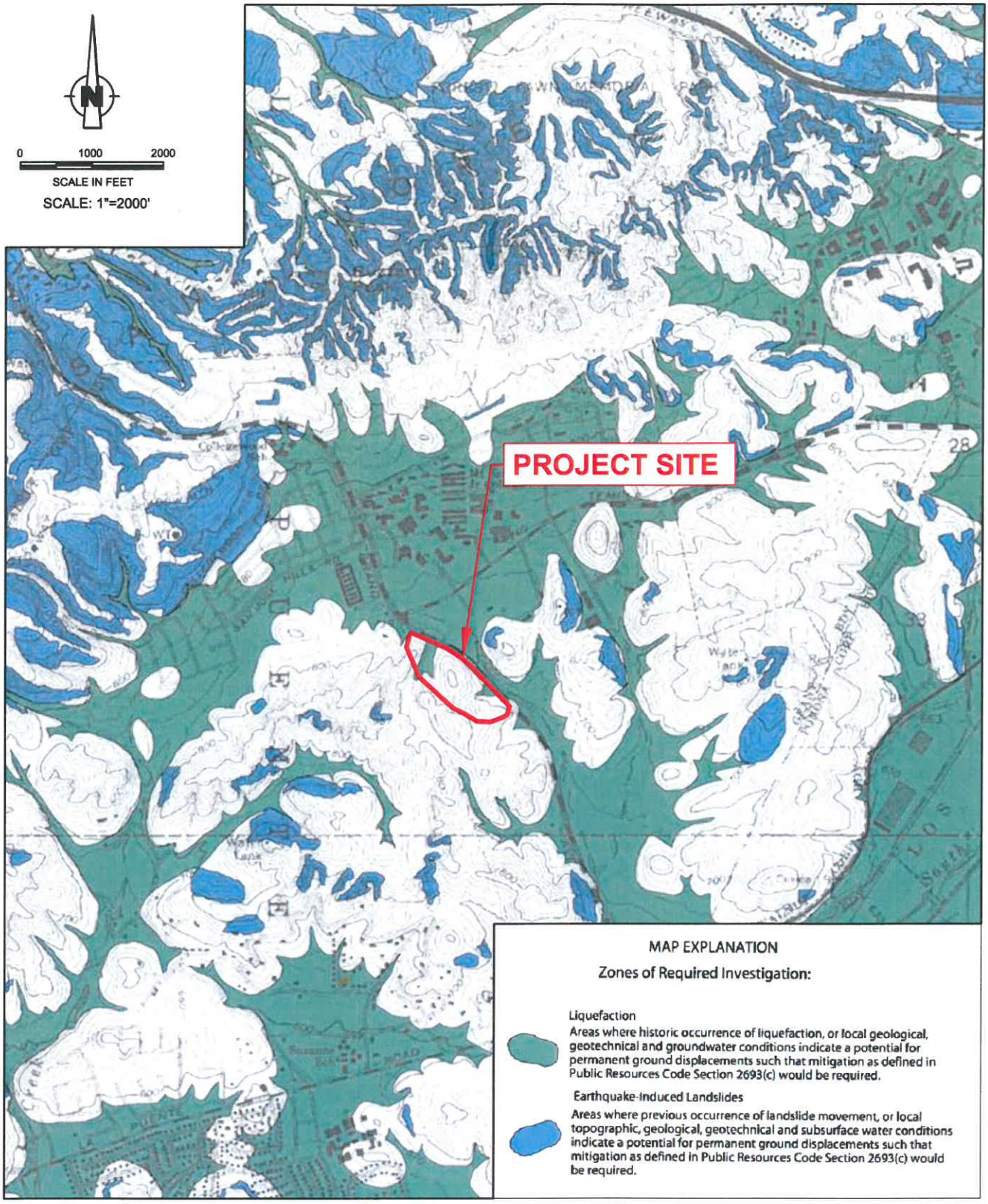

REFERENCE: SAN DIMAS QUADRANGLE 1999
SEISMIC HAZARD ZONES STATE OF CALIFORNIA

SEISMIC HAZARD ZONES MAP

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WALNUT, CALIFORNIA

Project No.	Drawing No.
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Seismic Hazard Zone Map for the San Dimas Quadrangle (March 25, 1999) shows the project site is located within an area of potential liquefaction and portions of the site indicate areas of potential seismically-induced landsliding.

Results of a site-specific evaluation for each type of possible seismic hazard are explained below:

5.3.1 Surface Fault Rupture

The site is not located within a currently designated State of California Earthquake Fault Zone. Based on a review of existing geologic information, no known active fault zone crosses or projects toward the site. The potential for surface rupture resulting from the movement of the nearby major faults is considered remote.

5.3.2 Liquefaction and Seismically-Induced Settlement

Liquefaction is the sudden decrease in the strength of cohesionless soils due to dynamic or cyclic shaking. Saturated soils behave temporarily as a viscous fluid (liquefaction) and, consequently, lose their capacity to support the structures founded on them. The potential for liquefaction decreases with increasing clay and gravel content, but increases as the ground acceleration and duration of shaking increase. Liquefaction potential has been found to be the greatest where the groundwater level and loose sands occur within 50 feet of the ground surface.

The site is partially located within potential liquefaction zones per the State of California Seismic Hazard Zones Map for the San Dimas Quadrangle. Drawing No. 7, *Seismic Hazard Zones Map*, has been prepared to show the mapped locations of potential liquefaction in relation to the project sites. Groundwater was encountered at 19 feet in BH-1 and BH-2 in the northern portion of the site and at 44 feet and 16 feet respectively in BH-14, BH-15.

The liquefaction potential and seismic settlement analyses were performed utilizing SPT data obtained from boring BH-15 for the upper 50 feet of soil. The detailed results of the liquefaction analysis and a summary of the methods used are presented in Appendix C, *Liquefaction/Seismic Settlement Analysis*. Based on our liquefaction potential analyses, and the firm bedrock materials encountered during the exploration, the project site is not susceptible to liquefaction and seismically-induced settlement is anticipated to be negligible.

5.3.3 Lateral Spreading

Seismically induced lateral spreading involves primarily lateral movement of saturated earth materials due to ground shaking. It differs from the slope failure in that complete ground failure involving large movement does not occur due to the

relatively smaller gradient of the initial ground surface. Lateral spreading is demonstrated by near-vertical cracks with predominantly horizontal movement of the soil mass involved. The topography at the project sites consists of bedrock knolls overlain by relatively-dry and dense colluvial soils and gentle swales below. Under these circumstances, the potential for lateral spreading at the subject site is considered negligible.

5.3.4 Seismically-Induced Slope Instability

Seismically-induced landslides and other slope failures are common occurrences during or soon after earthquakes. Slopes within the project area will be completely removed or reduced to a 2:1 (H:V) gradient during the proposed grading operations. Slopes with a gradient steeper than 2:1 (H:V) would be over underlying hard, cemented sandstone pebble conglomerate bedrock. In the absence of significantly steep slopes, the potential for seismically-induced landslides to affect the proposed site is considered to be very low.

5.3.5 Earthquake-Induced Flooding

Review of the Flood Insurance Rate Map (FIRM), Panel 1725 of 2350, from the FEMA Map Service Center Viewer, indicates that the site is in an area designated as Zone D, “Areas in which flood hazards are undetermined, but possible.” Due to the absence of groundwater at shallow depths, distance of the subject site from large bodies of water and regional flood control structures, the potential for flooding at the subject site is considered remote.

5.3.6 Tsunami and Seiches

Tsunamis are seismic sea waves generated by fault displacement or major ground movement. Based on the location of the site from the ocean (over 20 kilometers), tsunamis do not pose a hazard. Seiches are large waves generated in enclosed bodies of water in response to ground shaking. Based on site location away from lakes and reservoirs, seiches do not pose a hazard.

5.3.7 Volcanic Eruption Hazard

There are no known volcanoes near the site. According to Jennings (1994), the nearest potential hazards from future volcanic eruptions is the Amboy Crater-Lavic Lake area located in the Mojave Desert more than 120 miles east/northeast of the site. Volcanic eruption hazards are not present.

6.0 SEISMIC ANALYSIS

6.1 CBC Seismic Design Parameters

Seismic parameters based on the 2013 California Building Code are calculated using the United States Geological Survey *U.S. Seismic Design Maps* website application and the site coordinates (34.0398 degrees North Latitude, 117.8452 degrees West Longitude). These coordinates are in reference to the central portion of the project area. Review of the California Geologic Survey (CGS) publication Engineering Geology and Seismology for Public Schools, Colleges and Hospitals in California, dated August 9, 2005 (page 32) indicates that accuracy to within a few hundred meters of these coordinates is sufficient for the computation of the earthquake ground motion of the project site. Therefore, these coordinates are considered representative of the entire site. The seismic parameters are presented below.

Table No. 2, CBC Seismic Design Parameters

Seismic Parameters	2013 CBC
Site Class	D
Mapped Short period (0.2-sec) Spectral Response Acceleration, S_S	2.177 g
Mapped 1-second Spectral Response Acceleration, S_1	0.776 g
Site Coefficient (from Table 1613.5.3(1)), F_a	1.0
Site Coefficient (from Table 1613.5.3(2)), F_v	1.5
MCE 0.2-sec period Spectral Response Acceleration, S_{MS}	2.177 g
MCE 1-second period Spectral Response Acceleration, S_{M1}	1.163 g
Design Spectral Response Acceleration for short period, S_{DS}	1.451 g
Design Spectral Response Acceleration for 1-second period, S_{D1}	0.776 g
Seismic Design Category	E

6.2 Site-Specific Ground Motion Response Spectrum

The subject site is partially located in a Seismic Hazard Zone. Based on 2013 CBC Section 1616A.1.3, a site-specific ground motion analysis is required. A site-specific response spectrum was developed for the project for a Maximum Considered Earthquake (MCE), defined as a horizontal peak ground acceleration that has a 2 percent probability of being exceeded in 50 years (return period of approximately 2,475 years).

In accordance with ASCE 7-10, Section 21.2 and Code Application Notice (CAN 2-1802A.6.2) the site-specific response spectra can be taken as the lesser of the probabilistic maximum rotated component of MCE ground motion and the 84th percentile of deterministic maximum rotated component of MCE ground motion response spectra. The design response spectra can be taken as 2/3 of site-specific MCE response

spectra, but should not be lower than 80 percent of CBC general response spectra. The risk coefficient C_R has been incorporated at each spectral response period for which the acceleration was computed in accordance with ASCE 7-10, Section 21.2.1.1.

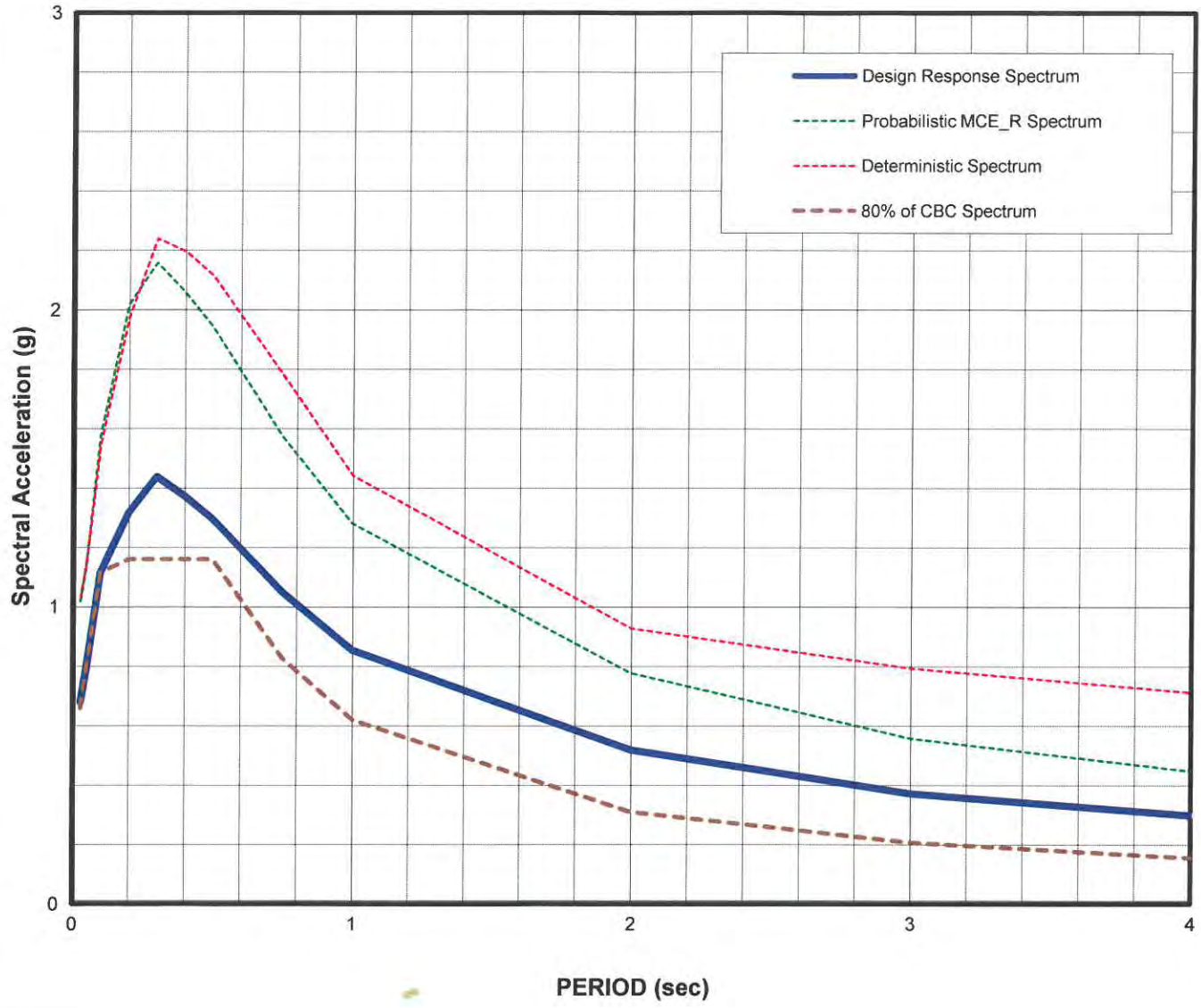
The 2013 CBC mapped acceleration parameters are provided in the following table. These parameters were determined using the United States Geological Survey *U.S. Seismic Design Maps* website application, and in accordance with ASCE 7-10 Sections 11.4, 11.6, 11.8 and 21.2.

Table No. 3, 2013 CBC Mapped Acceleration Parameters

Site Class	D	Seismic Design Category	E
S_s	2.177	C_{RS}	1.007
S_1	0.776	C_{R1}	1.019
F_a	1	**0.08 F_v/F_a**	0.120
F_v	1.5	**0.4 F_v/F_a**	0.600
S_{MS}	2.177	T_0	0.107
S_{M1}	1.164	T_S	0.535
S_{DS}	1.451	T_L	8
S_{D1}	0.776		

A Site-Specific response analysis, using faults within 100 kilometers of the site, was developed using the computer program EZ-FRISK by Risk Engineering (v. 7.51) and the 2008 USGS Fault Model database. Attenuation relationships proposed by Boore and Atkinson (2008), Campbell and Bozorgnia (2008), Chiou and Youngs (2008) were used in the analysis. These attenuation relationships are based on Next Generation Attenuation (NGA) project model. Maximum rotated components were determined using Huang (2008) method. An average shear wave velocity at upper 30 meters of soil profile (V_{s30}) of 270 meters per second, depth to bedrock of with a shear wave velocity 1,000 meters per second at 50 meters below grade, and depth of bedrock where the shear wave velocity is 2,500 meters per second at 3,000 meters below grade were selected for EZ-Frisk Analysis.

Applicable response spectra data are presented in the table below and on Drawing No. 8, *Site-Specific Design Response Spectrum.* These curves correspond to response values obtained from above attenuation relations for horizontal elastic single-degree-of-freedom systems with equivalent viscous damping of 5 percent of critical damping.



Note: Calculated using EZFRISK program Risk Engineering, version 7.51
and USGS 2008 fault model database.

SITE SPECIFIC DESIGN RESPONSE SPECTRUM

Mt. SAC West Parcel

Mt. San Antonio College, Walnut

For : Mt. San Antonio College

Project Number:

13-31-339-01

Converse Consultants

Drawing No.

8

Table No. 4, Site-Specific Response Spectrum Data

Period (sec)	2% in 50yr Probabilistic Spectral Acceleration (g)	Risk Coefficient C_R	Probabilistic MCE_R Spectral Acceleration (g)	84th Percentile Deterministic MCE Response Spectra, (g)	Deterministic CBC Lower Level, (g)	Site Specific MCE_R Spectral Acceleration (g)	80% CBC Design Response Spectrum	Site Specific Design Spectral Acceleration (g)
0.03	1.013	1.007	1.020	1.032	0.825	1.020	0.660	**0.680**
0.05	1.130	1.007	1.138	1.146	0.975	1.138	0.790	**0.790**
0.10	1.567	1.007	1.578	1.550	1.350	1.550	1.116	**1.116**
0.20	2.005	1.007	2.019	1.976	1.500	1.976	1.161	**1.317**
0.30	2.140	1.009	2.158	2.240	1.500	2.158	1.161	**1.439**
0.40	2.039	1.010	2.059	2.197	1.500	2.059	1.161	**1.373**
0.50	1.922	1.012	1.944	2.116	1.500	1.944	1.161	**1.296**
0.75	1.551	1.015	1.575	1.782	1.200	1.575	0.828	**1.050**
1.00	1.258	1.019	1.282	1.442	0.900	1.282	0.621	**0.855**
2.00	0.764	1.019	0.779	0.929	0.450	0.779	0.310	**0.519**
3.00	0.548	1.019	0.559	0.794	0.300	0.559	0.207	**0.372**
4.00	0.440	1.019	0.448	0.714	0.225	0.448	0.155	**0.299**

Vertical acceleration at the site may be calculated using the ASCE 7-10, Section 12.4.

The site-specific design response parameters are provided in the following table. These parameters were determined from Design Response Spectra presented in table above, and following guidelines of ASCE Section 21.4.

Table No. 5, Site-Specific Seismic Design Parameters

	Design Parameters (5% Damping)	Lower Limit, 80% of CBC Design Spectra
Site-Specific 0.2-second period Spectral Response Acceleration, S_{MS}	1.976	1.742
Site-Specific1-second period Spectral Response Acceleration, S_{M1}	1.558	0.931
Site-Specific Design Spectral Response Acceleration for short period S_{DS}	1.317	1.161
Site-Specific Design Spectral Response Acceleration for 1-second period, S_{D1}	1.039	0.621

7.0 GEOTECHNICAL EVALUATIONS AND CONCLUSIONS

Based on the results of our background review, subsurface exploration, laboratory testing, geotechnical analyses, and understanding of the planned grading development, it is our opinion that the proposed project is feasible from a geotechnical standpoint, provided the following conclusions and recommendations are incorporated into the project plans, specifications, and are followed during site construction.

The following is a summary of the major geologic and geotechnical factors to be considered for the planned project:

- The site is located partially within a mapped Seismic Hazard Zone for liquefaction. Based on our liquefaction potential analyses, and the firm bedrock materials encountered during the exploration, the project site is not susceptible to liquefaction and seismically-induced settlement is anticipated to be negligible.

- Localized zones of groundwater were encountered during subsurface exploration, ranging in depths at approximately 16 feet bgs in boring BH-15 to 44 feet bgs in Boring BH-14. Localized perched groundwater seepage should be anticipated during excavation in these locations.
- For the West Parcel site, the axes of historical drainage channels should be installed with canyon bottom subdrains to collect any direct subsurface drainage to an approved outlet location.
- Undocumented fill soils up to 5 feet were encountered in boring BH-3 at the northern portion of the site in the Christmas Tree Lot. The fill at the site consists of primarily silty sand with some gravels. Undocumented fill should be excavated and recompacted.

- Based on the proposed plan, cut-and-fill grading operations are required to achieve the planned finished grades.
- The surficial site soils and earth materials generated from excavations of bedrock at both sites exhibit a low expansive potential. These materials should be mitigated if they are to be used for any future structural support.
- On-site silty, clayey soils and siltstone with an expansion index exceeding 20 should not be re-used for compaction within 5 feet below the planned fill pad finish grade or for retaining wall backfill. Soils containing organic materials should not be used as structural fill. The extent of removal should be determined by the geotechnical representative based on soil observation during grading. Based on borings BH-1 and BH-20, the top 5 feet of existing grade exhibits an expansion index greater than 20.
- The planned fill pad at the site is expected to be up to approximately 60 feet in thickness above the existing grade. Long term consolidation ground settlement for

the planned compacted fill pads is expected to be less than 1.5 inches with differential settlement of 0.5 inch over a 30-foot span.

- The earth materials at the site consisting of soil should be excavatable with conventional heavy-duty earth moving and trenching equipment. Earth materials consisting of conglomerate bedrock will be considerably harder to excavate. The on-site materials contain about 5 to 30 percent gravel up to 3 inches in maximum dimension. Larger gravels, cobbles and possible boulders may exist at the site. Earthwork should be performed with suitable equipments for gravelly materials.
- Removals up to approximately 55 feet deep are anticipated.
- The fill slope on the east side of the site along Grand Avenue will include a maximum proposed fill height of approximately 80 feet. Existing slopes within the project area will be completely removed or reduced to a 2:1 (H:V) gradient during the proposed grading operations placed over underlying hard sandstone pebble conglomerate bedrock. In the absence of significantly steep slopes, the potential for seismically-induced landslides to affect the proposed site is considered to be very low.
- Slopes along the western portion of the proposed fill pad are planned to be placed in a 2:1 (H:V) step-like fashion as depicted in Drawing No. 2, *Site Plan and Approximate Locations of Borings*.

8.0 EARTHWORK AND SITE GRADING RECOMMENDATIONS

8.1 General Evaluation

Based on our field exploration, laboratory testing, and analyses of subsurface conditions at the site, remedial grading including cut-and-fill operations is required to prepare the planned fill pads for support of the future developments. To reduce differential settlement, variations in the soil type, degree of compaction, and thickness of the compacted fill, the thickness of compacted fill placed underneath the footings should be kept uniform.

Site grading recommendations provided below are based on our experience with similar projects in the area and our evaluation of this study. Site preparation might involve removal of any existing structures with their foundations and other existing underground manmade structures and utilities.

8.2 Over-Excavation/Removal

The existing undocumented fill materials in their present condition are not considered suitable for supporting the planned additional fill. All undocumented fill should be removed, moisture-conditioned if necessary, and replaced as compacted fill. The actual depth of over-excavation from the existing ground surface will depend on existing depth

of fill placed during site grading. During our explorations in the proposed area, undocumented fill soils up to five (5) feet in thickness below the existing ground surface were encountered in boring BH-3 at the northern portion of the site in the Christmas Tree Lot. The depth of existing fill could be deeper elsewhere onsite.

Unsuitable natural surface soils and alluvium shall be removed, moisture conditioned to near optimum moisture levels, mixed and recompacted as compacted fill to project specifications. Clay top soils that are disturbed and loosened by seasonal cycles of wetting and drying producing dessication cracks and voids shall be removed and recompacted. Estimated depth of clay top soil removal is approximately three (3) feet. Loose, disturbed or unsuitable alluvial soils encountered in the drainage canyons shall be removed to firm natural soils and/or bedrock and then replaced as compacted fill. Loose and unsuitable alluvial soils shall be cleaned out of the canyon bottoms prior to the placement of compacted fills and canyon bottom subdrains.

Due to the proposed approximately 55 foot removal of bedrock off of the top of hill, the rebound of the cut subgrade of bedrock is expected after the cut is first made. Elastic rebound due to removal of overburden typically occurs for cuts of greater than 50 feet in thickness. The amount of rebound will vary across the site and may result in an uneven ground surface. Therefore, we recommend the hilltop removal portions of the site (cut areas) be over-excavated at least two (2) feet and replaced with a properly compacted fill. This will aid in reducing unevenness in the subgrade below the planned pavement and/or future structures.

Keyways with a minimum width of 25 feet and a minimum embedment depth of 5 feet should be excavated and constructed along the toe of the compacted fill slope for the site. Backdrains should be installed at the bottom of slope with a minimum one percent gradient to outlet pipe. A backdrain consisting of 4-inch diameter perforated PVC pipe (Schedule 40 or equivalent) with perforations down and ends capped encased with 1-cubic-foot ¾-inch gravel per linear foot wrapped with filter fabrics should be installed along the bench. Backdrains should be installed every 15 feet vertically. A Minimum 1 percent gradient to solid outlet pipes is recommended. The outlet pipes should be a minimum of 4-inch diameter PVC pipe (Schedule 40 or equivalent) and be installed every 50 feet horizontal spacing, or minimum two outlets.

All excavations on slopes steeper than a gradient of 10:1 (horizontal: vertical) shall be benched into competent soils or bedrock. Typically the benching should be 2 to 3 feet in height and minimum 3 feet in width.

To minimize the potential of differential settlement, we recommend that over-excavation be kept uniform. The excavation to remove undocumented fill and unsuitable soils should be extended to a minimum of five (5) feet laterally beyond the fill pad limits, where space is available. The actual depth of removal should be determined based on observations and tests made during grading.

The exposed bottom of the over-excavation area should be scarified at least 6 inches; moisture conditioned as needed to near-optimum moisture content, and compacted to 90 percent relative compaction. Over-excavation should not undermine adjacent off-site improvements. Remedial grading should not extend within a projected 1:1 (horizontal to vertical) plane projected down from the outer edge of adjacent off-site improvements.

Existing soil and bedrock materials exhibited moisture contents ranging from as low as 3% up to 55% during the field exploration, while the optimum moisture contents for purposes of compaction range from 9.2% to 16.8%. The grading contractor will need to take efforts to process the soils with thorough moisture conditioning and mixing of soils to meet the requirements of acceptable fill materials prior to placing as engineered fill as stated in the earthwork specifications.

If soft, yielding soil conditions are encountered at the excavation bottom, the following options can be considered:

a. Over-excavate until reach firm bottom

b. Over-excavate additional 18 inches deep, and then place at least 18-inch-thick compacted base material (CAB or equivalent) to bridge the soft bottom. Base should be compacted to 95% relative compaction.

c. Over-excavate additional 18 inches deep, and then place a layer of geofabric (i.e. Marifi HP570, X600 or equivalent), place 18-inch-thick compacted base material (CAB or equivalent) to bridge the soft bottom. Base should be compacted to 95% relative compaction. An additional layer of geofabric may be needed on top of base depending on the actual site conditions.

Site grading may result in transition lines with cut and/or fill conditions. This transition line would require special grading considerations. Detailed site grading recommendations are provided in the following sections.

8.3 Canyon Bottom Subdrains

Canyon bottom subdrain systems should be constructed of a minimum 6-inch diameter, Schedule 80 PVC pipe with glued manufactured pipe fitting and caps. The subdrain pipes should be located in the bottoms of the canyons. The drain pipes should be sloped at a minimum 2% gradient to provide gravity flow to the approved outlet location. Perforated pipes shall be laid with perforations down. Schedule 80 PVC perforated pipe may have to be custom fabricated.

Surface drain systems should not be connected to the subdrain system. Introduction of surface water in the subdrain system could recharge water into the compacted fill soils. Surface and subsurface drainage systems should be kept separate.

A State of California Department of Transportation (Caltrans) Class 2 Permeable Material is recommended for the permeable drain material. The percentage composition by weight of permeable material in place shall conform to the following gradings:

Table No. 6, Caltrans Class 2 Permeable Material Grading

CALTRANS CLASS 2 PERMEABLE MATERIAL	
Sieve Size	Percentage Passing
1”	100
¾”	90 - 100
3/8”	40 - 100
No. 4	25 – 40
No.8	18 – 33
No. 30	5 – 15
No. 50	0 – 7
No. 200	0 - 3

Note: Class 2 permeable material shall have a Sand Equivalent value of not less than 75.

8.4 Structural Fill

All engineered fill should be placed on competent, scarified and compacted bottom as evaluated by the geotechnical engineer and in accordance with the specifications presented in this section. Generally, excavated site soils, free of deleterious materials and rock particles larger than three (3) inches in the largest dimension, should be suitable for placement as compacted fill. Any proposed import fill should be evaluated and approved by Converse prior to import to the site. Import fill material should have an expansion index less than 20.

Excavated conglomerate bedrock, which consists of sand, gravel, and cobbles may be considered as base material below proposed hardscape, such as the propose access road.

Prior to compaction, fill materials should be thoroughly mixed and moisture conditioned when necessary, within two (2) percent of the optimum moisture for granular soils and at approximately three (3) percent above the optimum moisture for fine-grained soils. Fill soils shall be evenly spread in maximum 8-inch lifts, watered or dried as necessary, mixed and compacted to at least the density specified below. The fill shall be placed and compacted on a horizontal plane, unless otherwise approved by the Geotechnical Engineer.

Fills exceeding five (5) feet in height shall not be placed on native slopes that are steeper than 5:1 horizontal:vertical (H:V). Where native slopes are steeper than 5:1 H:V, and the height of the fill is greater than five (5) feet, the fill shall be keyed and

benched into competent materials. A 2:1 (horizontal to vertical) or flatter slope gradient for the planned new fill pad is recommended. All new fill should be compacted to at least 90 percent of the maximum dry density for the upper 10 feet of fill and 95 percent of the maximum dry density for fill placed 10 feet below proposed finished grade in accordance with the ASTM Standard D1557 test method. Appropriate means and methods of placement will be required to achieve these compaction requirements.

Though we expect most of the bedrock materials to break down to less than 3-inch size materials by the standard grading process, following are recommendations with regards to hard cobble and boulder size clasts that may be encountered in the bedrock materials that do not break down without considerable effort.

Structural fills placed in the top ten (10) feet of the finished graded pads and 2:1 (H:V) fill slopes shall contain sedimentary bedrock particles no larger than three (3) inches in size throughout and be mixed evenly throughout the fill soil matrix.

Deeper structural fills placed below the top ten (10) feet of the graded pad and slope surfaces can contain rock particle sizes from three (3) to twelve (12) inch size provided the following conditions are adhered to during grading:

- The rock materials shall not be nested, stacked or piled on top of each other during placement.
- Rock materials shall be evenly placed and dispersed in controlled lifts and layers throughout the compacted fill soils.
- Granular fine grained soils shall be placed and compacted on all sides of the rock to eliminate void spaces.
- Buried rock materials shall be proof-rolled with loaded heavy rubber tire grading equipment (scrapers, loaders and compactors) to provide the required compaction.
- Compaction and moisture conditioning of the structural fill soils containing rocks shall meet all earthwork specifications for structural fill placement.
- Placement of rock within the structural fill soils shall be performed under the full-time observation and testing of the Geotechnical Soil Consultant.

Placement of natural rock materials larger than twelve (12) inches and less than twenty four (24) inches in deeper structural fills shall require special observation and testing during fill placement. Placement of this rock size in the structural fills shall require prior approval by the Geotechnical Soils Consultant on a case by case basis. The contractor shall demonstrate that rocks of this size cannot be broken down and downsized by conventional grading methods.

Natural oversize rock materials that are resistant and durable can be used as natural rock armor for surface drain outlets, drainage aprons and drainage channels. Rocks should be placed in a controlled, tightly spaced pattern with compacted fill or concrete placed between the rocks to eliminate void spaces. The remaining oversize rocks, if any, could then be placed in specific areas selected by the Geotechnical Soils Consultants and documented on the as-built grading plans. The oversize rock shall be placed in accordance with the same criteria as the three (3) to twelve (12) inch size rock materials in controlled layers and with soil placed and compacted on all sides of the rock to eliminate void spaces.

Rock sizes could be increased from 3-inch to 6-inch size maximum in the top 10 feet if significant quantities of hard rocks were to be encountered. However, we do not anticipate this. The rock materials would have to be spread out in the fills in single layers with no nesting, stacking, or voids and then completely buried by fill soils as stated earlier. Additional re-grading of future building pad or structure areas (i.e., footing, slab and utility trench areas) may be required if rocks larger than 3-inch size are used in the top 10-feet of compacted fills.

If the campus decides to allow up to 6-inch size rocks be used within top 10 feet of fills, it should be reminded that earthwork may need to be redone for future buildings or structures and removal of large size rocks may result in requiring imported soils at that time. Temporary shoring may also be required for excavation deeper than 5 feet or sloping excavation is not feasible in future construction activities.

8.5 Excavatability and Rippability

Based on our field exploration, most of the earth materials at the site should be excavatable and rippable with conventional heavy-duty earth moving equipment in good working condition. However areas of harder, cemented and resistant bedrock units and layers (pebble conglomerates, sandstone layers, siliceous layers, etc.) are anticipated to be encountered during excavation and grading. These areas may require the use of larger heavy-duty dozers, excavators, track-mounted hydraulic breakers and/or single shank rippers to loosen, rip, cross-rip, downsize, crush, breakdown, mix and process the excavated sedimentary bedrock materials into soil size materials suitable for use as structural fill. Every effort shall be made during excavation, transport and grading to reduce the size of the bedrock materials to particle sizes less than three (3) inches in size to be adequately placed as structural fill.

The earth materials generated from the removal of the existing bedrock knoll will contain larger gravels, cobbles and possible boulders. Those materials require screening and/or processing into smaller particles prior to be used for compaction as specified in the section under structural fill.

8.6 Expansive Soil

Based on our laboratory testing results, the on-site silty, clayey earth materials are considered to be expansive. On-site silty, clayey soils and siltstone with an expansion index exceeding 20 should not be re-used for compaction within 5 feet below the planned fill pad finish grade or for retaining wall backfill. Soils containing organic materials should not be used as structural fill. The extent of removal should be determined by the geotechnical representative based on soil observation during grading. Based on borings BH-1 and BH-20, the top 5 feet of existing grade exhibits an expansion index greater than 20.

There are several alternative mitigation measures that can be utilized to improve expansive soils at the site. Some mitigation measures include:

- Placement of 2 feet thick of non-expansive soil below finished subgrade.
- Pre-saturation of on-site compacted subgrade soils to at approximate three (3) percent above optimum moisture content.
- Lime treat the upper two (2) feet of the subgrade soils.

The on-site soil materials will be mixed during the grading and the expansion potential might change. Therefore, the expansion potential of site soils should be verified after the grading.

8.7 Shrinkage and Bulking

The shrinkage and/or bulkage would depend on, among other factors, the depth of cut and/or fill, and the grading method and equipment utilized. For preliminary estimation, bulking and shrinkage factors for various units of earth material at the site may be taken as presented below:

- The approximate shrinkage factor for the upper ten (10) feet of alluvial soils is estimated to range from ten (10) to twenty (20) percent.

- The approximate bulking factor for the fill materials generated from the removal of bedrock hilltop is estimated to range from two (2) to five (5) percent, depending on final compaction achieved for the fill materials.

Although these values are only approximate, they represent our best estimates of the factors to be used to calculate lost volume that may occur during grading. If more accurate shrinkage and bulking factors are needed, it is recommended that field-testing using the actual equipment and grading techniques be conducted.

8.8 Subgrade Preparation

Final subgrade soils for structures and roads should be uniform and non-yielding. To obtain a uniform subgrade, soils should be well mixed and uniformly compacted. The subgrade soils should be non-expansive and well-drained. The near-surface site soils should be free draining. We recommend that at least the upper two (2) inches of subgrade soils underneath the slab-on-grade should be comprised of well-drained granular soils such as sands, gravel or crushed aggregate satisfying the following criteria:

- Maximum size $\leq$ 1.5 inches
- Percent passing U.S. #200 sieve $\leq$ 12 percent
- Sand equivalent $\geq$ 30

The subgrade soils should be moisture conditioned before placing concrete.

9.0 PRELIMINARY DESIGN RECOMMENDATIONS

The future development plans on the graded pads presented in this report were not available at this time. However, for planning purposes, we assume the future development will consist of multiple arrays of solar panels without subterranean basement to provide the preliminary design recommendations. Our recommendations provided in this section are based on the assumptions that in preparing the site, the earthwork and site grading recommendations provided in this report will be followed. It should be advised that the design recommendations presented herein are considered preliminary for planning purpose only. Any future development at these project sites shall be further reviewed and provided with project-specific geotechnical recommendations.

9.1 Shallow Foundations

9.1.1 Vertical Capacity

We recommend continuous and square footings be founded at least 18 inches below lowest adjacent final grade on compacted fill on bedrock. A minimum footing width of 24 inches is recommended for square footings and 12 inches for continuous footings. The allowable bearing value for footings with above minimum sizes is 2,000 psf for compacted fill and 2,500 psf for bedrock. The net allowable bearing pressure can be increase by 350 psf for each additional foot of excavation depth and by 250 psf for each additional foot of excavation width up to a maximum value of 4,500 psf.

The net allowable bearing values indicated above are for the dead loads and frequently applied live loads and are obtained by applying a factor of safety of 3.0 to the net ultimate bearing capacity.

9.1.2 Lateral Capacity

Resistance to lateral loads can be provided by friction acting at the base of the foundation and by passive earth pressure. A coefficient of friction of 0.35 may be assumed with normal dead load forces. An allowable passive earth pressure of 300 psf per foot of depth up to a maximum of 3,000 psf may be used for footings poured against properly compacted fill or undisturbed stiff natural soils. The values of coefficient of friction and allowable passive earth pressure include a factor of safety of 1.5.

9.1.3 Settlement

The static settlement of structures supported on continuous and/or spread footings founded on compacted fill will depend on the actual footing dimensions and the imposed vertical loads. Most of the footing settlement at the project site is expected to occur immediately after the application of the load. Based on the maximum allowable net bearing pressures presented above, static settlement is anticipated to be less than 1.0 inch. Differential settlement is expected to be up to one-half of the total settlement over a 30 foot span.

9.1.4 Dynamic Increases

Bearing values indicated above are for total dead load and frequently applied live loads. The above vertical bearing may be increased by 33% for short durations of loading which will include the effect of wind or seismic forces. The allowable passive pressure may be increased by 33% for lateral loading due to wind or seismic forces.

9.2 Pier Foundations

As an alternative to conventional shallow foundations, the planned solar arrays can be supported on piers (caissons) provided the following recommendations incorporated into design and construction. The piers can be connected to a grade beam system determined by the project structural engineer to control the deflections of structure under the design tolerance.

9.2.1 Vertical Capacity

Piers should be at least 24-inch in diameter extending at least 8 feet below adjacent final grade on compacted fill or bedrock. Piers can be designed for an allowable skin friction of 250 psf against the perimeter of pier for a minimum embedment of 8 feet below the adjacent grade. The upper two (2) feet of soil skin friction should be neglected in pier capacity calculations.

If end bearing capacity is to be considered for design, the bottom of pier should be cleaned out with appropriate equipment. The allowable end bearing capacity can be

designed for 3,500 psf. However, the diameter of pier may be increased and temporary casing may be required to facilitate cleanout.

9.2.2 Lateral Capacity

Resistance to lateral loads can be provided by friction acting at the base of the foundation and by passive earth pressure. A coefficient of friction of 0.35 may be assumed with normal dead load forces. An allowable passive earth pressure of 300 psf per foot of depth up to a maximum of 3,000 psf may be used for foundations poured against compacted fill or bedrock. The values of coefficient of friction and allowable passive earth pressure include a factor of safety of 1.5. For ground surface restrained by concrete slab, the passive resistance may be calculated from the ground surface. For unrestrained ground condition, the passive resistance of the upper one (1) feet earth material should be neglected in design.

9.2.3 Settlement

The static settlement of structures supported on piers founded on native alluvium will depend on the actual footing dimensions and the imposed vertical loads. Most of the footing settlement at the project site is expected to occur immediately after the application of the load. Based on the maximum allowable net bearing pressures presented above, static settlement is anticipated to be less than 0.5 inch.

9.2.4 Dynamic Increases

Bearing values indicated above are for total dead load and frequently applied live loads. The above vertical bearing may be increased by 33% for short durations of loading which will include the effect of wind or seismic forces. The allowable passive pressure may be increased by 33% for lateral loading due to wind or seismic forces.

9.3 Modulus of Subgrade Reaction

For the subject project, design of the structures supported on compacted fill subgrade prepared in accordance with the recommendations provided in this report may be based on a soil modulus of subgrade reaction of (k_s) of 150 pounds per square inch per inch.

9.4 Lateral Earth Pressure

Though not anticipated, following are recommendations for retaining walls up to 6 feet in height. The earth pressure behind any buried wall depends primarily on the allowable wall movement, type of backfill materials, backfill slopes, wall inclination, surcharges, and any hydrostatic pressure. The following fluid pressures are recommended for vertical walls with no hydrostatic pressure, no surcharge, and level backfill.

Table No. 7, Lateral Earth Pressures for Retaining Wall Design

Wall Type	Equivalent Fluid Pressure (pcf)
	Level Backfill
Cantilever Wall (Active pressure)	30 (Triangular Distribution)
Restrained Wall (At-rest pressure)	50 (Triangular Distribution)

The recommended lateral pressures assume that the walls are fully back-drained to prevent build-up of hydrostatic pressure. Adequate drainage could be provided by means of permeable drainage materials wrapped in filter fabric installed behind the walls. The drainage system should consist of perforated pipe surrounded by free draining, uniformly graded, ¾ -inch washed, crushed aggregate, and wrapped in filter fabric such as Mirafi 140N or equivalent, and should extend to about 2 feet below the finished grade. The filter fabric should overlap approximately 12 inches or more at the joints. The subdrain pipe should consist of perforated, four-inch diameter, rigid ABS (SDR-35) or PVC A-2000, or equivalent, with perforations placed down. Alternatively, a prefabricated drainage composite system such as the Miradrain G100N or equivalent can be used. The subdrain should be connected to surface drain or sump pump.

In addition, walls with inclined backfill should be designed for an additional equivalent fluid pressure of one (1) pound per cubic foot for every two (2) degrees of slope inclination. Walls subjected to surcharge loads located within a distance equal to the height of the wall should be designed for an additional uniform lateral pressure equal to one-third or one-half the anticipated surcharge load for unrestrained or restrained walls, respectively. These values are applicable for backfill placed between the wall stem and an imaginary plane rising 45 degrees from below the edge (heel) of the wall footings.

9.5 Flexible Pavement

The flexible pavement structural section design recommendations were performed in accordance with the method contained in the *CALTRANS Highway Design Manual*, Chapter 630 without the factor of safety. No specific traffic study was performed to determine the Traffic Index (TI) for the proposed project, therefore a wide range of TI values were evaluated.

Due to various earth materials encountered at the site, flexible pavement structural section recommendations are prepared for both subgrade soils. We recommend that the project structural engineer consider the traffic loading conditions at various locations and select the appropriate pavement sections from the following table:

Table No. 8, Flexible Pavement Structural Sections

Design R-value	Design TI	Asphalt Concrete (AC) Over Aggregate Base (AB) Structural Sections		Full AC Structural Section
		AC (inches)	AB (inches)	AC (inches)
44	4	2	2.5	3
	5	3	3	4.5
	6	4	3.5	5.5
	7	4	6	7
	8	5	6.5	8
	9	6	7	9

Base material shall conform to requirements for Crushed Miscellaneous Base (CMB) or equivalent and should be placed in accordance with the requirements of the Standard Specifications for Public Works Construction (SSPWC, latest Edition).

Asphaltic materials should conform to Section 203-1, "Paving Asphalt," of the Standard Specifications for Public Works Construction (SSPWC, latest Edition) and should be placed in accordance with Section 302-5, "Asphalt Concrete Pavement," of the SSPWC, 2012 edition.

Positive drainage should be provided away from all pavement areas to prevent seepage of surface and/or subsurface water into the pavement base and/or subgrade.

9.6 Rigid Pavement

Rigid pavement design recommendations were provided in accordance with the Portland Cement Association's (PCA) Southwest Region Publication P-14, *Portland Cement Concrete Pavement (PCCP) for Light, Medium, and Heavy Traffic*. We recommend that the project structural engineer consider the loading conditions at various locations and select the appropriate pavement sections from the following table:

Table No. 9, Rigid Pavement Structural Sections

Design R-Value	Design Traffic Index (TI)	PCCP Pavement Section (inches)
44	4.5	5.75
	5.0	6.00
	6.0	6.25
	7.0	6.75
	8.0	7.00
	9.0	7.25

The pavement sections presented in the table are based on a minimum 28-day Modulus of Rupture (M-R) of 550 psi and a compressive strength of 3,000 psi. The third point method of testing beams should be used to evaluate modulus of rupture. The concrete mix design should contain a minimum cement content of 5.5 sacks per cubic yard

9.7 Site Drainage

Adequate positive drainage should be provided away from the structures to prevent ponding and to reduce percolation of water into structural backfill. We recommend that the any landscape area immediately adjacent to the foundation shall be designed sloped away from the structures with a minimum 5% slope gradient for at least 10 feet measured perpendicular to the face structure. Impervious surfaces within 10 feet of the foundation shall be sloped a minimum of 2 percent away from the structure per 2013 CBC.

Planters and landscaped areas adjacent to the any building perimeter should be designed to minimize water infiltration into the subgrade soils. Lower level walkways and open patio areas may require special drainage provisions and sump pumps to provide suitable drainage.

10.0 CONSTRUCTION RECOMMENDATIONS

10.1 Temporary Excavations

Based on the materials encountered in the exploratory borings, sloped temporary excavations may be constructed according to the slope ratios presented in the following table:

Table No. 10, Slope Ratios for Temporary Excavation

Maximum Depth of Cut (feet)	Maximum Slope Ratio* (horizontal: vertical)
0 - 5	vertical
5 - 15	1:1
15+	1.5:1

*Slope ratio assumed to be uniform from top to toe of slope.

Any loose utility trench backfill or other fill encountered in excavations will be less stable than the native soils. Temporary cuts encountering loose fill or loose dry sand should be constructed at a flatter gradient than presented in the table above. Surfaces exposed in slope excavations should be kept moist but not saturated to minimize raveling and sloughing during construction. Adequate provisions should be made to protect the slopes

from erosion during periods of rainfall. Surcharge loads, including construction, should not be placed within five (5) feet of the unsupported excavation edge.

All applicable requirements of the California Construction and General Industry Safety Orders, the Occupational Safety and Health Act of 1987 and current amendments, and the Construction Safety Act should be met. The soils exposed in cuts should be observed during excavation by the project's geotechnical consultant. If potentially unstable soil conditions are encountered, modifications of slope ratios for temporary cuts may be required.

10.2 Geotechnical Services during Construction

This report has been prepared to aid in the foundation plans and specifications, and to assist the architect, civil and structural engineers in the design of the proposed structures. It is recommended that this office be provided an opportunity to review final design drawings and specifications to verify that the recommendations of this report have been properly implemented.

Recommendations presented herein are based upon the assumption that adequate earthwork monitoring will be provided by Converse. Footing excavations should be observed by Converse prior to placement of steel and concrete so that footings are founded on satisfactory materials and excavations are free of loose and disturbed materials. Trench backfill should be placed and compacted with observation and field density testing provided by this office.

During construction, the geotechnical engineer and/or their authorized representatives should be present at the site to provide a source of advice to the client regarding the geotechnical aspects of the project and to observe and test the earthwork performed. Their presence should not be construed as an acceptance of responsibility for the performance of the completed work, since it is the sole responsibility of the contractor performing the work to ensure that it complies with all applicable plans, specifications, ordinances, etc.

This firm does not practice or consult in the field of safety engineering. We do not direct the contractor’s operations, and cannot be responsible for other than our own personnel on the site; therefore, the safety of others is the responsibility of the contractor. The contractor should notify the owner if he considers any recommended actions presented herein to be unsafe.

11.0 CLOSURE

The findings and recommendations of this report were prepared in accordance with generally accepted professional engineering and engineering geologic principles and practice. We make no other warranty, either expressed or implied. Our conclusions and recommendations are based on the results of the field and laboratory investigations, combined with an interpolation and extrapolation of soil conditions between and beyond boring locations. If conditions encountered during construction appear to be different from those shown by the borings, this office should be notified.

The preliminary design recommendations given in this report are based on the assumption that the earthwork and site grading recommendations contained in this report are implemented. It should be advised that the design recommendations presented herein are considered preliminary for planning purpose only. Additional consultation may be prudent to interpret Converse's findings for contractors, or to possibly refine these recommendations based upon the review of the final site grading and actual site conditions encountered during construction. If the scope of the project changes, if project completion is to be delayed, or if the report is to be used for another purpose, this office should be consulted.

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APPENDIX A

FIELD EXPLORATION FOR PROPOSED FILL PLACEMENT AT WEST PARCEL

APPENDIX A

FIELD EXPLORATION FOR PROPOSED FILL PLACEMENT AT WEST PARCEL

Our field investigation included a site reconnaissance of the site and a subsurface exploration program consisting of drilling soil borings. During the site reconnaissance on April 2, 2014, the surface conditions were noted and the locations of the borings were determined. The borings were located using existing boundary features as a guide and should be considered accurate only to the degree implied by the method used.

Exploratory Borings

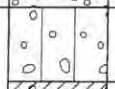
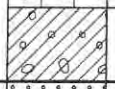
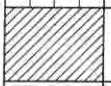
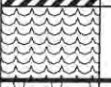
Twenty-one (21) hollow-stem auger borings were drilled from May 5 to May 9, 2014 extending between depths of approximately 10 to 51.5 feet below the existing ground surface (bgs), and one (1) bucket auger boring (BH-13) on May 19, 2014 to a depth of 31 feet (bgs). The borings were drilled using a truck-mounted drill rig equipped with an 8-inch diameter hollow-stem auger for soil sampling. The bucket auger boring location was utilized for downhole logging for detailed classification of bedrock properties. Soils were logged by our engineer/geologist and classified in the field by visual examination in accordance with the Unified Soil Classification System. The field descriptions have been modified where appropriate to reflect the laboratory test results.

Ring samples of the subsurface materials were obtained at frequent intervals in the exploratory borings using a drive sampler (2.4-inches inside diameter and 3.0-inches outside diameter) lined with sample rings. The steel ring sampler was driven into the bottom of the borehole with successive drops of a 140-pound driving weight falling 30 inches, using an automatic hammer. Samples were retained in brass rings (2.4-inches inside diameter and 1.0-inch in height). The central portion of the sample was retained and carefully sealed in waterproof plastic containers for shipment to the Converse laboratory. Blow counts for each sample interval are presented on the logs of borings. Bulk samples of typical soil types were also obtained.

Standard Penetration Tests (SPT) were also performed using a standard (1.4-inches inside diameter and 2.0-inches outside diameter) split-barrel sampler. The mechanically driven hammer for the SPT sampler was 140 pounds, failing 30 inches for each blow. The recorded blow counts for every six inches for a total of 1.5 feet of sampler penetration are shown on the Logs of Borings in the “BLOWS" column. The standard penetration test was performed in accordance with the ASTM Standard D1586 test method. The soil retrieved from the spoon sampler was carefully sealed in waterproof plastic containers for shipment to the laboratory.
It should be noted that the exact depths at which material changes occur cannot always be established accurately. Changes in material conditions that occur between driven samples are indicated in the logs at the top of the next drive sample. A key to soil

symbols and terms is presented as Drawing No. A1, *Soil Classification Chart*. The logs of the exploratory boring are presented in Drawing Nos. *A2 through A23*, *Log of Borings.*

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS (MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE)	GRAVEL AND GRAVELLY SOILS (MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE)	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS (MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE)	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS (MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE)	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

BORING LOG SYMBOLS

SAMPLE TYPE

- STANDARD PENETRATION TEST — Split barrel sampler in accordance with ASTM D-1586-84 Standard Test Method
- DRIVE SAMPLE 2.42" I.D. sampler.
- DRIVE SAMPLE No recovery
- BULK SAMPLE
- GROUNDWATER WHILE DRILLING
- GROUNDWATER AFTER DRILLING

LABORATORY TESTING ABBREVIATIONS

TEST TYPE
(Results shown in Appendix B)

CLASSIFICATION

Plasticity	pi
Grain Size Analysis	ma
Passing No. 200 Sieve	wa
Sand Equivalent	se
Expansion Index	ei
Compaction Curve	max
Hydrometer	h

STRENGTH

Pocket Penetrometer	p
Direct Shear	ds
Direct Shear (single point)	ds*
Unconfined Compression	uc
Triaxial Compression	tx
Vane Shear	vs
Consolidation	c
Collapse Test	col
Resistance (R) Value	r
Chemical Analysis	ca
Electrical Resistivity	er

UNIFIED SOIL CLASSIFICATION AND KEY TO BORING LOG SYMBOLS

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. **13-31-339-01**

Drawing No. **A-1**

Log of Boring No. BH- 1

Dates Drilled: 5/6/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 734 Depth to Water (ft): 19.25

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		ALLUVIUM (Qa): **SILTY SAND (SM):** fine to medium-grained, some clay, with gravels up to 1.5" in maximum dimension, brown.						ei
5		-with cobbles			16/19/14	8	99	c
10		-with clay			5/5/6			
15		**GRAVELLY SAND (SP):** medium to coarse-grained, some silt, brown.			14/12/15	26	103	
20					12/9/12			
		End of boring at 21.5 feet. Groundwater encountered at 19.25 feet. Borehole backfilled with soil cuttings on 5-6-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-2

Log of Boring No. BH- 2

Dates Drilled: 5/6/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 734 Depth to Water (ft): 15.5

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		ALLUVIUM (Qa): **SILTY SAND (SM):** fine to medium-grained, some clay, with gravels up to 1.5" in maximum dimension, dark brown.						
5		-brown	■		15/14/13	9	98	
10		**GRAVELLY SAND (SP):** medium to coarse-grained, gravels up to 2" in maximum dimension, trace silts, few cobbles, brown.	■		11/13/15	13	105	
15			☒		17/15/12			
20		-with cobbles	■		50(3")	16	107	
		End of boring at 21.5 feet. Groundwater encountered at 15.5 feet. Borehole backfilled with soil cuttings on 5-6-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-3

Log of Boring No. BH- 3

Dates Drilled: 5/5/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 729 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		ALLUVIUM (Qa): **SILTY SAND (SM):** fine to medium-grained, some clay, few gravels up to 1.5" in maximum dimension, brown.		■				max
5			■		15/39/49	8	126	
10			■		25/33/37	10	126	
15			☒		7/10/13			
20		**BEDROCK - SYCAMORE CANYON FORMATION (Tscs):** **SILTSTONE AND SANDSTONE:** weathered, thinly bedded, near vertical bedding, grayish brown.	■		11/13/18	14	117	
25			☒		6/10/12			
30			☒		9/11/12			
		End of boring at 31.5 feet. No groundwater encountered during drilling. Borehole backfilled with soil cuttings on 5-5-14						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-4

Log of Boring No. BH- 4

Dates Drilled: 5/5/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 737 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		COLLUVIUM (Qc): **SILTY SAND (SM):** fine to medium-grained, some clay, few gravels up to 1.5" in maximum dimension, brown.						
5		**BEDROCK - SYCAMORE CANYON FORMATION (Tscs):** **SILTSTONE, SANDSTONE:** weathered, no apparent bedding, orangish brown.			17/50(6")	7	125	
10					12/17/32			
15					31/45/50(5")	9	127	
20					10/16/29			
		End of boring at 21.5 feet. No groundwater encountered. Borehole backfilled with soil cuttings on 5-5-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-5

Log of Boring No. BH- 5

Dates Drilled: 5/8/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 792 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		COLLUVIUM (Qc): **SILTY SAND (SM):** fine to medium-grained, some clay, with gravels up to 3" in maximum dimension and cobbles up to 12" in maximum dimension, yellowish brown.						ma (fc=19.9%)
		BEDROCK - SYCAMORE CANYON FORMATION (Tscg): **CONGLOMERATE WITH SANDSTONE:** gravels and cobbles up to 3" in maximum dimension, weathered massive, orangish brown.						
5					50(4")	4	108	
10					50(5")			
15					50(5")	3	117	
20					50(4")			
25		**BEDROCK - SYCAMORE CANYON FORMATION (Tscs):** **SANDSTONE, SILTSTONE:** severely weathered, no apparent bedding, with gravels up to 3" in maximum dimension, orangish brown.			50(4")	5	131	
30					50(2")			

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-6a

Log of Boring No. BH- 5

Dates Drilled: 5/8/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 792 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		BEDROCK - SYCAMORE CANYON FORMATION (Tscs): **SANDSTONE, SILTSTONE:** severely weathered, no apparent bedding, with gravels up to 3" in maximum dimension, orangish brown.	■		50(3")	5	129	
		End of boring at 37 feet due to refusal from hard bedrock including cobbles and possible boulders. No groundwater encountered during drilling. Borehole backfilled with soil cuttings on 5-8-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

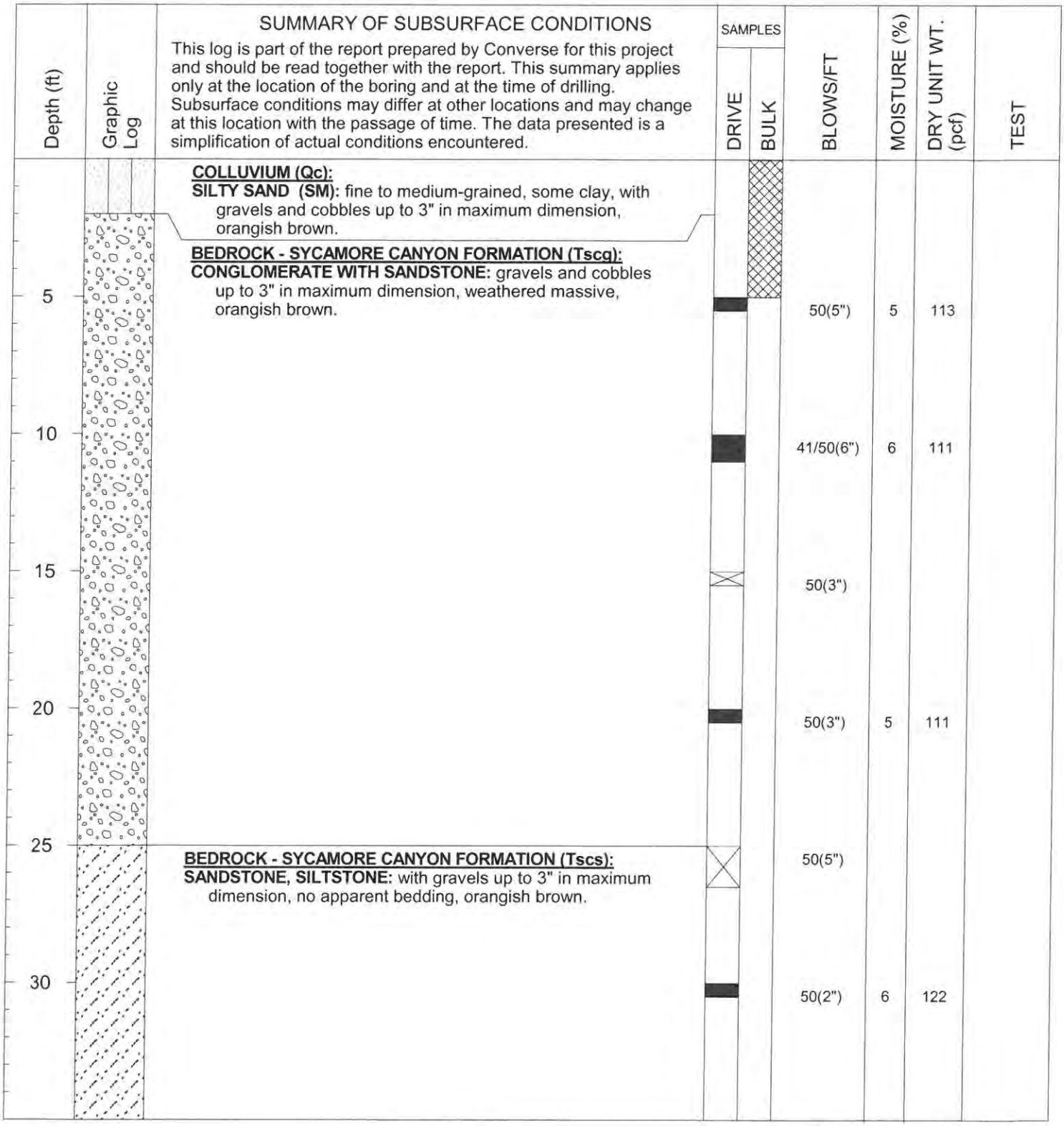
Drawing No. A-6b

Log of Boring No. BH- 6

Dates Drilled: 5/5/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 793 Depth to Water (ft): NOT ENCOUNTERED



Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-7a

Log of Boring No. BH- 6

Dates Drilled: 5/5/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 793 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		BEDROCK - SYCAMORE CANYON FORMATION (Tscs): **SANDSTONE, SILTSTONE:** with gravels up to 3" in maximum dimension, no apparent bedding, orangish brown.	X		50(6")			
40			■		50(2")	4	116	
45			X		33/50(2")			
50			X		50(2")			
		End of boring at 51.5 feet. No groundwater encountered. Borehole backfilled with soil cuttings on 5-5-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-7b

Log of Boring No. BH- 7

Dates Drilled: 5/6/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 744.5 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		ALLUVIUM (Qa): **SILTY SAND (SM):** fine to medium-grained, some clay, few gravels up to 1.5" in maximum dimension, brown.						r
5			■		10/11/14	8	103	
10		**BEDROCK - PUENTE FORMATION (Tscs):** **SANDSTONE, SILTSTONE:** weathered, no apparent bedding, with gravels up to 2.5" in maximum dimension, few cobbles, orangish brown.	■		13/33/50(4")	6	115	
15			⊠		27/48/50(5")			
20			■		50(5")	8	112	
		End of boring at 21.5 feet. No groundwater encountered. Borehole backfilled with soil cuttings on 5-5-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-8

Log of Boring No. BH- 8

Dates Drilled: 5/6/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 745.5 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		COLLUVIUM (Qc): **SILTY SAND (SM):** fine to medium-grained, some clay, few gravels up to 2.5" in maximum dimension, brown.						
5		**BEDROCK - PUENTE FORMATION (Tscs):** **SANDSTONE, SILTSTONE:** weathered, no apparent bedding, with gravels up to 2.5" in maximum dimension and few cobbles, orangish brown and brown.			36/41/50(4")	9	114	c
10					50(6")	6	114	
15					50(6")			
20					50(4")			
		End of boring at 21.5 feet. No groundwater encountered. Borehole backfilled with soil cuttings on 5-5-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-9

Log of Boring No. BH- 9

Dates Drilled: 5/6/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 739 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		COLLUVIUM (Qc): **SILTY SAND (SM):** fine to medium-grained, some clay, few gravels up to 2.5" in maximum dimension, brown.						max,ds
5		**BEDROCK - PUENTE FORMATION (Tscs):** **SILTSTONE, SANDSTONE:** weathered, no apparent bedding, few gravels up to 1" in maximum dimension, orange.	■		29/50(4")	16	99	
10		-olive brown	■		33/50(5")	5	107	
15		**BEDROCK - PUENTE FORMATION (Tscg):** **CONGLORMERATE WITH SANDSTONE:** severly weathered, no apparent bedding, gravels and cobbles up to 3" in maximum dimension, massive, olive brown, orangish brown.	⊠		13/10/18			
20			■		50(4")	16	103	
25			⊠		50(4")			
		End of boring at 26 feet due to refusal from hard bedrock including cobbles and possible boulders. No groundwater encountered. Borehole backfilled with soil cuttings on 5-6-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-10

Log of Boring No. BH-10

Dates Drilled: 5/6/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 757.5 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		ALLUVIUM (Qa): **SILTY SAND (SM):** fine to medium-grained, some clay, few gravels up to 1.5" in maximum dimension, brown.						ma (fc=44%)
5		**BEDROCK - PUENTE FORMATION (Tscs):** **SANDSTONE, SILTSTONE:** with gravels up to 2.5" in maximum dimension, weathered, no apparent bedding, orangish brown, grayish brown.			50(6")	6	112	
10					50(6")	6	122	
15		-with cobbles			50(6")			
20					50(2")	12	120	
		End of boring at 21.5 feet. No groundwater encountered. Borehole backfilled with soil cuttings on 5-5-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-11

Log of Boring No. BH-11

Dates Drilled: 5/8/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 785 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		COLLUVIUM (Qc): **SILTY SAND (SM):** fine to medium-grained, some clay, few gravels up to 2" in maximum dimension, light brown.						
5		**BEDROCK - PUENTE FORMATION (Tscs):** **SANDSTONE, SILTSTONE:** severely weathered, no apparent bedding, orangish brown, grayish brown.			50(4")	13	95	
10		-with cobbles			35/45/50			
15					50(5")	4	107	
20					13/19/38			
25					50(4")	5	114	
		End of boring at 27 feet due to refusal from hard bedrock including cobbles and possible boulders. No groundwater encountered. Borehole backfilled with soil cuttings on 5-5-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-12

Log of Boring No. BH-12

Dates Drilled: 5/8/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 776.5 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		ALLUVIUM (Qa): **SILTY SAND (SM) WITH CLAY AND GRAVELS:** fine to medium-grained, some clay, few gravels up to 1.5" in maximum dimension, brown						
5			■		35/42/50	6	125	
10			■		14/30/47	9	109	
15		**BEDROCK - PUENTE FORMATION (Tscs):** **SANDSTONE, SILTSTONE:** with gravels up to 2" in maximum dimension, severly weathered, no apparent bedding, orangish brown, brown.	⊠		18/20/27			
20			■		10/12/19	23	93	
		End of boring at 21.5 feet. No groundwater encountered. Borehole backfilled with soil cuttings on 5-5-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-13

Log of Boring No. BH-13

Dates Drilled: 5/19/2014 Logged by: MBS/MM Checked By: WHC

Equipment: 24" BUCKET AUGER Driving Weight and Drop: 800 lbs / 30 in

Ground Surface Elevation (ft): 786 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		SILTY SAND (SM) WITH CLAY AND GRAVELS topsoil with round grravels 30%-40%, organics, roots, gray to blackish gray						
		BEDROCK - PUENTE FORMATION (Tscg): **CONGLOMERATE** clayey sand with gravels, cobbles and boulders, clay binder, mottled, oxidized rust, weathered, yellowish brown						
5		-bedding 5.5, N24E, 22NW,	■		20(6") 24(6")	30	99	
		-increased rock, gravels and cobbles-subrounded to rounded (30-40% rock), olive gray to yellowish brown color						
10			■		15(6") 36(6")	28	94	
15		-clayey sandstone, matrix with gravels and cobbles, rocks subrounded to rounded, hard stream rocks, some boulder size rocks -bedding 16.5, N30E, 25W,	■		17(6") 40(6")	36	91	
			■		50(6")			
20		-increased drilling resistance, gravels and cobbles, cemented conglomerate, weathered, gray to yellowish brown				32	101	
		bedding 23.5, N10E, 8NW,						
25		-cemented hard, sandstone matrix with gravels and cobbles, olive gray	■	▨	47(6") 50(5")	6	125	max,ds
30			■	▨	60(6") 20(2")	6	100	
		End of boring at 31 feet due to refusal from hard bedrock. No groundwater encountered. Borehole backfilled with soil cuttings on 5-19-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-14

Log of Boring No. BH-14

Dates Drilled: 5/8/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 719.5 Depth to Water (ft): 44

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		COLLUVIUM (Qc): **SILTY SAND (SM):** fine to medium-grained, some clay, few gravels up to 2" in maximum dimension, light brown.						
5		**BEDROCK - PUENTE FORMATION (Tscs):** **SANDSTONE, SILTSTONE:** weathered bedding, nearly horizontal bedding, orangish brown, brown			26/50(6")	5	112	
10					18/18/19			
15					50(5")	8	102	
20					15/17/30			
25					50(6")	33	90	
30					16/17/23			

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-15a

Log of Boring No. BH-14

Dates Drilled: 5/8/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 719.5 Depth to Water (ft): 44

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		BEDROCK - PUENTE FORMATION (Tscs): **SANDSTONE, SILTSTONE:** weathered bedding, nearly horizontal bedding, orangish brown, brown	■		14/26/31	11	116	
40		**CLAYSTONE, SILTSTONE:** severly weathered, laminated bedding, near horizontal bedding, grayish brown, olive brown	☒		5/9/14			
45			■		50(6")	37	85	
		End of boring at 46.5 feet. Groundwater encountered at 44 feet. Borehole backfilled with soil cuttings on 5-8-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-15b

Log of Boring No. BH-15

Dates Drilled: 5/7/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 706 Depth to Water (ft): 16

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		ALLUVIUM (Qa): **SILTY SAND (SM):** fine to medium-grained, some clay, few gravels up to 1.5" in maximum dimension, brown.						
5		-few clays, dark brown	■		10/18/24	20	105	c
10			■		19/36/30	16	117	
		BEDROCK - PUENTE FORMATION (Tscs): **SILTSTONE, SANDSTONE:** near vertical bedding, few caliche, orange brown, olive brown						
15			☒		3/4/7			
20		-thinly bedded at 45°	■		10/15/19	31	89	c
25			☒		5/7/9			
30		**SANDSTONE:** with gravels up to 2.5" in maximum dimension, light brown	☒		22/41/32			

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-16a

Log of Boring No. BH-15

Dates Drilled: 5/7/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 706 Depth to Water (ft): 16

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		SANDSTONE: with gravels up to 2.5" in maximum dimension, light brown	■		50(6")	16	121	
40		**SANDSTONE, SILTSTONE:** moderately weathered, nearly 40° bedding, gray, orangish brown	☒		16/25/23			
45			☒		15/28/31			
		End of boring at 46.5 feet. Groundwater encountered at 16 feet. Borehole backfilled with soil cuttings on 5-8-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-16b

Log of Boring No. BH-16

Dates Drilled: 5/7/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 706 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		ALLUVIUM (Qa): **SILTY SAND (SM):** fine to medium-grained, some clay, few gravels up to 1.5" in maximum dimension, light brown.						
5		**BEDROCK - PUENTE FORMATION (Tscs):** **SANDSTONE, SILTSTONE:** severely weathered, no apparent bedding, with gravels up to 1.5" in maximum dimension, dark orangish brown.			26/40/50(4")	10	124	
10					50(6")			
		End of boring at 11.5 feet. Groundwater not encountered. Borehole backfilled with soil cuttings on 5-7-14						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-17

Log of Boring No. BH-17

Dates Drilled: 5/7/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 695.5 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		ALLUVIUM (Qa): **SILTY SAND (SM):** fine to medium-grained, some clay, few gravels up to 1.5" in maximum dimension, light brown.						
5		**BEDROCK - PUENTE FORMATION (Tscs):** **SILTSTONE, SANDSTONE:** with gravels up to 1.5" in maximum dimension, slightly weathered, no bedding, yellowish brown			50(5")	10	100	
10					50(3")	30	99	
		End of boring at 11.5 feet. Groundwater not encountered. Borehole backfilled with soil cuttings on 5-7-14						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-18

Log of Boring No. BH-18

Dates Drilled: 5/7/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 691 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		ALLUVIUM (Qa): **SANDY SILT (ML):** fine to medium-grained, some clay, few gravels up to 1" in maximum dimension, brown.						ma
5		-with cobbles			21/50(5")	55	67	
10		**BEDROCK - PUENTE FORMATION (Tscs):** **SANDSTONE, SILTSTONE:** weathered, laminated, near horizontal bedding, olive brown, orangish brown.			22/29/50(3")	30	99	
		End of boring at 11.5 feet. Groundwater not encountered. Borehole backfilled with soil cuttings on 5-7-14						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-19

Log of Boring No. BH-19

Dates Drilled: 5/7/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 694 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		ALLUVIUM (Qa): **SILTY SAND (SM):** fine to medium-grained, some clay, few gravels up to 1" in maximum dimension, brown.						
5			■		19/29/33	12	122	c
10		**BEDROCK - PUENTE FORMATION (Tscs):** **SANDSTONE, SILTSTONE:** weathered, laminated, near horizontal bedding, orangish brown, olive brown.	■		19/31/50(5")	42	78	
		End of boring at 11.5 feet. Groundwater not encountered. Borehole backfilled with soil cuttings on 5-7-14						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-20

Log of Boring No. BH-20

Dates Drilled: 5/7/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 689 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		ALLUVIUM (Qa): **SILTY SAND (SM):** fine to medium-grained, some clay, few gravels up to 1.25" in maximum dimension, brown.						ei
5		-with cobbles			18/37/32	15	104	
10		**BEDROCK - PUENTE FORMATION (Tscs):** **SANDSTONE, SILTSTONE:** weathered, laminated, near horizontal bedding, orangish brown, olive brown			15/21/28	13	117	
		End of boring at 11.5 feet. Groundwater not encountered. Borehole backfilled with soil cuttings on 5-7-14						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-21

Log of Boring No. BH-21

Dates Drilled: 5/7/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 686 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		ALLUVIUM (Qa): **SILTY SAND (SM):** fine to medium-grained, some clay, few gravels up to 1.5" in maximum dimension, brown.						max
5		-with cobbles			50(2")	17	97	
10		**BEDROCK - PUENTE FORMATION (Tscs):** **SANDSTONE, SILTSTONE:** weathered, laminated, nearly horizontal bedding, orangish brown, olive brown			31/50(3")	24	95	
		End of boring at 11.5 feet. Groundwater not encountered. Borehole backfilled with soil cuttings on 5-7-14						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-22

Log of Boring No. BH-22

Dates Drilled: 5/7/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 693 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	TEST
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		ALLUVIUM (Qa): **SILTY SAND (SM):** fine to medium-grained, some clay, few gravels up to 1" in maximum dimension, brown.						
5			■		13/17/22	14	114	
		BEDROCK - PUENTE FORMATION (Tscs): **SANDSTONE, SILTSTONE:** weathered, laminated, near vertical horizontal bedding, orangish brown, olive brown.						
10			■		14/20/26	31	87	
15			■		15/21/28	34	84	
		End of boring at 16.5 feet. Groundwater not encountered. Borehole backfilled with soil cuttings on 5-7-14						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. A-23

APPENDIX B

LABORATORY TESTING PROGRAM
FOR PROPOSED FILL PLACEMENT AT WEST PARCEL

APPENDIX B

LABORATORY TESTING PROGRAM

Tests were conducted in our laboratory on representative soil samples for the purpose of classification and evaluation of their relevant physical characteristics and engineering properties. The amount and selection of tests were based on the geotechnical requirements of the project. Test results are presented herein and on the Logs of Borings in Appendix A, *Field Exploration for Proposed Fill Placement at West Parcel.* The following is a summary of the laboratory tests conducted for this project.

Moisture Content and Dry Density

Results of moisture content and dry density tests, performed on relatively undisturbed ring samples were used to aid in the classification of the soils and to provide quantitative measure of the *in situ* dry density. Data obtained from this test provides qualitative information on strength and compressibility characteristics of site soils. For test results, see the Logs of Borings in Appendix A, *Field Exploration for Proposed Fill Placement at West Parcel.*

Grain-Size Analysis

To assist in classification of soils, mechanical grain-size analyses were performed on Three (3) selected samples. Tests were performed in general accordance with the ASTM Standard C136 test method. Grain-size curves are shown in Drawing No. B1, *Grain Size Distribution Results*.

Maximum Dry Density Test

Four (4) laboratory maximum dry density-moisture content relationship tests were performed on one representative bulk sample. The tests were conducted in accordance with ASTM Standard D1557 laboratory procedure. The test results are presented on Drawing No. B2, *Moisture-Density Relationship Results*.

Direct Shear

Direct shear tests were performed on two (2) relatively undisturbed samples at soaked moisture conditions. For each test, three samples contained in brass sampler rings were placed, one at a time, directly into the test apparatus and subjected to a range of normal loads appropriate for the anticipated conditions. The samples were then sheared at a constant strain rate of 0.01 inch/minute. Shear deformation was recorded until a maximum of about 0.50-inch shear displacement was achieved. Ultimate strength was selected from the shear-stress deformation data and plotted to determine the shear

strength parameters. For test data, including sample density and moisture content, see Drawing Nos. B3a through B3b, Direct *Shear Test Results,* and in the following table:

Table No. B-1, Direct Shear Test Results

Boring No.	Depth (feet)	Soil Classification	Peak Strength Parameters	
			Friction Angle (degrees)	Cohesion (psf)
BH-9	0-5	Silty Sand (SM)	32	150
BH-13	25-30	Sedimentary Bedrock-Conglomerate	29	300

Consolidation Test

Consolidation tests were performed on four (4) selected samples. Data obtained from this test performed on a relatively undisturbed soil sample was used to evaluate the settlement characteristics of the foundation soils under load. Preparation for this test involved trimming the sample and placing the one-inch high brass ring into the test apparatus, which contained porous stones, both top and bottom, to accommodate drainage during testing. Normal axial loads were applied to one end of the sample through the porous stones, and the resulting deflections were recorded at various time periods. The load was increased after the sample reached a reasonable state of equilibrium. Normal loads were applied at a constant load-increment ratio, successive loads being generally twice the preceding load. The sample was tested at field and submerged conditions. The test results, including sample density and moisture content, are presented in Drawings Nos. B4a through B4d, *Consolidation Test Results*.

Expansion Index Test

Two (2) representative bulk samples were tested to evaluate the expansion potential of material encountered at the site. The test was conducted in accordance with ASTM D4829 Standard. Test results are presented in the following table:

Table No. B-3, Expansion Index Test Result

Boring No.	Depth (feet)	Soil Description	Expansion Index	Expansion Potential
BH-1	0-5	Silty Sand (SM)	21	Low
BH-20	0-5	Silty Sand (SM)	23	Low

R-value Test

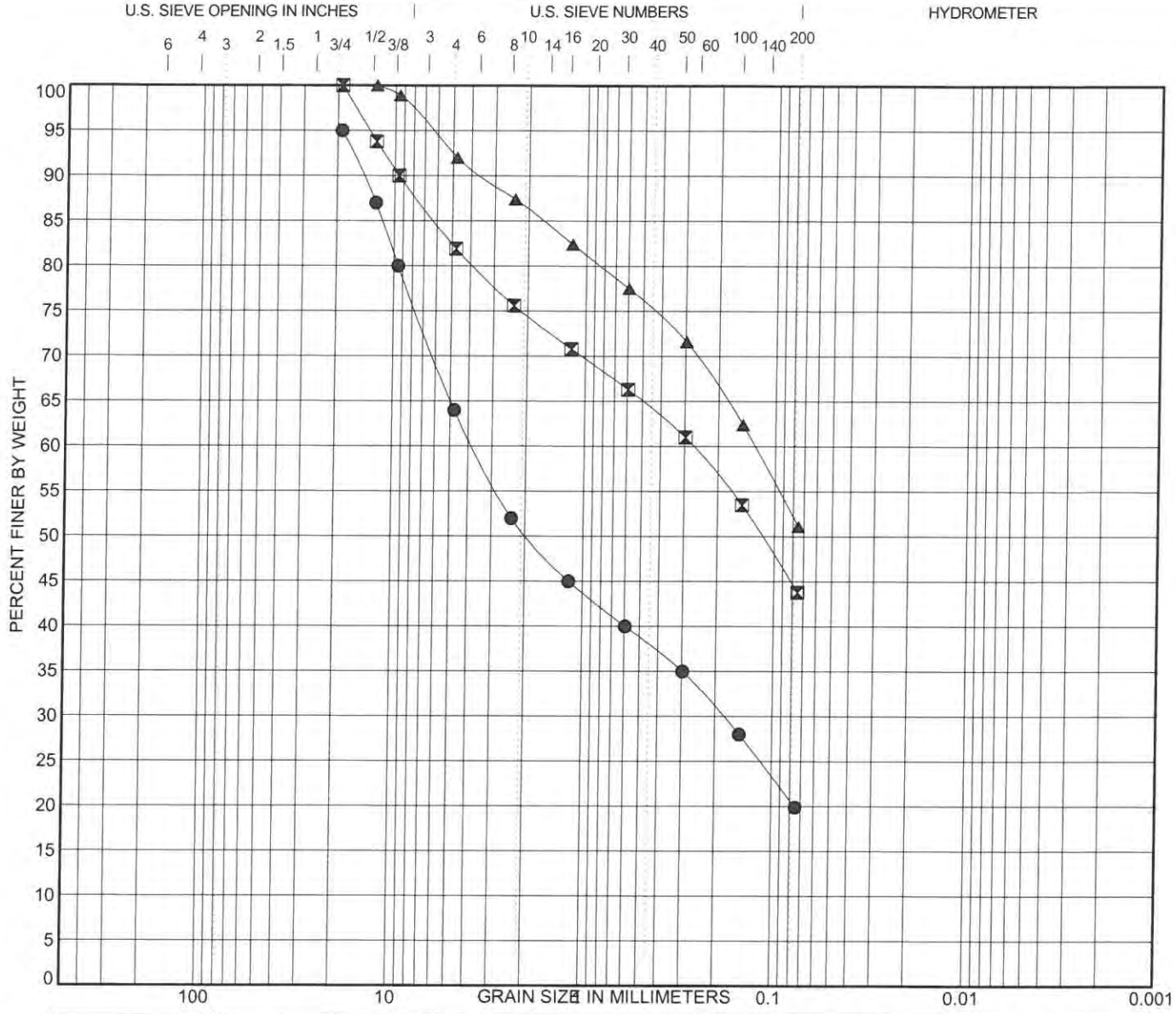
One (1) representative bulk soil sample was tested for resistance value (R-value) in accordance with State of California Standard Method 301-G. This test is designed to provide a relative measure of soil strength for use in pavement design. The test results are shown in the following table:

Table No. B-4, R-value Test Result

Boring No.	Depth (feet)	Soil Classification	Measured R-value
BH-7	0-5	Silty Sand (SM)	44

Sample Storage

Soil samples presently stored in our laboratory will be discarded 30 days after the date of this report, unless this office receives a specific request to retain the samples for a longer period of time.



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring No.	Depth (ft)	Description	LL	PL	PI	Cc	Cu
●	BH- 5	0-5	SILTY SAND (SM)					
⊠	BH-10	0-5	SILTY SAND (SM)					
▲	BH-18	0-5	SANDY SILT (ML)					

	Boring No.	Depth (ft)	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	BH- 5	0-5	19	3.762	0.181		31.0	44.1	19.9	
⊠	BH-10	0-5	19	0.271			18.1	38.1	43.8	
▲	BH-18	0-5	12.5	0.129			8.0	40.9	51.1	

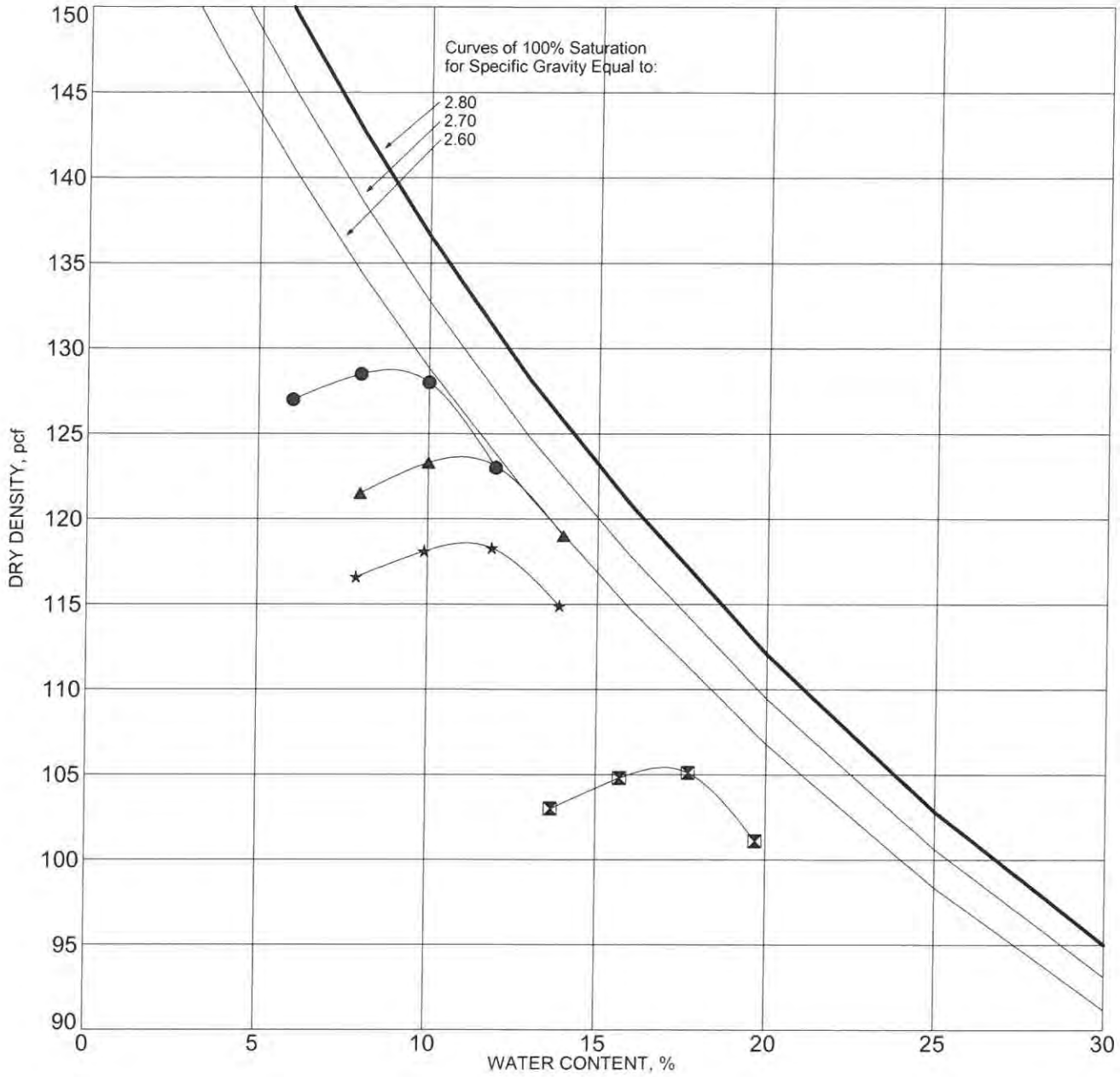
GRAIN SIZE DISTRIBUTION RESULTS

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No.
13-31-339-01

Drawing No.
B-1



SYMBOL	BORING NO.	DEPTH (ft)	DESCRIPTION	ASTM TEST METHOD	OPTIMUM WATER, %	MAXIMUM DRY DENSITY, pcf
●	BH- 3	0-5	SILTY SAND (SM)	D1557 Method B	9.2	128.5
⊠	BH- 9	0-5	SILTY SAND (SM)	D1557 Method A	16.8	106
▲	BH-13	0	SILTY SAND (SM) WITH CLAY AND GRAVELS	D1557 Method C	11.2	124
★	BH-21	0-5	SILTY SAND (SM)	D1557 Method A	11	119

NOTE:

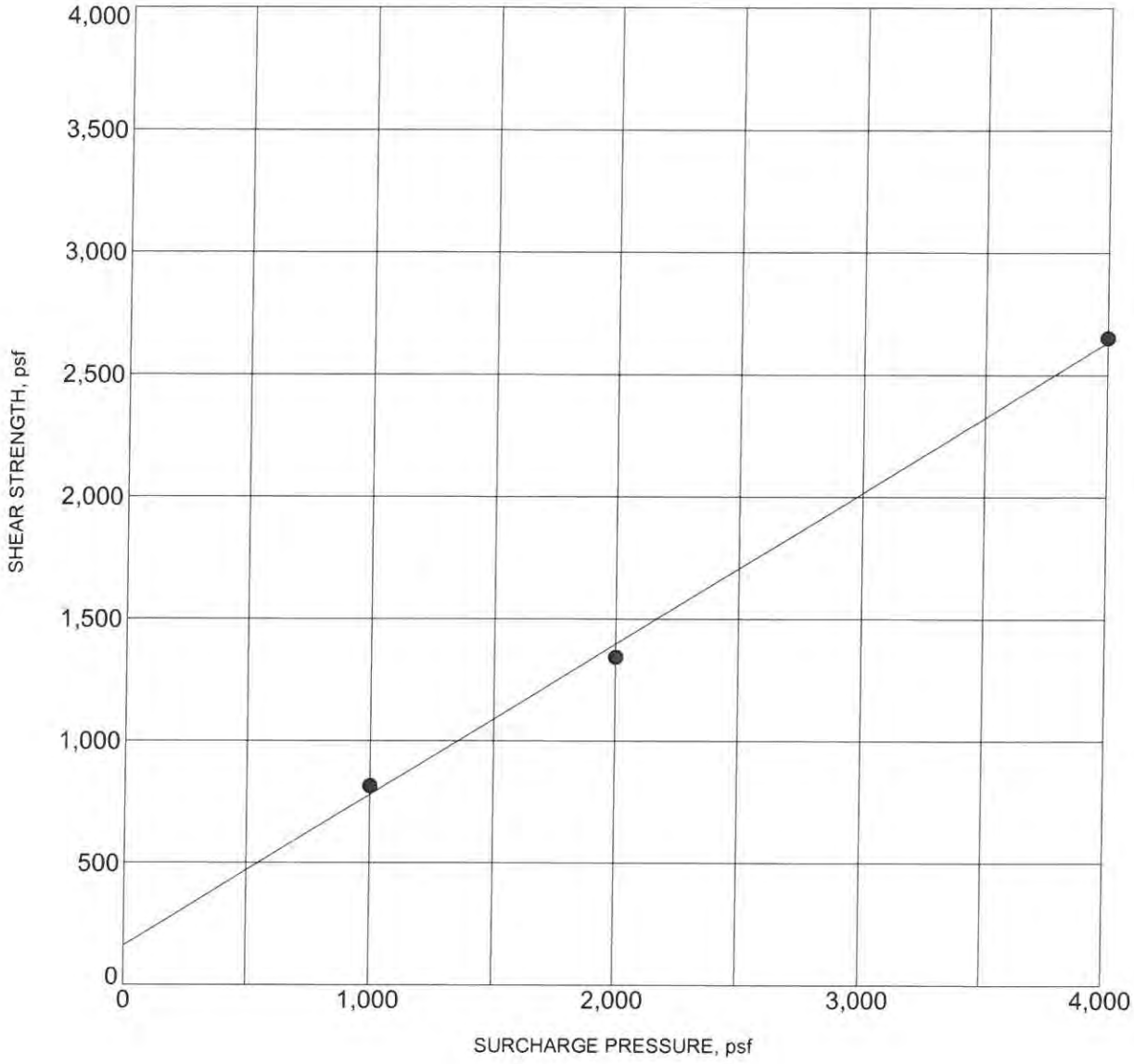
MOISTURE-DENSITY RELATIONSHIP RESULTS

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No.
13-31-339-01

Drawing No.
B-2



BORING NO. :	**BH- 9**	DEPTH (ft) :	**0-5**
DESCRIPTION :	**SILTY SAND (SM)**		
COHESION (psf) :	**150**	FRICTION ANGLE (degrees):	**32**
MOISTURE CONTENT (%) :	**18.0**	DRY DENSITY (pcf) :	**94.5**

NOTE: Ultimate Strength.

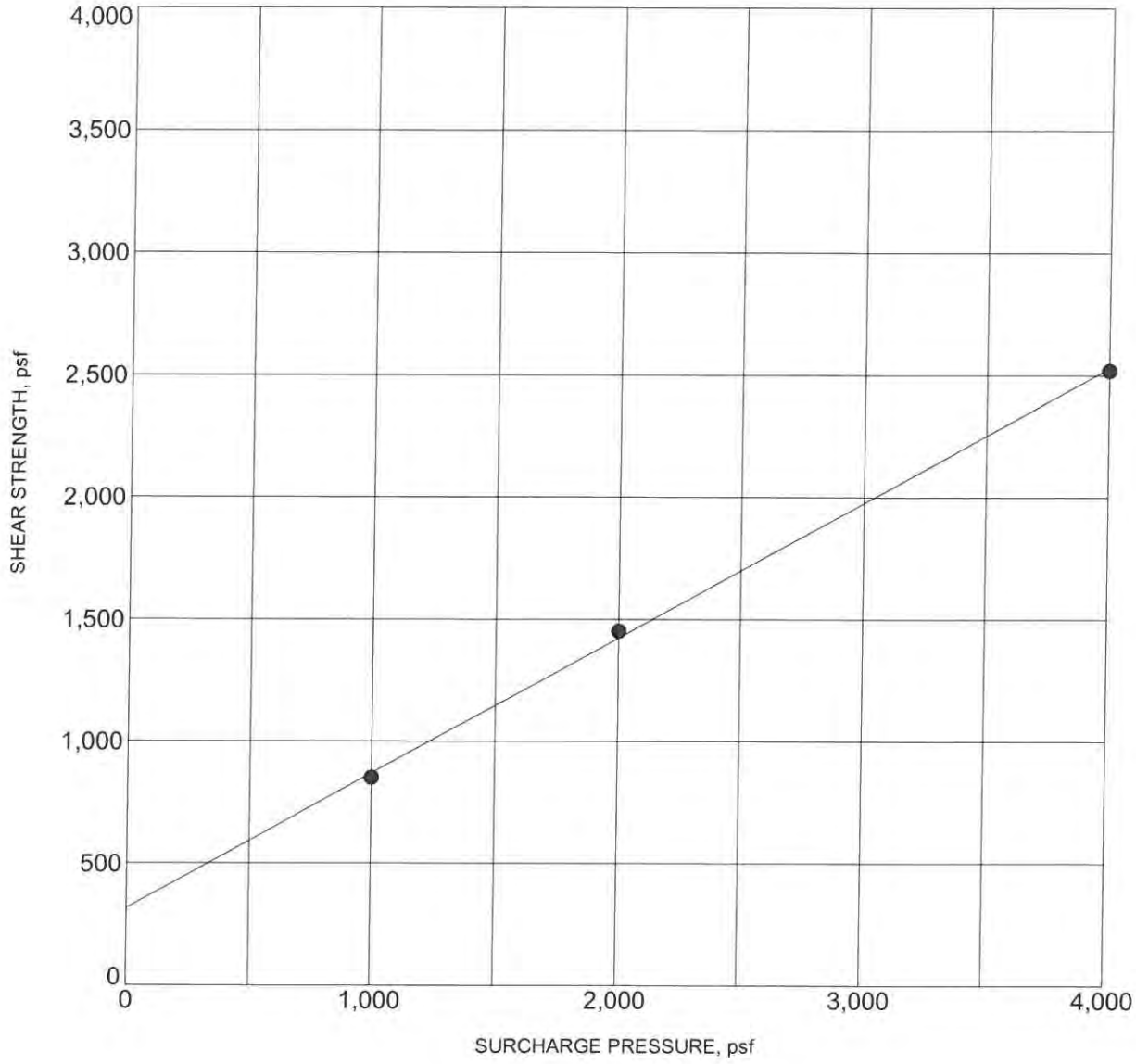
DIRECT SHEAR TEST RESULTS

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. **13-31-339-01**

Drawing No. **B-3a**



BORING NO. :	**BH-13**	DEPTH (ft) :	**25-30**
DESCRIPTION :	**SEDIMENTARY BEDROCK - CONGLOMERATE**		
COHESION (psf) :	**300**	FRICTION ANGLE (degrees):	**29**
MOISTURE CONTENT (%) :	**13.3**	DRY DENSITY (pcf) :	**109.6**

NOTE: Ultimate Strength.

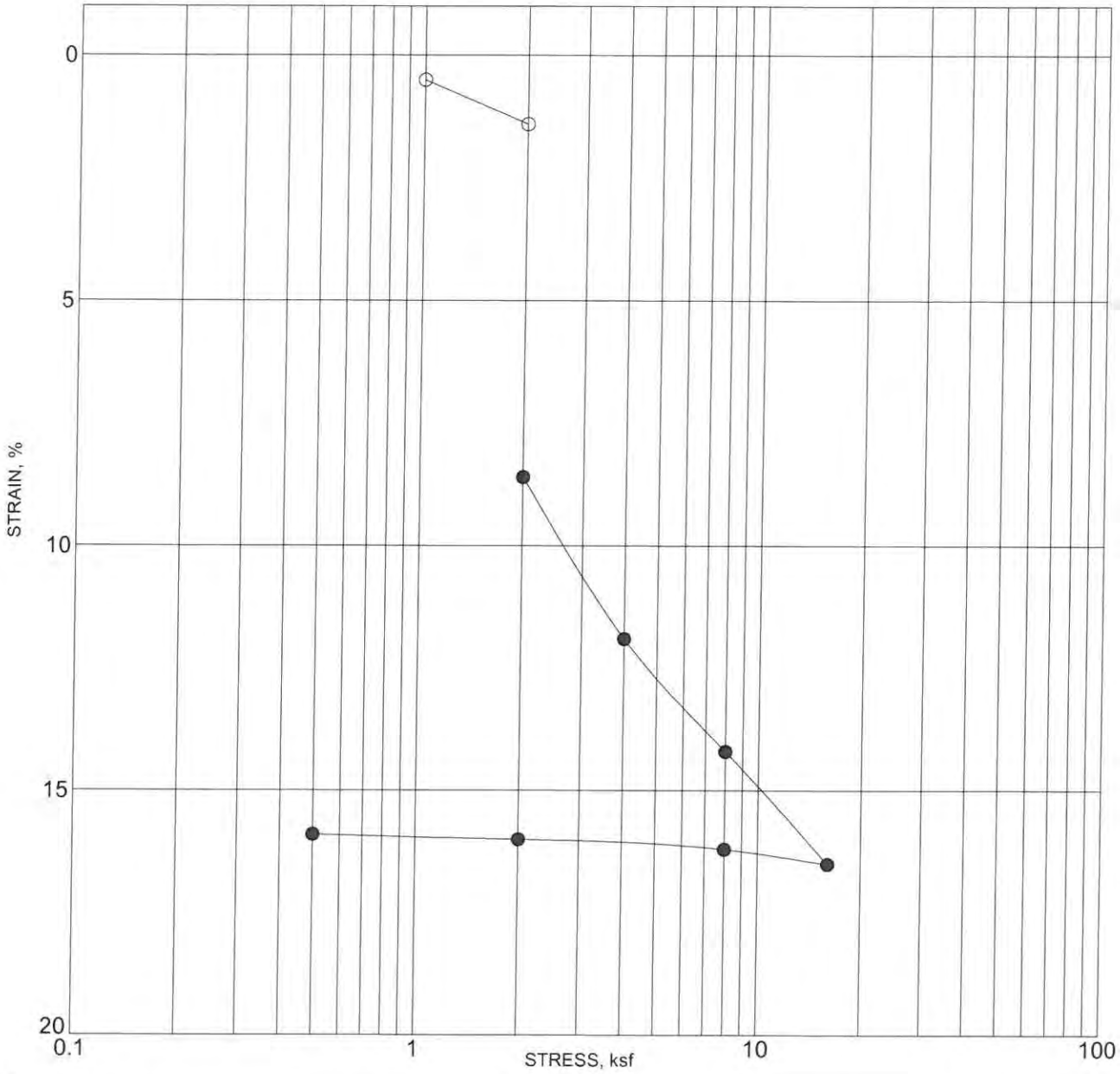
DIRECT SHEAR TEST RESULTS

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. **13-31-339-01**

Drawing No. **B-3b**



BORING NO. :	BH- 1	DEPTH (ft) :	5
DESCRIPTION :	SILTY SAND (SM)		

	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	PERCENT SATURATION	VOID RATIO
INITIAL	8.1	99.1		
FINAL	13.6	114.9		

NOTE: SOLID CIRCLES INDICATE READINGS AFTER ADDITION OF WATER

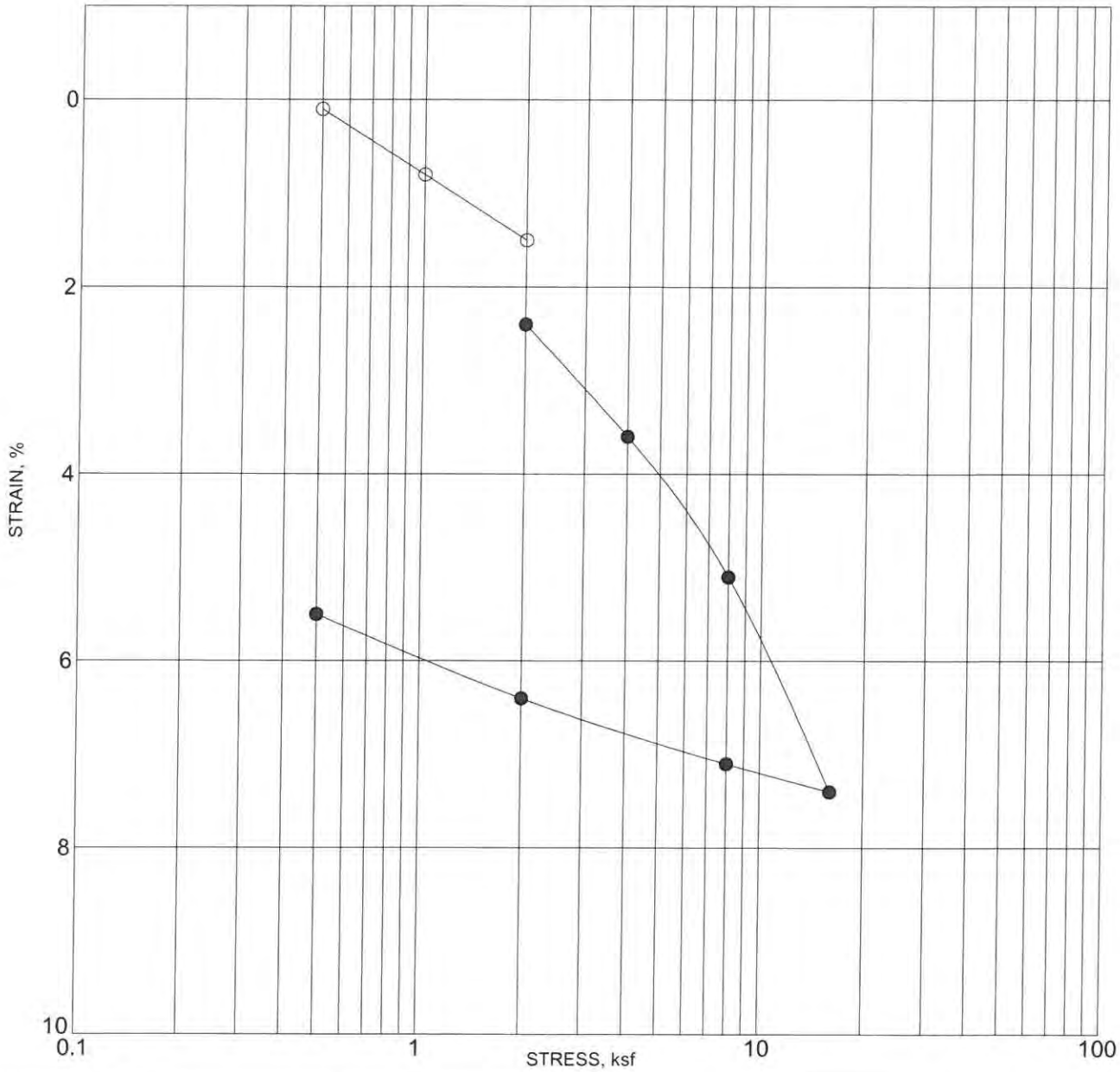
CONSOLIDATION TEST RESULTS

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. B-4a



BORING NO. :	BH- 8	DEPTH (ft) :	5
DESCRIPTION :	SANDSTONE - SILTSTONE		

	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	PERCENT SATURATION	VOID RATIO
INITIAL	8.9	113.9		
FINAL	15.8	120.2		

NOTE: SOLID CIRCLES INDICATE READINGS AFTER ADDITION OF WATER

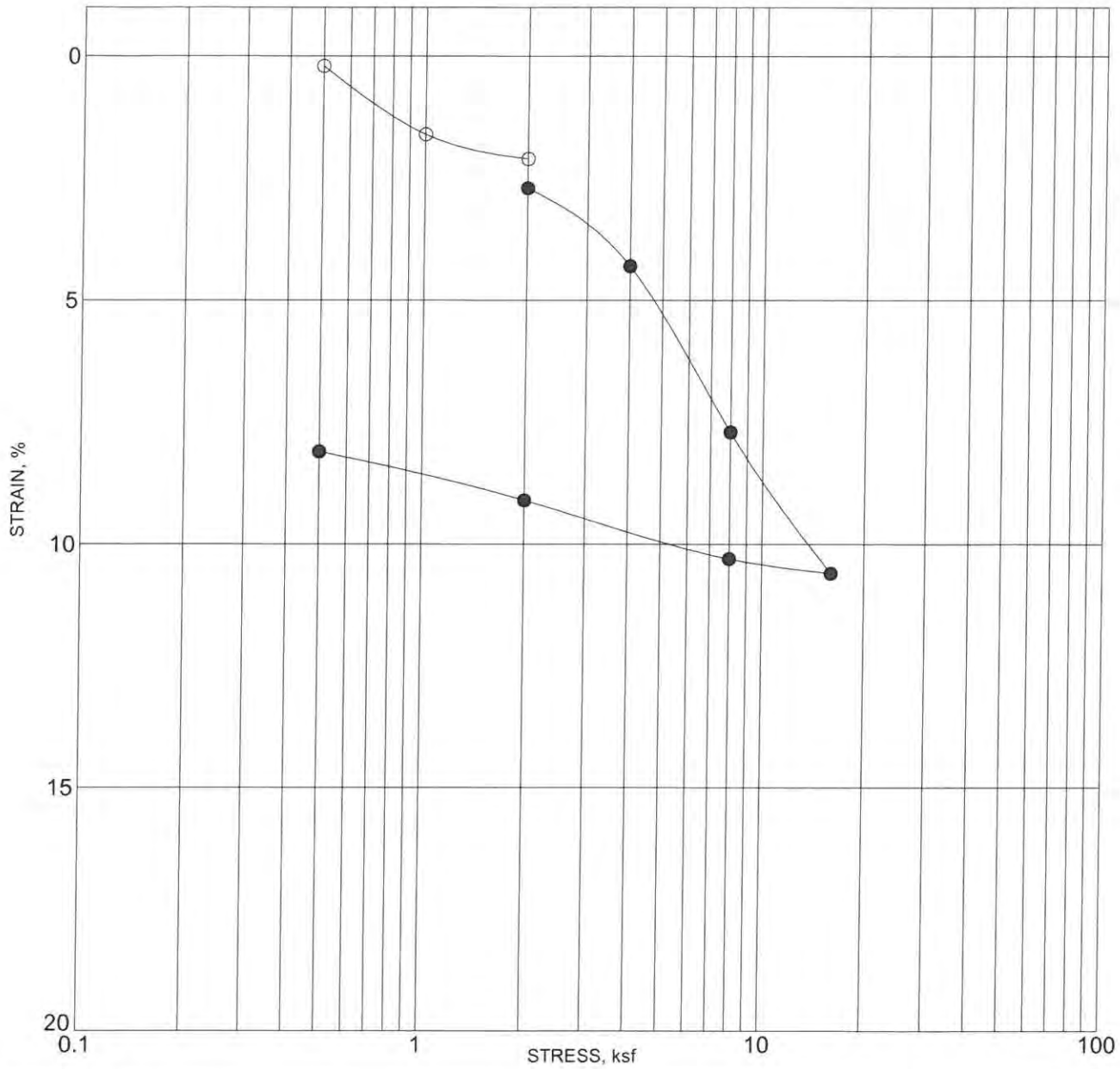
CONSOLIDATION TEST RESULTS

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. B-4b



BORING NO. :	BH-15	DEPTH (ft) :	5
DESCRIPTION :	SILTY SAND (SM)		

	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	PERCENT SATURATION	VOID RATIO
INITIAL	19.5	105		
FINAL	19.8	110.2		

NOTE: SOLID CIRCLES INDICATE READINGS AFTER ADDITION OF WATER

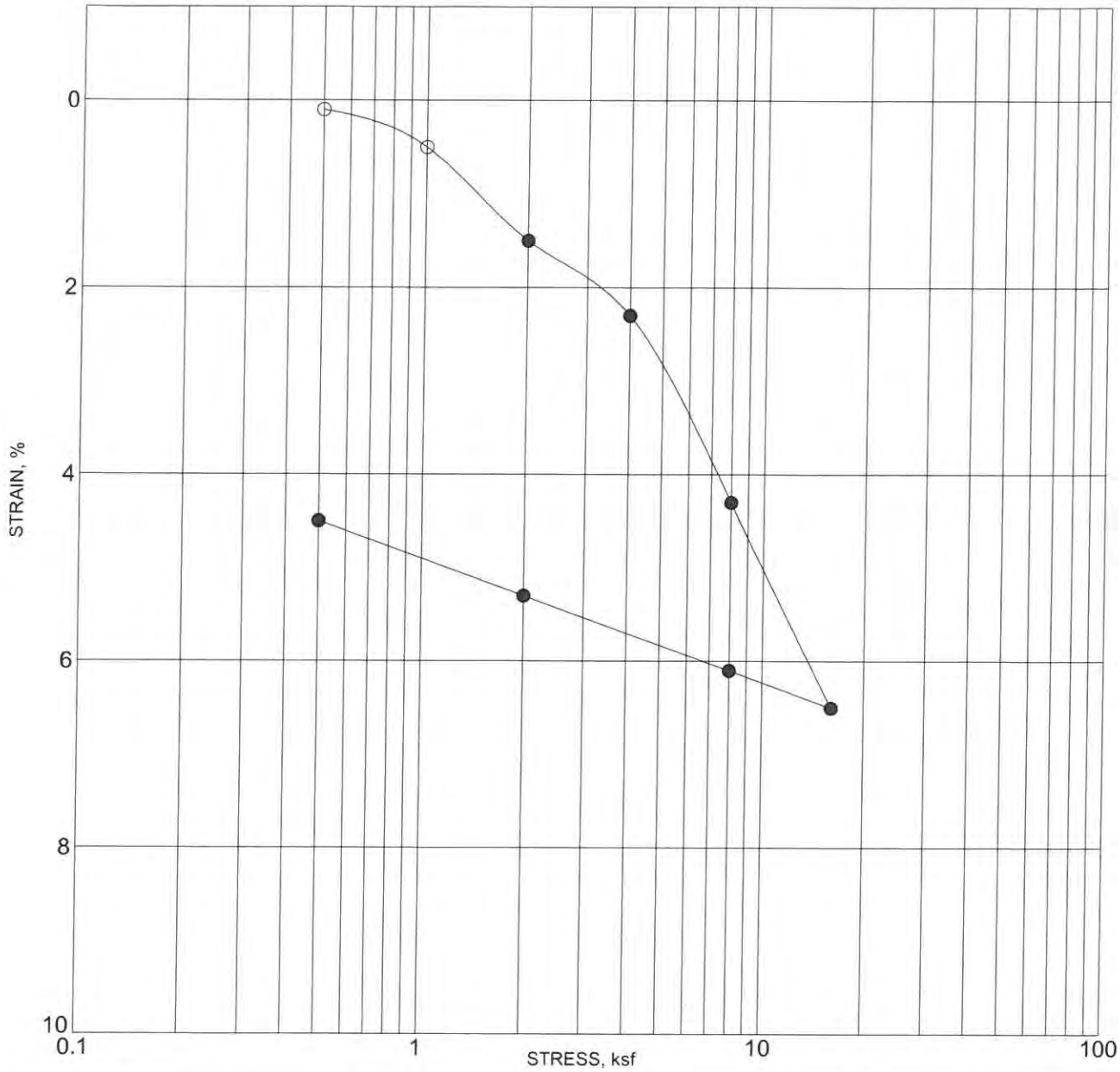
CONSOLIDATION TEST RESULTS

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. B-4c



BORING NO. :	BH-15	DEPTH (ft) :	20
DESCRIPTION :	SILTY SAND (SM)		

	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	PERCENT SATURATION	VOID RATIO
INITIAL	30.9	89		
FINAL	30.5	93		

NOTE: SOLID CIRCLES INDICATE READINGS AFTER ADDITION OF WATER

CONSOLIDATION TEST RESULTS

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. B-4d

APPENDIX C

LIQUEFACTION/SEISMIC SETTLEMENT ANALYSIS

APPENDIX C

LIQUEFACTION/SEISMIC SETTLEMENT ANALYSIS

Liquefaction is defined as the phenomenon where a soil mass exhibits a substantial reduction in its shear strength. This strength reduction is due to the development of excess pore pressure in a soil mass caused by earthquake induced ground motions. Saturated soils behave temporarily as a viscous fluid (liquefaction) and, consequently, lose their capacity to support the structures founded on them. The potential for liquefaction decreases with increasing clay and gravel content, but increases as the ground acceleration and duration of shaking increase. Liquefaction potential has been found to be the greatest where the groundwater level and loose sands occur within 50 feet of the ground surface.

Our liquefaction analyses are based on the *Special Publication 117A: Guidelines for Evaluating and Mitigating Seismic Hazards in California* (9/2008), *Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Liquefaction Hazards in California* (3/1999), and *2013 California Building Code*.

The subsurface data obtained from exploratory boring was used to evaluate the liquefaction/seismic settlement potential of the area. The Logs of Borings are presented in Appendix A, *Field Exploration*. The liquefaction potential and seismic settlement analyses were performed utilizing SPT data obtained from boring BH-15 for the upper 46.5 feet of soils, using *LiquefyPro,* Version 5.8d, 2009, by Civil Tech Software. The following seismic parameters are used for liquefaction potential analyses.

Table No. D-1, Seismic Parameters Used in Liquefaction Analysis

Groundwater Depth* (feet)	Earthquake Magnitude** Mw	Peak Ground Acceleration*** (g)
16	6.69	0.77

* Based on Groundwater encountered during field exploration.
** Based on USGS 2008 NSHMP PSHA Interactive Deaggregation web site.
** Based on PGA_M per section 21.5 of ASCE 7-10.

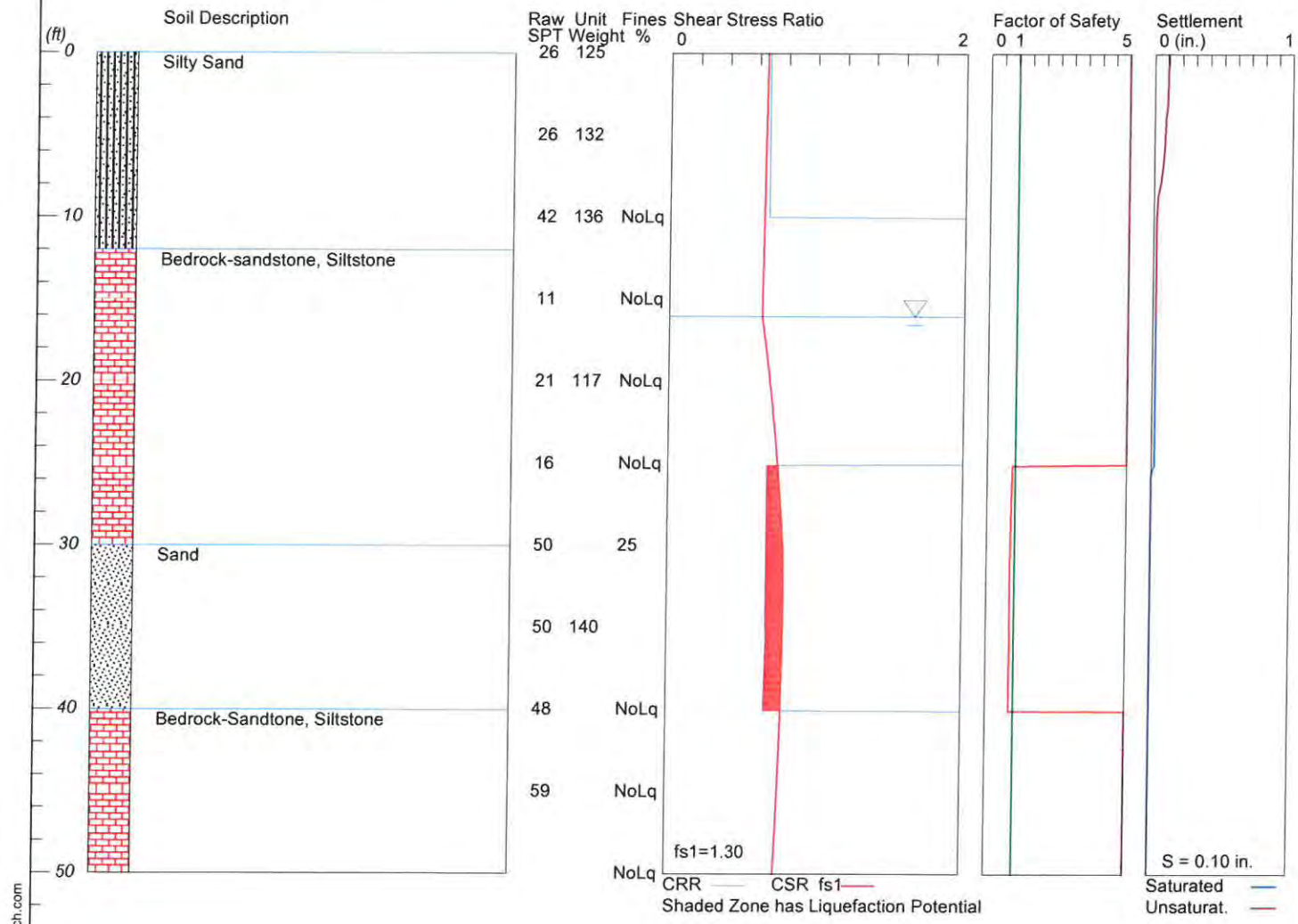
The results of our liquefaction analyses indicate the project site is not susceptible to liquefaction as presented in the attached calculations. The estimated seismic settlement is approximately 0.10 inches with differential settlement of approximately 0.05 inches.

LIQUEFACTION ANALYSIS

MT. SAN ANTONIO COLLEGE

Hole No.=BH-15 Water Depth=16 ft Surface Elev.=706

Magnitude=6.69
Acceleration=0.77g



LiquefyPro CivilTech Software USA www.civiltech.com

****

LIQUEFACTION ANALYSIS SUMMARY
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Font: Courier New, Regular, Size 8 is recommended for this report.
Licensed to , 7/14/2014 4:44:05 PM

Input File Name: E:\Liquefy5\13-31-339-01-BH-15.liq
Title: MT. SAN ANTONIO COLLEGE
Subtitle: 13-31-339-01

Surface Elev.=706
Hole No.=BH-15
Depth of Hole= 50.00 ft
Water Table during Earthquake= 16.00 ft
Water Table during In-Situ Testing= 16.00 ft
Max. Acceleration= 0.77 g
Earthquake Magnitude= 6.69

Input Data:
Surface Elev.=706
Hole No.=BH-15
Depth of Hole=50.00 ft
Water Table during Earthquake= 16.00 ft
Water Table during In-Situ Testing= 16.00 ft
Max. Acceleration=0.77 g
Earthquake Magnitude=6.69
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. SPT or BPT Calculation.
2. Settlement Analysis Method: Tokimatsu/Seed
3. Fines Correction for Liquefaction: Stark/Olson et al.*
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
6. Hammer Energy Ratio, Ce = 1.3
7. Borehole Diameter, Cb= 1.15
8. Sampling Method, Cs= 1.12
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth ft	SPT	gamma pcf	Fines %
0.00	26.00	125.00	0.00
5.00	26.00	132.00	0.00
10.00	42.00	136.00	NoLiq
15.00	11.00	136.00	NoLiq
20.00	21.00	117.00	NoLiq
25.00	16.00	117.00	NoLiq
30.00	50.00	117.00	25.00
35.00	50.00	140.00	25.00
40.00	48.00	140.00	NoLiq
45.00	59.00	140.00	NoLiq
50.00	59.00	140.00	NoLiq

Output Results:
Settlement of Saturated Sands=0.02 in.
Settlement of Unsaturated Sands=0.08 in.
Total Settlement of Saturated and Unsaturated Sands=0.10 in.
Differential Settlement=0.049 to 0.065 in.

Depth	CRRm	CSRfs	F.S.	S_sat.	S_dry	S_all

ft				in.	in.	Liquefy.sum in.
0.00	0.67	0.65	5.00	0.02	0.08	0.10
0.05	0.67	0.65	5.00	0.02	0.08	0.10
0.10	0.67	0.65	5.00	0.02	0.08	0.10
0.15	0.67	0.65	5.00	0.02	0.08	0.10
0.20	0.67	0.65	5.00	0.02	0.08	0.10
0.25	0.67	0.65	5.00	0.02	0.08	0.10
0.30	0.67	0.65	5.00	0.02	0.08	0.10
0.35	0.67	0.65	5.00	0.02	0.08	0.10
0.40	0.67	0.65	5.00	0.02	0.08	0.10
0.45	0.67	0.65	5.00	0.02	0.08	0.10
0.50	0.67	0.65	5.00	0.02	0.08	0.10
0.55	0.67	0.65	5.00	0.02	0.08	0.10
0.60	0.67	0.65	5.00	0.02	0.08	0.10
0.65	0.67	0.65	5.00	0.02	0.08	0.10
0.70	0.67	0.65	5.00	0.02	0.08	0.10
0.75	0.67	0.65	5.00	0.02	0.08	0.10
0.80	0.67	0.65	5.00	0.02	0.08	0.10
0.85	0.67	0.65	5.00	0.02	0.07	0.10
0.90	0.67	0.65	5.00	0.02	0.07	0.10
0.95	0.67	0.65	5.00	0.02	0.07	0.10
1.00	0.67	0.65	5.00	0.02	0.07	0.10
1.05	0.67	0.65	5.00	0.02	0.07	0.10
1.10	0.67	0.65	5.00	0.02	0.07	0.10
1.15	0.67	0.65	5.00	0.02	0.07	0.10
1.20	0.67	0.65	5.00	0.02	0.07	0.10
1.25	0.67	0.65	5.00	0.02	0.07	0.10
1.30	0.67	0.65	5.00	0.02	0.07	0.10
1.35	0.67	0.65	5.00	0.02	0.07	0.10
1.40	0.67	0.65	5.00	0.02	0.07	0.10
1.45	0.67	0.65	5.00	0.02	0.07	0.10
1.50	0.67	0.65	5.00	0.02	0.07	0.10
1.55	0.67	0.65	5.00	0.02	0.07	0.10
1.60	0.67	0.65	5.00	0.02	0.07	0.10
1.65	0.67	0.65	5.00	0.02	0.07	0.10
1.70	0.67	0.65	5.00	0.02	0.07	0.10
1.75	0.67	0.65	5.00	0.02	0.07	0.10
1.80	0.67	0.65	5.00	0.02	0.07	0.10
1.85	0.67	0.65	5.00	0.02	0.07	0.10
1.90	0.67	0.65	5.00	0.02	0.07	0.10
1.95	0.67	0.65	5.00	0.02	0.07	0.10
2.00	0.67	0.65	5.00	0.02	0.07	0.10
2.05	0.67	0.65	5.00	0.02	0.07	0.10
2.10	0.67	0.65	5.00	0.02	0.07	0.10
2.15	0.67	0.65	5.00	0.02	0.07	0.10
2.20	0.67	0.65	5.00	0.02	0.07	0.10
2.25	0.67	0.65	5.00	0.02	0.07	0.10
2.30	0.67	0.65	5.00	0.02	0.07	0.10
2.35	0.67	0.65	5.00	0.02	0.07	0.09
2.40	0.67	0.65	5.00	0.02	0.07	0.09
2.45	0.67	0.65	5.00	0.02	0.07	0.09
2.50	0.67	0.65	5.00	0.02	0.07	0.09
2.55	0.67	0.65	5.00	0.02	0.07	0.09
2.60	0.67	0.65	5.00	0.02	0.07	0.09
2.65	0.67	0.65	5.00	0.02	0.07	0.09
2.70	0.67	0.65	5.00	0.02	0.07	0.09
2.75	0.67	0.65	5.00	0.02	0.07	0.09
2.80	0.67	0.65	5.00	0.02	0.07	0.09
2.85	0.67	0.65	5.00	0.02	0.07	0.09
2.90	0.67	0.65	5.00	0.02	0.07	0.09
2.95	0.67	0.65	5.00	0.02	0.07	0.09
3.00	0.67	0.65	5.00	0.02	0.07	0.09
3.05	0.67	0.65	5.00	0.02	0.07	0.09
3.10	0.67	0.65	5.00	0.02	0.07	0.09
3.15	0.67	0.65	5.00	0.02	0.07	0.09
3.20	0.67	0.65	5.00	0.02	0.07	0.09

						Liquefy.sum
3.25	0.67	0.65	5.00	0.02	0.07	0.09
3.30	0.67	0.65	5.00	0.02	0.07	0.09
3.35	0.67	0.65	5.00	0.02	0.07	0.09
3.40	0.67	0.65	5.00	0.02	0.07	0.09
3.45	0.67	0.65	5.00	0.02	0.07	0.09
3.50	0.67	0.65	5.00	0.02	0.07	0.09
3.55	0.67	0.65	5.00	0.02	0.07	0.09
3.60	0.67	0.65	5.00	0.02	0.07	0.09
3.65	0.67	0.65	5.00	0.02	0.06	0.09
3.70	0.67	0.65	5.00	0.02	0.06	0.09
3.75	0.67	0.64	5.00	0.02	0.06	0.09
3.80	0.67	0.64	5.00	0.02	0.06	0.08
3.85	0.67	0.64	5.00	0.02	0.06	0.08
3.90	0.67	0.64	5.00	0.02	0.06	0.08
3.95	0.67	0.64	5.00	0.02	0.06	0.08
4.00	0.67	0.64	5.00	0.02	0.06	0.08
4.05	0.67	0.64	5.00	0.02	0.06	0.08
4.10	0.67	0.64	5.00	0.02	0.06	0.08
4.15	0.67	0.64	5.00	0.02	0.06	0.08
4.20	0.67	0.64	5.00	0.02	0.06	0.08
4.25	0.67	0.64	5.00	0.02	0.06	0.08
4.30	0.67	0.64	5.00	0.02	0.06	0.08
4.35	0.67	0.64	5.00	0.02	0.06	0.08
4.40	0.67	0.64	5.00	0.02	0.06	0.08
4.45	0.67	0.64	5.00	0.02	0.06	0.08
4.50	0.67	0.64	5.00	0.02	0.06	0.08
4.55	0.67	0.64	5.00	0.02	0.06	0.08
4.60	0.67	0.64	5.00	0.02	0.06	0.08
4.65	0.67	0.64	5.00	0.02	0.06	0.08
4.70	0.67	0.64	5.00	0.02	0.06	0.08
4.75	0.67	0.64	5.00	0.02	0.06	0.08
4.80	0.67	0.64	5.00	0.02	0.06	0.08
4.85	0.67	0.64	5.00	0.02	0.06	0.08
4.90	0.67	0.64	5.00	0.02	0.06	0.08
4.95	0.67	0.64	5.00	0.02	0.06	0.08
5.00	0.67	0.64	5.00	0.02	0.06	0.08
5.05	0.67	0.64	5.00	0.02	0.06	0.08
5.10	0.67	0.64	5.00	0.02	0.06	0.08
5.15	0.67	0.64	5.00	0.02	0.06	0.08
5.20	0.67	0.64	5.00	0.02	0.05	0.08
5.25	0.67	0.64	5.00	0.02	0.05	0.08
5.30	0.67	0.64	5.00	0.02	0.05	0.08
5.35	0.67	0.64	5.00	0.02	0.05	0.08
5.40	0.67	0.64	5.00	0.02	0.05	0.08
5.45	0.67	0.64	5.00	0.02	0.05	0.08
5.50	0.67	0.64	5.00	0.02	0.05	0.08
5.55	0.67	0.64	5.00	0.02	0.05	0.08
5.60	0.67	0.64	5.00	0.02	0.05	0.08
5.65	0.67	0.64	5.00	0.02	0.05	0.07
5.70	0.67	0.64	5.00	0.02	0.05	0.07
5.75	0.67	0.64	5.00	0.02	0.05	0.07
5.80	0.67	0.64	5.00	0.02	0.05	0.07
5.85	0.67	0.64	5.00	0.02	0.05	0.07
5.90	0.67	0.64	5.00	0.02	0.05	0.07
5.95	0.67	0.64	5.00	0.02	0.05	0.07
6.00	0.67	0.64	5.00	0.02	0.05	0.07
6.05	0.67	0.64	5.00	0.02	0.05	0.07
6.10	0.67	0.64	5.00	0.02	0.05	0.07
6.15	0.67	0.64	5.00	0.02	0.05	0.07
6.20	0.67	0.64	5.00	0.02	0.05	0.07
6.25	0.67	0.64	5.00	0.02	0.05	0.07
6.30	0.67	0.64	5.00	0.02	0.05	0.07
6.35	0.67	0.64	5.00	0.02	0.05	0.07
6.40	0.67	0.64	5.00	0.02	0.05	0.07
6.45	0.67	0.64	5.00	0.02	0.05	0.07
6.50	0.67	0.64	5.00	0.02	0.05	0.07
6.55	0.67	0.64	5.00	0.02	0.04	0.07

						Liquefy.sum
6.60	0.67	0.64	5.00	0.02	0.04	0.07
6.65	0.67	0.64	5.00	0.02	0.04	0.07
6.70	0.67	0.64	5.00	0.02	0.04	0.07
6.75	0.67	0.64	5.00	0.02	0.04	0.07
6.80	0.67	0.64	5.00	0.02	0.04	0.07
6.85	0.67	0.64	5.00	0.02	0.04	0.06
6.90	0.67	0.64	5.00	0.02	0.04	0.06
6.95	0.67	0.64	5.00	0.02	0.04	0.06
7.00	0.67	0.64	5.00	0.02	0.04	0.06
7.05	0.67	0.64	5.00	0.02	0.04	0.06
7.10	0.67	0.64	5.00	0.02	0.04	0.06
7.15	0.67	0.64	5.00	0.02	0.04	0.06
7.20	0.67	0.64	5.00	0.02	0.04	0.06
7.25	0.67	0.64	5.00	0.02	0.04	0.06
7.30	0.67	0.64	5.00	0.02	0.04	0.06
7.35	0.67	0.64	5.00	0.02	0.04	0.06
7.40	0.67	0.64	5.00	0.02	0.03	0.06
7.45	0.67	0.64	5.00	0.02	0.03	0.06
7.50	0.67	0.64	5.00	0.02	0.03	0.06
7.55	0.67	0.64	5.00	0.02	0.03	0.06
7.60	0.67	0.64	5.00	0.02	0.03	0.05
7.65	0.67	0.64	5.00	0.02	0.03	0.05
7.70	0.67	0.64	5.00	0.02	0.03	0.05
7.75	0.67	0.64	5.00	0.02	0.03	0.05
7.80	0.67	0.64	5.00	0.02	0.03	0.05
7.85	0.67	0.64	5.00	0.02	0.03	0.05
7.90	0.67	0.64	5.00	0.02	0.03	0.05
7.95	0.67	0.64	5.00	0.02	0.02	0.05
8.00	0.67	0.64	5.00	0.02	0.02	0.05
8.05	0.67	0.64	5.00	0.02	0.02	0.05
8.10	0.67	0.64	5.00	0.02	0.02	0.04
8.15	0.67	0.64	5.00	0.02	0.02	0.04
8.20	0.67	0.64	5.00	0.02	0.02	0.04
8.25	0.67	0.64	5.00	0.02	0.02	0.04
8.30	0.67	0.64	5.00	0.02	0.02	0.04
8.35	0.67	0.64	5.00	0.02	0.02	0.04
8.40	0.67	0.64	5.00	0.02	0.01	0.04
8.45	0.67	0.64	5.00	0.02	0.01	0.04
8.50	0.67	0.64	5.00	0.02	0.01	0.04
8.55	0.67	0.64	5.00	0.02	0.01	0.03
8.60	0.67	0.64	5.00	0.02	0.01	0.03
8.65	0.67	0.64	5.00	0.02	0.01	0.03
8.70	0.67	0.64	5.00	0.02	0.01	0.03
8.75	0.67	0.64	5.00	0.02	0.01	0.03
8.80	0.67	0.64	5.00	0.02	0.01	0.03
8.85	0.67	0.64	5.00	0.02	0.01	0.03
8.90	0.67	0.64	5.00	0.02	0.01	0.03
8.95	0.67	0.64	5.00	0.02	0.01	0.03
9.00	0.67	0.64	5.00	0.02	0.01	0.03
9.05	0.67	0.64	5.00	0.02	0.01	0.03
9.10	0.67	0.64	5.00	0.02	0.01	0.03
9.15	0.67	0.64	5.00	0.02	0.01	0.03
9.20	0.67	0.64	5.00	0.02	0.01	0.03
9.25	0.67	0.64	5.00	0.02	0.00	0.03
9.30	0.67	0.64	5.00	0.02	0.00	0.03
9.35	0.67	0.64	5.00	0.02	0.00	0.03
9.40	0.67	0.64	5.00	0.02	0.00	0.03
9.45	0.67	0.64	5.00	0.02	0.00	0.03
9.50	0.67	0.64	5.00	0.02	0.00	0.03
9.55	0.67	0.64	5.00	0.02	0.00	0.03
9.60	0.67	0.64	5.00	0.02	0.00	0.03
9.65	0.67	0.64	5.00	0.02	0.00	0.03
9.70	0.67	0.64	5.00	0.02	0.00	0.02
9.75	0.67	0.64	5.00	0.02	0.00	0.02
9.80	0.67	0.64	5.00	0.02	0.00	0.02
9.85	0.67	0.64	5.00	0.02	0.00	0.02
9.90	0.67	0.64	5.00	0.02	0.00	0.02

						Liquefy.sum
9.95	0.67	0.64	5.00	0.02	0.00	0.02
10.00	2.00	0.64	5.00	0.02	0.00	0.02
10.05	2.00	0.64	5.00	0.02	0.00	0.02
10.10	2.00	0.64	5.00	0.02	0.00	0.02
10.15	2.00	0.64	5.00	0.02	0.00	0.02
10.20	2.00	0.64	5.00	0.02	0.00	0.02
10.25	2.00	0.64	5.00	0.02	0.00	0.02
10.30	2.00	0.64	5.00	0.02	0.00	0.02
10.35	2.00	0.63	5.00	0.02	0.00	0.02
10.40	2.00	0.63	5.00	0.02	0.00	0.02
10.45	2.00	0.63	5.00	0.02	0.00	0.02
10.50	2.00	0.63	5.00	0.02	0.00	0.02
10.55	2.00	0.63	5.00	0.02	0.00	0.02
10.60	2.00	0.63	5.00	0.02	0.00	0.02
10.65	2.00	0.63	5.00	0.02	0.00	0.02
10.70	2.00	0.63	5.00	0.02	0.00	0.02
10.75	2.00	0.63	5.00	0.02	0.00	0.02
10.80	2.00	0.63	5.00	0.02	0.00	0.02
10.85	2.00	0.63	5.00	0.02	0.00	0.02
10.90	2.00	0.63	5.00	0.02	0.00	0.02
10.95	2.00	0.63	5.00	0.02	0.00	0.02
11.00	2.00	0.63	5.00	0.02	0.00	0.02
11.05	2.00	0.63	5.00	0.02	0.00	0.02
11.10	2.00	0.63	5.00	0.02	0.00	0.02
11.15	2.00	0.63	5.00	0.02	0.00	0.02
11.20	2.00	0.63	5.00	0.02	0.00	0.02
11.25	2.00	0.63	5.00	0.02	0.00	0.02
11.30	2.00	0.63	5.00	0.02	0.00	0.02
11.35	2.00	0.63	5.00	0.02	0.00	0.02
11.40	2.00	0.63	5.00	0.02	0.00	0.02
11.45	2.00	0.63	5.00	0.02	0.00	0.02
11.50	2.00	0.63	5.00	0.02	0.00	0.02
11.55	2.00	0.63	5.00	0.02	0.00	0.02
11.60	2.00	0.63	5.00	0.02	0.00	0.02
11.65	2.00	0.63	5.00	0.02	0.00	0.02
11.70	2.00	0.63	5.00	0.02	0.00	0.02
11.75	2.00	0.63	5.00	0.02	0.00	0.02
11.80	2.00	0.63	5.00	0.02	0.00	0.02
11.85	2.00	0.63	5.00	0.02	0.00	0.02
11.90	2.00	0.63	5.00	0.02	0.00	0.02
11.95	2.00	0.63	5.00	0.02	0.00	0.02
12.00	2.00	0.63	5.00	0.02	0.00	0.02
12.05	2.00	0.63	5.00	0.02	0.00	0.02
12.10	2.00	0.63	5.00	0.02	0.00	0.02
12.15	2.00	0.63	5.00	0.02	0.00	0.02
12.20	2.00	0.63	5.00	0.02	0.00	0.02
12.25	2.00	0.63	5.00	0.02	0.00	0.02
12.30	2.00	0.63	5.00	0.02	0.00	0.02
12.35	2.00	0.63	5.00	0.02	0.00	0.02
12.40	2.00	0.63	5.00	0.02	0.00	0.02
12.45	2.00	0.63	5.00	0.02	0.00	0.02
12.50	2.00	0.63	5.00	0.02	0.00	0.02
12.55	2.00	0.63	5.00	0.02	0.00	0.02
12.60	2.00	0.63	5.00	0.02	0.00	0.02
12.65	2.00	0.63	5.00	0.02	0.00	0.02
12.70	2.00	0.63	5.00	0.02	0.00	0.02
12.75	2.00	0.63	5.00	0.02	0.00	0.02
12.80	2.00	0.63	5.00	0.02	0.00	0.02
12.85	2.00	0.63	5.00	0.02	0.00	0.02
12.90	2.00	0.63	5.00	0.02	0.00	0.02
12.95	2.00	0.63	5.00	0.02	0.00	0.02
13.00	2.00	0.63	5.00	0.02	0.00	0.02
13.05	2.00	0.63	5.00	0.02	0.00	0.02
13.10	2.00	0.63	5.00	0.02	0.00	0.02
13.15	2.00	0.63	5.00	0.02	0.00	0.02
13.20	2.00	0.63	5.00	0.02	0.00	0.02
13.25	2.00	0.63	5.00	0.02	0.00	0.02

13.30	2.00	0.63	5.00	0.02	0.00	0.02
13.35	2.00	0.63	5.00	0.02	0.00	0.02
13.40	2.00	0.63	5.00	0.02	0.00	0.02
13.45	2.00	0.63	5.00	0.02	0.00	0.02
13.50	2.00	0.63	5.00	0.02	0.00	0.02
13.55	2.00	0.63	5.00	0.02	0.00	0.02
13.60	2.00	0.63	5.00	0.02	0.00	0.02
13.65	2.00	0.63	5.00	0.02	0.00	0.02
13.70	2.00	0.63	5.00	0.02	0.00	0.02
13.75	2.00	0.63	5.00	0.02	0.00	0.02
13.80	2.00	0.63	5.00	0.02	0.00	0.02
13.85	2.00	0.63	5.00	0.02	0.00	0.02
13.90	2.00	0.63	5.00	0.02	0.00	0.02
13.95	2.00	0.63	5.00	0.02	0.00	0.02
14.00	2.00	0.63	5.00	0.02	0.00	0.02
14.05	2.00	0.63	5.00	0.02	0.00	0.02
14.10	2.00	0.63	5.00	0.02	0.00	0.02
14.15	2.00	0.63	5.00	0.02	0.00	0.02
14.20	2.00	0.63	5.00	0.02	0.00	0.02
14.25	2.00	0.63	5.00	0.02	0.00	0.02
14.30	2.00	0.63	5.00	0.02	0.00	0.02
14.35	2.00	0.63	5.00	0.02	0.00	0.02
14.40	2.00	0.63	5.00	0.02	0.00	0.02
14.45	2.00	0.63	5.00	0.02	0.00	0.02
14.50	2.00	0.63	5.00	0.02	0.00	0.02
14.55	2.00	0.63	5.00	0.02	0.00	0.02
14.60	2.00	0.63	5.00	0.02	0.00	0.02
14.65	2.00	0.63	5.00	0.02	0.00	0.02
14.70	2.00	0.63	5.00	0.02	0.00	0.02
14.75	2.00	0.63	5.00	0.02	0.00	0.02
14.80	2.00	0.63	5.00	0.02	0.00	0.02
14.85	2.00	0.63	5.00	0.02	0.00	0.02
14.90	2.00	0.63	5.00	0.02	0.00	0.02
14.95	2.00	0.63	5.00	0.02	0.00	0.02
15.00	2.00	0.63	5.00	0.02	0.00	0.02
15.05	2.00	0.63	5.00	0.02	0.00	0.02
15.10	2.00	0.63	5.00	0.02	0.00	0.02
15.15	2.00	0.63	5.00	0.02	0.00	0.02
15.20	2.00	0.63	5.00	0.02	0.00	0.02
15.25	2.00	0.63	5.00	0.02	0.00	0.02
15.30	2.00	0.63	5.00	0.02	0.00	0.02
15.35	2.00	0.63	5.00	0.02	0.00	0.02
15.40	2.00	0.63	5.00	0.02	0.00	0.02
15.45	2.00	0.63	5.00	0.02	0.00	0.02
15.50	2.00	0.63	5.00	0.02	0.00	0.02
15.55	2.00	0.63	5.00	0.02	0.00	0.02
15.60	2.00	0.63	5.00	0.02	0.00	0.02
15.65	2.00	0.63	5.00	0.02	0.00	0.02
15.70	2.00	0.63	5.00	0.02	0.00	0.02
15.75	2.00	0.63	5.00	0.02	0.00	0.02
15.80	2.00	0.63	5.00	0.02	0.00	0.02
15.85	2.00	0.63	5.00	0.02	0.00	0.02
15.90	2.00	0.63	5.00	0.02	0.00	0.02
15.95	2.00	0.63	5.00	0.02	0.00	0.02
16.00	2.00	0.63	5.00	0.02	0.00	0.02
16.05	2.00	0.63	5.00	0.02	0.00	0.02
16.10	2.00	0.63	5.00	0.02	0.00	0.02
16.15	2.00	0.63	5.00	0.02	0.00	0.02
16.20	2.00	0.63	5.00	0.02	0.00	0.02
16.25	2.00	0.63	5.00	0.02	0.00	0.02
16.30	2.00	0.63	5.00	0.02	0.00	0.02
16.35	2.00	0.63	5.00	0.02	0.00	0.02
16.40	2.00	0.63	5.00	0.02	0.00	0.02
16.45	2.00	0.63	5.00	0.02	0.00	0.02
16.50	2.00	0.63	5.00	0.02	0.00	0.02
16.55	2.00	0.64	5.00	0.02	0.00	0.02
16.60	2.00	0.64	5.00	0.02	0.00	0.02

16.65	2.00	0.64	5.00	0.02	0.00	0.02
16.70	2.00	0.64	5.00	0.02	0.00	0.02
16.75	2.00	0.64	5.00	0.02	0.00	0.02
16.80	2.00	0.64	5.00	0.02	0.00	0.02
16.85	2.00	0.64	5.00	0.02	0.00	0.02
16.90	2.00	0.64	5.00	0.02	0.00	0.02
16.95	2.00	0.64	5.00	0.02	0.00	0.02
17.00	2.00	0.64	5.00	0.02	0.00	0.02
17.05	2.00	0.64	5.00	0.02	0.00	0.02
17.10	2.00	0.64	5.00	0.02	0.00	0.02
17.15	2.00	0.64	5.00	0.02	0.00	0.02
17.20	2.00	0.65	5.00	0.02	0.00	0.02
17.25	2.00	0.65	5.00	0.02	0.00	0.02
17.30	2.00	0.65	5.00	0.02	0.00	0.02
17.35	2.00	0.65	5.00	0.02	0.00	0.02
17.40	2.00	0.65	5.00	0.02	0.00	0.02
17.45	2.00	0.65	5.00	0.02	0.00	0.02
17.50	2.00	0.65	5.00	0.02	0.00	0.02
17.55	2.00	0.65	5.00	0.02	0.00	0.02
17.60	2.00	0.65	5.00	0.02	0.00	0.02
17.65	2.00	0.65	5.00	0.02	0.00	0.02
17.70	2.00	0.65	5.00	0.02	0.00	0.02
17.75	2.00	0.65	5.00	0.02	0.00	0.02
17.80	2.00	0.65	5.00	0.02	0.00	0.02
17.85	2.00	0.66	5.00	0.02	0.00	0.02
17.90	2.00	0.66	5.00	0.02	0.00	0.02
17.95	2.00	0.66	5.00	0.02	0.00	0.02
18.00	2.00	0.66	5.00	0.02	0.00	0.02
18.05	2.00	0.66	5.00	0.02	0.00	0.02
18.10	2.00	0.66	5.00	0.02	0.00	0.02
18.15	2.00	0.66	5.00	0.02	0.00	0.02
18.20	2.00	0.66	5.00	0.02	0.00	0.02
18.25	2.00	0.66	5.00	0.02	0.00	0.02
18.30	2.00	0.66	5.00	0.02	0.00	0.02
18.35	2.00	0.66	5.00	0.02	0.00	0.02
18.40	2.00	0.66	5.00	0.02	0.00	0.02
18.45	2.00	0.66	5.00	0.02	0.00	0.02
18.50	2.00	0.67	5.00	0.02	0.00	0.02
18.55	2.00	0.67	5.00	0.02	0.00	0.02
18.60	2.00	0.67	5.00	0.02	0.00	0.02
18.65	2.00	0.67	5.00	0.02	0.00	0.02
18.70	2.00	0.67	5.00	0.02	0.00	0.02
18.75	2.00	0.67	5.00	0.02	0.00	0.02
18.80	2.00	0.67	5.00	0.02	0.00	0.02
18.85	2.00	0.67	5.00	0.02	0.00	0.02
18.90	2.00	0.67	5.00	0.02	0.00	0.02
18.95	2.00	0.67	5.00	0.02	0.00	0.02
19.00	2.00	0.67	5.00	0.02	0.00	0.02
19.05	2.00	0.67	5.00	0.02	0.00	0.02
19.10	2.00	0.67	5.00	0.02	0.00	0.02
19.15	2.00	0.67	5.00	0.02	0.00	0.02
19.20	2.00	0.67	5.00	0.02	0.00	0.02
19.25	2.00	0.68	5.00	0.02	0.00	0.02
19.30	2.00	0.68	5.00	0.02	0.00	0.02
19.35	2.00	0.68	5.00	0.02	0.00	0.02
19.40	2.00	0.68	5.00	0.02	0.00	0.02
19.45	2.00	0.68	5.00	0.02	0.00	0.02
19.50	2.00	0.68	5.00	0.02	0.00	0.02
19.55	2.00	0.68	5.00	0.02	0.00	0.02
19.60	2.00	0.68	5.00	0.02	0.00	0.02
19.65	2.00	0.68	5.00	0.02	0.00	0.02
19.70	2.00	0.68	5.00	0.02	0.00	0.02
19.75	2.00	0.68	5.00	0.02	0.00	0.02
19.80	2.00	0.68	5.00	0.02	0.00	0.02
19.85	2.00	0.68	5.00	0.02	0.00	0.02
19.90	2.00	0.68	5.00	0.02	0.00	0.02
19.95	2.00	0.68	5.00	0.02	0.00	0.02

20.00	2.00	0.69	5.00	0.02	0.00	0.02
20.05	2.00	0.69	5.00	0.02	0.00	0.02
20.10	2.00	0.69	5.00	0.02	0.00	0.02
20.15	2.00	0.69	5.00	0.02	0.00	0.02
20.20	2.00	0.69	5.00	0.02	0.00	0.02
20.25	2.00	0.69	5.00	0.02	0.00	0.02
20.30	2.00	0.69	5.00	0.02	0.00	0.02
20.35	2.00	0.69	5.00	0.02	0.00	0.02
20.40	2.00	0.69	5.00	0.02	0.00	0.02
20.45	2.00	0.69	5.00	0.02	0.00	0.02
20.50	2.00	0.69	5.00	0.02	0.00	0.02
20.55	2.00	0.69	5.00	0.02	0.00	0.02
20.60	2.00	0.69	5.00	0.02	0.00	0.02
20.65	2.00	0.69	5.00	0.02	0.00	0.02
20.70	2.00	0.69	5.00	0.02	0.00	0.02
20.75	2.00	0.70	5.00	0.02	0.00	0.02
20.80	2.00	0.70	5.00	0.02	0.00	0.02
20.85	2.00	0.70	5.00	0.02	0.00	0.02
20.90	2.00	0.70	5.00	0.02	0.00	0.02
20.95	2.00	0.70	5.00	0.02	0.00	0.02
21.00	2.00	0.70	5.00	0.02	0.00	0.02
21.05	2.00	0.70	5.00	0.02	0.00	0.02
21.10	2.00	0.70	5.00	0.02	0.00	0.02
21.15	2.00	0.70	5.00	0.02	0.00	0.02
21.20	2.00	0.70	5.00	0.02	0.00	0.02
21.25	2.00	0.70	5.00	0.02	0.00	0.02
21.30	2.00	0.70	5.00	0.02	0.00	0.02
21.35	2.00	0.70	5.00	0.02	0.00	0.02
21.40	2.00	0.70	5.00	0.02	0.00	0.02
21.45	2.00	0.70	5.00	0.02	0.00	0.02
21.50	2.00	0.70	5.00	0.02	0.00	0.02
21.55	2.00	0.70	5.00	0.02	0.00	0.02
21.60	2.00	0.71	5.00	0.02	0.00	0.02
21.65	2.00	0.71	5.00	0.02	0.00	0.02
21.70	2.00	0.71	5.00	0.02	0.00	0.02
21.75	2.00	0.71	5.00	0.02	0.00	0.02
21.80	2.00	0.71	5.00	0.02	0.00	0.02
21.85	2.00	0.71	5.00	0.02	0.00	0.02
21.90	2.00	0.71	5.00	0.02	0.00	0.02
21.95	2.00	0.71	5.00	0.02	0.00	0.02
22.00	2.00	0.71	5.00	0.02	0.00	0.02
22.05	2.00	0.71	5.00	0.02	0.00	0.02
22.10	2.00	0.71	5.00	0.02	0.00	0.02
22.15	2.00	0.71	5.00	0.02	0.00	0.02
22.20	2.00	0.71	5.00	0.02	0.00	0.02
22.25	2.00	0.71	5.00	0.02	0.00	0.02
22.30	2.00	0.71	5.00	0.02	0.00	0.02
22.35	2.00	0.71	5.00	0.02	0.00	0.02
22.40	2.00	0.71	5.00	0.02	0.00	0.02
22.45	2.00	0.72	5.00	0.02	0.00	0.02
22.50	2.00	0.72	5.00	0.02	0.00	0.02
22.55	2.00	0.72	5.00	0.02	0.00	0.02
22.60	2.00	0.72	5.00	0.02	0.00	0.02
22.65	2.00	0.72	5.00	0.02	0.00	0.02
22.70	2.00	0.72	5.00	0.02	0.00	0.02
22.75	2.00	0.72	5.00	0.02	0.00	0.02
22.80	2.00	0.72	5.00	0.02	0.00	0.02
22.85	2.00	0.72	5.00	0.02	0.00	0.02
22.90	2.00	0.72	5.00	0.02	0.00	0.02
22.95	2.00	0.72	5.00	0.02	0.00	0.02
23.00	2.00	0.72	5.00	0.02	0.00	0.02
23.05	2.00	0.72	5.00	0.02	0.00	0.02
23.10	2.00	0.72	5.00	0.02	0.00	0.02
23.15	2.00	0.72	5.00	0.02	0.00	0.02
23.20	2.00	0.72	5.00	0.02	0.00	0.02
23.25	2.00	0.72	5.00	0.02	0.00	0.02
23.30	2.00	0.72	5.00	0.02	0.00	0.02

23.35	2.00	0.73	5.00	0.02	0.00	0.02
23.40	2.00	0.73	5.00	0.02	0.00	0.02
23.45	2.00	0.73	5.00	0.02	0.00	0.02
23.50	2.00	0.73	5.00	0.02	0.00	0.02
23.55	2.00	0.73	5.00	0.02	0.00	0.02
23.60	2.00	0.73	5.00	0.02	0.00	0.02
23.65	2.00	0.73	5.00	0.02	0.00	0.02
23.70	2.00	0.73	5.00	0.02	0.00	0.02
23.75	2.00	0.73	5.00	0.02	0.00	0.02
23.80	2.00	0.73	5.00	0.02	0.00	0.02
23.85	2.00	0.73	5.00	0.02	0.00	0.02
23.90	2.00	0.73	5.00	0.02	0.00	0.02
23.95	2.00	0.73	5.00	0.02	0.00	0.02
24.00	2.00	0.73	5.00	0.02	0.00	0.02
24.05	2.00	0.73	5.00	0.02	0.00	0.02
24.10	2.00	0.73	5.00	0.02	0.00	0.02
24.15	2.00	0.73	5.00	0.02	0.00	0.02
24.20	2.00	0.73	5.00	0.02	0.00	0.02
24.25	2.00	0.74	5.00	0.02	0.00	0.02
24.30	2.00	0.74	5.00	0.02	0.00	0.02
24.35	2.00	0.74	5.00	0.02	0.00	0.02
24.40	2.00	0.74	5.00	0.02	0.00	0.02
24.45	2.00	0.74	5.00	0.02	0.00	0.02
24.50	2.00	0.74	5.00	0.02	0.00	0.02
24.55	2.00	0.74	5.00	0.02	0.00	0.02
24.60	2.00	0.74	5.00	0.02	0.00	0.02
24.65	2.00	0.74	5.00	0.02	0.00	0.02
24.70	2.00	0.74	5.00	0.02	0.00	0.02
24.75	2.00	0.74	5.00	0.02	0.00	0.02
24.80	2.00	0.74	5.00	0.02	0.00	0.02
24.85	2.00	0.74	5.00	0.02	0.00	0.02
24.90	2.00	0.74	5.00	0.02	0.00	0.02
24.95	2.00	0.74	5.00	0.02	0.00	0.02
25.00	2.00	0.74	5.00	0.02	0.00	0.02
25.05	0.67	0.74	0.90*	0.02	0.00	0.02
25.10	0.67	0.74	0.90*	0.02	0.00	0.02
25.15	0.67	0.74	0.90*	0.02	0.00	0.02
25.20	0.67	0.74	0.90*	0.02	0.00	0.02
25.25	0.67	0.75	0.90*	0.01	0.00	0.01
25.30	0.67	0.75	0.90*	0.01	0.00	0.01
25.35	0.67	0.75	0.90*	0.01	0.00	0.01
25.40	0.67	0.75	0.90*	0.01	0.00	0.01
25.45	0.67	0.75	0.90*	0.01	0.00	0.01
25.50	0.67	0.75	0.90*	0.00	0.00	0.00
25.55	0.67	0.75	0.90*	0.00	0.00	0.00
25.60	0.67	0.75	0.89*	0.00	0.00	0.00
25.65	0.67	0.75	0.89*	0.00	0.00	0.00
25.70	0.67	0.75	0.89*	0.00	0.00	0.00
25.75	0.67	0.75	0.89*	0.00	0.00	0.00
25.80	0.67	0.75	0.89*	0.00	0.00	0.00
25.85	0.67	0.75	0.89*	0.00	0.00	0.00
25.90	0.67	0.75	0.89*	0.00	0.00	0.00
25.95	0.67	0.75	0.89*	0.00	0.00	0.00
26.00	0.67	0.75	0.89*	0.00	0.00	0.00
26.05	0.67	0.75	0.89*	0.00	0.00	0.00
26.10	0.67	0.75	0.89*	0.00	0.00	0.00
26.15	0.67	0.75	0.89*	0.00	0.00	0.00
26.20	0.67	0.75	0.89*	0.00	0.00	0.00
26.25	0.67	0.75	0.89*	0.00	0.00	0.00
26.30	0.67	0.76	0.89*	0.00	0.00	0.00
26.35	0.67	0.76	0.89*	0.00	0.00	0.00
26.40	0.67	0.76	0.89*	0.00	0.00	0.00
26.45	0.67	0.76	0.89*	0.00	0.00	0.00
26.50	0.67	0.76	0.88*	0.00	0.00	0.00
26.55	0.67	0.76	0.88*	0.00	0.00	0.00
26.60	0.67	0.76	0.88*	0.00	0.00	0.00
26.65	0.67	0.76	0.88*	0.00	0.00	0.00

26.70	0.67	0.76	0.88*	0.00	0.00	0.00
26.75	0.67	0.76	0.88*	0.00	0.00	0.00
26.80	0.67	0.76	0.88*	0.00	0.00	0.00
26.85	0.67	0.76	0.88*	0.00	0.00	0.00
26.90	0.67	0.76	0.88*	0.00	0.00	0.00
26.95	0.67	0.76	0.88*	0.00	0.00	0.00
27.00	0.67	0.76	0.88*	0.00	0.00	0.00
27.05	0.67	0.76	0.88*	0.00	0.00	0.00
27.10	0.67	0.76	0.88*	0.00	0.00	0.00
27.15	0.67	0.76	0.88*	0.00	0.00	0.00
27.20	0.67	0.76	0.88*	0.00	0.00	0.00
27.25	0.67	0.76	0.88*	0.00	0.00	0.00
27.30	0.67	0.76	0.88*	0.00	0.00	0.00
27.35	0.67	0.76	0.88*	0.00	0.00	0.00
27.40	0.67	0.76	0.88*	0.00	0.00	0.00
27.45	0.67	0.77	0.87*	0.00	0.00	0.00
27.50	0.67	0.77	0.87*	0.00	0.00	0.00
27.55	0.67	0.77	0.87*	0.00	0.00	0.00
27.60	0.67	0.77	0.87*	0.00	0.00	0.00
27.65	0.67	0.77	0.87*	0.00	0.00	0.00
27.70	0.67	0.77	0.87*	0.00	0.00	0.00
27.75	0.67	0.77	0.87*	0.00	0.00	0.00
27.80	0.67	0.77	0.87*	0.00	0.00	0.00
27.85	0.67	0.77	0.87*	0.00	0.00	0.00
27.90	0.67	0.77	0.87*	0.00	0.00	0.00
27.95	0.67	0.77	0.87*	0.00	0.00	0.00
28.00	0.67	0.77	0.87*	0.00	0.00	0.00
28.05	0.67	0.77	0.87*	0.00	0.00	0.00
28.10	0.67	0.77	0.87*	0.00	0.00	0.00
28.15	0.67	0.77	0.87*	0.00	0.00	0.00
28.20	0.67	0.77	0.87*	0.00	0.00	0.00
28.25	0.67	0.77	0.87*	0.00	0.00	0.00
28.30	0.67	0.77	0.87*	0.00	0.00	0.00
28.35	0.67	0.77	0.87*	0.00	0.00	0.00
28.40	0.67	0.77	0.87*	0.00	0.00	0.00
28.45	0.67	0.77	0.87*	0.00	0.00	0.00
28.50	0.67	0.77	0.86*	0.00	0.00	0.00
28.55	0.67	0.77	0.86*	0.00	0.00	0.00
28.60	0.67	0.78	0.86*	0.00	0.00	0.00
28.65	0.67	0.78	0.86*	0.00	0.00	0.00
28.70	0.67	0.78	0.86*	0.00	0.00	0.00
28.75	0.67	0.78	0.86*	0.00	0.00	0.00
28.80	0.67	0.78	0.86*	0.00	0.00	0.00
28.85	0.67	0.78	0.86*	0.00	0.00	0.00
28.90	0.67	0.78	0.86*	0.00	0.00	0.00
28.95	0.67	0.78	0.86*	0.00	0.00	0.00
29.00	0.67	0.78	0.86*	0.00	0.00	0.00
29.05	0.67	0.78	0.86*	0.00	0.00	0.00
29.10	0.67	0.78	0.86*	0.00	0.00	0.00
29.15	0.67	0.78	0.86*	0.00	0.00	0.00
29.20	0.67	0.78	0.86*	0.00	0.00	0.00
29.25	0.67	0.78	0.86*	0.00	0.00	0.00
29.30	0.67	0.78	0.86*	0.00	0.00	0.00
29.35	0.67	0.78	0.86*	0.00	0.00	0.00
29.40	0.67	0.78	0.86*	0.00	0.00	0.00
29.45	0.67	0.78	0.86*	0.00	0.00	0.00
29.50	0.67	0.78	0.86*	0.00	0.00	0.00
29.55	0.67	0.78	0.86*	0.00	0.00	0.00
29.60	0.67	0.78	0.86*	0.00	0.00	0.00
29.65	0.67	0.78	0.85*	0.00	0.00	0.00
29.70	0.67	0.78	0.85*	0.00	0.00	0.00
29.75	0.67	0.78	0.85*	0.00	0.00	0.00
29.80	0.67	0.78	0.85*	0.00	0.00	0.00
29.85	0.67	0.78	0.85*	0.00	0.00	0.00
29.90	0.67	0.79	0.85*	0.00	0.00	0.00
29.95	0.67	0.79	0.85*	0.00	0.00	0.00
30.00	0.67	0.79	0.85*	0.00	0.00	0.00

						Liquefy.sum
30.05	0.67	0.79	0.85*	0.00	0.00	0.00
30.10	0.67	0.79	0.85*	0.00	0.00	0.00
30.15	0.67	0.79	0.85*	0.00	0.00	0.00
30.20	0.67	0.79	0.85*	0.00	0.00	0.00
30.25	0.67	0.79	0.85*	0.00	0.00	0.00
30.30	0.67	0.79	0.85*	0.00	0.00	0.00
30.35	0.67	0.79	0.85*	0.00	0.00	0.00
30.40	0.67	0.79	0.85*	0.00	0.00	0.00
30.45	0.67	0.79	0.85*	0.00	0.00	0.00
30.50	0.67	0.79	0.85*	0.00	0.00	0.00
30.55	0.67	0.79	0.85*	0.00	0.00	0.00
30.60	0.67	0.79	0.85*	0.00	0.00	0.00
30.65	0.67	0.79	0.85*	0.00	0.00	0.00
30.70	0.67	0.79	0.85*	0.00	0.00	0.00
30.75	0.67	0.79	0.85*	0.00	0.00	0.00
30.80	0.67	0.79	0.85*	0.00	0.00	0.00
30.85	0.67	0.79	0.85*	0.00	0.00	0.00
30.90	0.67	0.79	0.85*	0.00	0.00	0.00
30.95	0.67	0.79	0.85*	0.00	0.00	0.00
31.00	0.67	0.79	0.85*	0.00	0.00	0.00
31.05	0.67	0.79	0.85*	0.00	0.00	0.00
31.10	0.67	0.79	0.85*	0.00	0.00	0.00
31.15	0.67	0.79	0.85*	0.00	0.00	0.00
31.20	0.67	0.79	0.85*	0.00	0.00	0.00
31.25	0.67	0.79	0.85*	0.00	0.00	0.00
31.30	0.67	0.79	0.85*	0.00	0.00	0.00
31.35	0.67	0.79	0.85*	0.00	0.00	0.00
31.40	0.67	0.79	0.85*	0.00	0.00	0.00
31.45	0.67	0.79	0.85*	0.00	0.00	0.00
31.50	0.67	0.79	0.85*	0.00	0.00	0.00
31.55	0.67	0.79	0.85*	0.00	0.00	0.00
31.60	0.67	0.79	0.85*	0.00	0.00	0.00
31.65	0.67	0.79	0.85*	0.00	0.00	0.00
31.70	0.67	0.79	0.85*	0.00	0.00	0.00
31.75	0.67	0.79	0.85*	0.00	0.00	0.00
31.80	0.67	0.79	0.85*	0.00	0.00	0.00
31.85	0.67	0.79	0.85*	0.00	0.00	0.00
31.90	0.67	0.79	0.85*	0.00	0.00	0.00
31.95	0.67	0.79	0.85*	0.00	0.00	0.00
32.00	0.67	0.79	0.85*	0.00	0.00	0.00
32.05	0.67	0.79	0.85*	0.00	0.00	0.00
32.10	0.67	0.79	0.85*	0.00	0.00	0.00
32.15	0.67	0.79	0.85*	0.00	0.00	0.00
32.20	0.67	0.79	0.85*	0.00	0.00	0.00
32.25	0.67	0.79	0.85*	0.00	0.00	0.00
32.30	0.67	0.79	0.85*	0.00	0.00	0.00
32.35	0.67	0.79	0.85*	0.00	0.00	0.00
32.40	0.67	0.79	0.85*	0.00	0.00	0.00
32.45	0.67	0.79	0.85*	0.00	0.00	0.00
32.50	0.67	0.79	0.85*	0.00	0.00	0.00
32.55	0.67	0.79	0.85*	0.00	0.00	0.00
32.60	0.67	0.79	0.85*	0.00	0.00	0.00
32.65	0.67	0.79	0.85*	0.00	0.00	0.00
32.70	0.67	0.79	0.85*	0.00	0.00	0.00
32.75	0.67	0.79	0.85*	0.00	0.00	0.00
32.80	0.67	0.79	0.85*	0.00	0.00	0.00
32.85	0.67	0.79	0.85*	0.00	0.00	0.00
32.90	0.67	0.79	0.85*	0.00	0.00	0.00
32.95	0.67	0.79	0.85*	0.00	0.00	0.00
33.00	0.67	0.79	0.85*	0.00	0.00	0.00
33.05	0.67	0.79	0.85*	0.00	0.00	0.00
33.10	0.67	0.79	0.85*	0.00	0.00	0.00
33.15	0.67	0.79	0.85*	0.00	0.00	0.00
33.20	0.67	0.79	0.85*	0.00	0.00	0.00
33.25	0.67	0.79	0.85*	0.00	0.00	0.00
33.30	0.67	0.79	0.85*	0.00	0.00	0.00
33.35	0.67	0.79	0.85*	0.00	0.00	0.00

33.40	0.67	0.79	0.85*	0.00	0.00	0.00
33.45	0.67	0.79	0.85*	0.00	0.00	0.00
33.50	0.67	0.79	0.85*	0.00	0.00	0.00
33.55	0.67	0.79	0.85*	0.00	0.00	0.00
33.60	0.67	0.79	0.85*	0.00	0.00	0.00
33.65	0.67	0.79	0.85*	0.00	0.00	0.00
33.70	0.67	0.79	0.85*	0.00	0.00	0.00
33.75	0.67	0.79	0.85*	0.00	0.00	0.00
33.80	0.67	0.79	0.85*	0.00	0.00	0.00
33.85	0.67	0.79	0.85*	0.00	0.00	0.00
33.90	0.67	0.79	0.85*	0.00	0.00	0.00
33.95	0.67	0.79	0.85*	0.00	0.00	0.00
34.00	0.67	0.79	0.85*	0.00	0.00	0.00
34.05	0.67	0.79	0.85*	0.00	0.00	0.00
34.10	0.67	0.79	0.85*	0.00	0.00	0.00
34.15	0.67	0.79	0.85*	0.00	0.00	0.00
34.20	0.67	0.79	0.85*	0.00	0.00	0.00
34.25	0.67	0.79	0.85*	0.00	0.00	0.00
34.30	0.67	0.79	0.85*	0.00	0.00	0.00
34.35	0.67	0.79	0.85*	0.00	0.00	0.00
34.40	0.67	0.79	0.85*	0.00	0.00	0.00
34.45	0.67	0.79	0.85*	0.00	0.00	0.00
34.50	0.67	0.79	0.85*	0.00	0.00	0.00
34.55	0.67	0.79	0.85*	0.00	0.00	0.00
34.60	0.67	0.79	0.85*	0.00	0.00	0.00
34.65	0.67	0.79	0.85*	0.00	0.00	0.00
34.70	0.67	0.79	0.85*	0.00	0.00	0.00
34.75	0.67	0.79	0.85*	0.00	0.00	0.00
34.80	0.67	0.79	0.85*	0.00	0.00	0.00
34.85	0.67	0.79	0.85*	0.00	0.00	0.00
34.90	0.67	0.79	0.85*	0.00	0.00	0.00
34.95	0.67	0.79	0.85*	0.00	0.00	0.00
35.00	0.67	0.79	0.85*	0.00	0.00	0.00
35.05	0.67	0.79	0.85*	0.00	0.00	0.00
35.10	0.67	0.79	0.85*	0.00	0.00	0.00
35.15	0.67	0.79	0.85*	0.00	0.00	0.00
35.20	0.67	0.79	0.85*	0.00	0.00	0.00
35.25	0.67	0.79	0.85*	0.00	0.00	0.00
35.30	0.67	0.79	0.85*	0.00	0.00	0.00
35.35	0.67	0.79	0.85*	0.00	0.00	0.00
35.40	0.67	0.79	0.85*	0.00	0.00	0.00
35.45	0.67	0.79	0.85*	0.00	0.00	0.00
35.50	0.67	0.79	0.85*	0.00	0.00	0.00
35.55	0.67	0.79	0.85*	0.00	0.00	0.00
35.60	0.67	0.79	0.85*	0.00	0.00	0.00
35.65	0.67	0.79	0.85*	0.00	0.00	0.00
35.70	0.67	0.79	0.85*	0.00	0.00	0.00
35.75	0.67	0.79	0.85*	0.00	0.00	0.00
35.80	0.67	0.79	0.85*	0.00	0.00	0.00
35.85	0.67	0.79	0.85*	0.00	0.00	0.00
35.90	0.67	0.79	0.85*	0.00	0.00	0.00
35.95	0.67	0.79	0.85*	0.00	0.00	0.00
36.00	0.67	0.79	0.85*	0.00	0.00	0.00
36.05	0.67	0.79	0.85*	0.00	0.00	0.00
36.10	0.67	0.79	0.85*	0.00	0.00	0.00
36.15	0.67	0.79	0.85*	0.00	0.00	0.00
36.20	0.67	0.79	0.85*	0.00	0.00	0.00
36.25	0.67	0.79	0.85*	0.00	0.00	0.00
36.30	0.67	0.79	0.85*	0.00	0.00	0.00
36.35	0.67	0.79	0.85*	0.00	0.00	0.00
36.40	0.67	0.79	0.85*	0.00	0.00	0.00
36.45	0.67	0.79	0.85*	0.00	0.00	0.00
36.50	0.67	0.79	0.85*	0.00	0.00	0.00
36.55	0.67	0.79	0.85*	0.00	0.00	0.00
36.60	0.67	0.79	0.85*	0.00	0.00	0.00
36.65	0.67	0.79	0.85*	0.00	0.00	0.00
36.70	0.67	0.79	0.85*	0.00	0.00	0.00

36.75	0.67	0.79	0.85*	0.00	0.00	0.00
36.80	0.67	0.79	0.85*	0.00	0.00	0.00
36.85	0.67	0.79	0.85*	0.00	0.00	0.00
36.90	0.67	0.79	0.85*	0.00	0.00	0.00
36.95	0.67	0.79	0.85*	0.00	0.00	0.00
37.00	0.67	0.79	0.85*	0.00	0.00	0.00
37.05	0.67	0.79	0.85*	0.00	0.00	0.00
37.10	0.67	0.79	0.85*	0.00	0.00	0.00
37.15	0.67	0.79	0.85*	0.00	0.00	0.00
37.20	0.67	0.79	0.85*	0.00	0.00	0.00
37.25	0.67	0.79	0.85*	0.00	0.00	0.00
37.30	0.67	0.79	0.85*	0.00	0.00	0.00
37.35	0.67	0.79	0.85*	0.00	0.00	0.00
37.40	0.67	0.79	0.85*	0.00	0.00	0.00
37.45	0.67	0.79	0.85*	0.00	0.00	0.00
37.50	0.67	0.79	0.85*	0.00	0.00	0.00
37.55	0.67	0.79	0.85*	0.00	0.00	0.00
37.60	0.67	0.79	0.85*	0.00	0.00	0.00
37.65	0.67	0.79	0.85*	0.00	0.00	0.00
37.70	0.67	0.78	0.85*	0.00	0.00	0.00
37.75	0.67	0.78	0.85*	0.00	0.00	0.00
37.80	0.67	0.78	0.85*	0.00	0.00	0.00
37.85	0.67	0.78	0.85*	0.00	0.00	0.00
37.90	0.67	0.78	0.85*	0.00	0.00	0.00
37.95	0.67	0.78	0.85*	0.00	0.00	0.00
38.00	0.67	0.78	0.85*	0.00	0.00	0.00
38.05	0.67	0.78	0.85*	0.00	0.00	0.00
38.10	0.67	0.78	0.85*	0.00	0.00	0.00
38.15	0.67	0.78	0.85*	0.00	0.00	0.00
38.20	0.67	0.78	0.85*	0.00	0.00	0.00
38.25	0.67	0.78	0.85*	0.00	0.00	0.00
38.30	0.67	0.78	0.85*	0.00	0.00	0.00
38.35	0.67	0.78	0.85*	0.00	0.00	0.00
38.40	0.67	0.78	0.85*	0.00	0.00	0.00
38.45	0.67	0.78	0.85*	0.00	0.00	0.00
38.50	0.67	0.78	0.85*	0.00	0.00	0.00
38.55	0.67	0.78	0.85*	0.00	0.00	0.00
38.60	0.66	0.78	0.85*	0.00	0.00	0.00
38.65	0.66	0.78	0.85*	0.00	0.00	0.00
38.70	0.66	0.78	0.85*	0.00	0.00	0.00
38.75	0.66	0.78	0.85*	0.00	0.00	0.00
38.80	0.66	0.78	0.85*	0.00	0.00	0.00
38.85	0.66	0.78	0.85*	0.00	0.00	0.00
38.90	0.66	0.78	0.85*	0.00	0.00	0.00
38.95	0.66	0.78	0.85*	0.00	0.00	0.00
39.00	0.66	0.78	0.85*	0.00	0.00	0.00
39.05	0.66	0.78	0.85*	0.00	0.00	0.00
39.10	0.66	0.78	0.85*	0.00	0.00	0.00
39.15	0.66	0.78	0.85*	0.00	0.00	0.00
39.20	0.66	0.78	0.85*	0.00	0.00	0.00
39.25	0.66	0.78	0.85*	0.00	0.00	0.00
39.30	0.66	0.78	0.85*	0.00	0.00	0.00
39.35	0.66	0.78	0.85*	0.00	0.00	0.00
39.40	0.66	0.78	0.85*	0.00	0.00	0.00
39.45	0.66	0.78	0.85*	0.00	0.00	0.00
39.50	0.66	0.78	0.85*	0.00	0.00	0.00
39.55	0.66	0.78	0.85*	0.00	0.00	0.00
39.60	0.66	0.78	0.85*	0.00	0.00	0.00
39.65	0.66	0.78	0.85*	0.00	0.00	0.00
39.70	0.66	0.78	0.85*	0.00	0.00	0.00
39.75	0.66	0.78	0.85*	0.00	0.00	0.00
39.80	0.66	0.78	0.85*	0.00	0.00	0.00
39.85	0.66	0.78	0.85*	0.00	0.00	0.00
39.90	0.66	0.78	0.85*	0.00	0.00	0.00
39.95	0.66	0.78	0.85*	0.00	0.00	0.00
40.00	0.66	0.78	0.85*	0.00	0.00	0.00
40.05	2.00	0.78	5.00	0.00	0.00	0.00

40.10	2.00	0.78	5.00	0.00	0.00	0.00
40.15	2.00	0.78	5.00	0.00	0.00	0.00
40.20	2.00	0.78	5.00	0.00	0.00	0.00
40.25	2.00	0.78	5.00	0.00	0.00	0.00
40.30	2.00	0.78	5.00	0.00	0.00	0.00
40.35	2.00	0.78	5.00	0.00	0.00	0.00
40.40	2.00	0.78	5.00	0.00	0.00	0.00
40.45	2.00	0.78	5.00	0.00	0.00	0.00
40.50	2.00	0.78	5.00	0.00	0.00	0.00
40.55	2.00	0.78	5.00	0.00	0.00	0.00
40.60	2.00	0.78	5.00	0.00	0.00	0.00
40.65	2.00	0.78	5.00	0.00	0.00	0.00
40.70	2.00	0.78	5.00	0.00	0.00	0.00
40.75	2.00	0.78	5.00	0.00	0.00	0.00
40.80	2.00	0.78	5.00	0.00	0.00	0.00
40.85	2.00	0.78	5.00	0.00	0.00	0.00
40.90	2.00	0.78	5.00	0.00	0.00	0.00
40.95	2.00	0.78	5.00	0.00	0.00	0.00
41.00	2.00	0.78	5.00	0.00	0.00	0.00
41.05	2.00	0.78	5.00	0.00	0.00	0.00
41.10	2.00	0.78	5.00	0.00	0.00	0.00
41.15	2.00	0.78	5.00	0.00	0.00	0.00
41.20	2.00	0.78	5.00	0.00	0.00	0.00
41.25	2.00	0.78	5.00	0.00	0.00	0.00
41.30	2.00	0.78	5.00	0.00	0.00	0.00
41.35	2.00	0.78	5.00	0.00	0.00	0.00
41.40	2.00	0.77	5.00	0.00	0.00	0.00
41.45	2.00	0.77	5.00	0.00	0.00	0.00
41.50	2.00	0.77	5.00	0.00	0.00	0.00
41.55	2.00	0.77	5.00	0.00	0.00	0.00
41.60	2.00	0.77	5.00	0.00	0.00	0.00
41.65	2.00	0.77	5.00	0.00	0.00	0.00
41.70	2.00	0.77	5.00	0.00	0.00	0.00
41.75	2.00	0.77	5.00	0.00	0.00	0.00
41.80	2.00	0.77	5.00	0.00	0.00	0.00
41.85	2.00	0.77	5.00	0.00	0.00	0.00
41.90	2.00	0.77	5.00	0.00	0.00	0.00
41.95	2.00	0.77	5.00	0.00	0.00	0.00
42.00	2.00	0.77	5.00	0.00	0.00	0.00
42.05	2.00	0.77	5.00	0.00	0.00	0.00
42.10	2.00	0.77	5.00	0.00	0.00	0.00
42.15	2.00	0.77	5.00	0.00	0.00	0.00
42.20	2.00	0.77	5.00	0.00	0.00	0.00
42.25	2.00	0.77	5.00	0.00	0.00	0.00
42.30	2.00	0.77	5.00	0.00	0.00	0.00
42.35	2.00	0.77	5.00	0.00	0.00	0.00
42.40	2.00	0.77	5.00	0.00	0.00	0.00
42.45	2.00	0.77	5.00	0.00	0.00	0.00
42.50	2.00	0.77	5.00	0.00	0.00	0.00
42.55	2.00	0.77	5.00	0.00	0.00	0.00
42.60	2.00	0.77	5.00	0.00	0.00	0.00
42.65	2.00	0.77	5.00	0.00	0.00	0.00
42.70	2.00	0.77	5.00	0.00	0.00	0.00
42.75	2.00	0.77	5.00	0.00	0.00	0.00
42.80	2.00	0.77	5.00	0.00	0.00	0.00
42.85	2.00	0.77	5.00	0.00	0.00	0.00
42.90	2.00	0.77	5.00	0.00	0.00	0.00
42.95	2.00	0.77	5.00	0.00	0.00	0.00
43.00	2.00	0.77	5.00	0.00	0.00	0.00
43.05	2.00	0.77	5.00	0.00	0.00	0.00
43.10	2.00	0.77	5.00	0.00	0.00	0.00
43.15	2.00	0.77	5.00	0.00	0.00	0.00
43.20	2.00	0.77	5.00	0.00	0.00	0.00
43.25	2.00	0.77	5.00	0.00	0.00	0.00
43.30	2.00	0.77	5.00	0.00	0.00	0.00
43.35	2.00	0.77	5.00	0.00	0.00	0.00
43.40	2.00	0.77	5.00	0.00	0.00	0.00

43.45	2.00	0.77	5.00	0.00	0.00	0.00
43.50	2.00	0.77	5.00	0.00	0.00	0.00
43.55	2.00	0.77	5.00	0.00	0.00	0.00
43.60	2.00	0.77	5.00	0.00	0.00	0.00
43.65	2.00	0.77	5.00	0.00	0.00	0.00
43.70	2.00	0.77	5.00	0.00	0.00	0.00
43.75	2.00	0.77	5.00	0.00	0.00	0.00
43.80	2.00	0.77	5.00	0.00	0.00	0.00
43.85	2.00	0.77	5.00	0.00	0.00	0.00
43.90	2.00	0.77	5.00	0.00	0.00	0.00
43.95	2.00	0.77	5.00	0.00	0.00	0.00
44.00	2.00	0.77	5.00	0.00	0.00	0.00
44.05	2.00	0.77	5.00	0.00	0.00	0.00
44.10	2.00	0.77	5.00	0.00	0.00	0.00
44.15	2.00	0.77	5.00	0.00	0.00	0.00
44.20	2.00	0.76	5.00	0.00	0.00	0.00
44.25	2.00	0.76	5.00	0.00	0.00	0.00
44.30	2.00	0.76	5.00	0.00	0.00	0.00
44.35	2.00	0.76	5.00	0.00	0.00	0.00
44.40	2.00	0.76	5.00	0.00	0.00	0.00
44.45	2.00	0.76	5.00	0.00	0.00	0.00
44.50	2.00	0.76	5.00	0.00	0.00	0.00
44.55	2.00	0.76	5.00	0.00	0.00	0.00
44.60	2.00	0.76	5.00	0.00	0.00	0.00
44.65	2.00	0.76	5.00	0.00	0.00	0.00
44.70	2.00	0.76	5.00	0.00	0.00	0.00
44.75	2.00	0.76	5.00	0.00	0.00	0.00
44.80	2.00	0.76	5.00	0.00	0.00	0.00
44.85	2.00	0.76	5.00	0.00	0.00	0.00
44.90	2.00	0.76	5.00	0.00	0.00	0.00
44.95	2.00	0.76	5.00	0.00	0.00	0.00
45.00	2.00	0.76	5.00	0.00	0.00	0.00
45.05	2.00	0.76	5.00	0.00	0.00	0.00
45.10	2.00	0.76	5.00	0.00	0.00	0.00
45.15	2.00	0.76	5.00	0.00	0.00	0.00
45.20	2.00	0.76	5.00	0.00	0.00	0.00
45.25	2.00	0.76	5.00	0.00	0.00	0.00
45.30	2.00	0.76	5.00	0.00	0.00	0.00
45.35	2.00	0.76	5.00	0.00	0.00	0.00
45.40	2.00	0.76	5.00	0.00	0.00	0.00
45.45	2.00	0.76	5.00	0.00	0.00	0.00
45.50	2.00	0.76	5.00	0.00	0.00	0.00
45.55	2.00	0.76	5.00	0.00	0.00	0.00
45.60	2.00	0.76	5.00	0.00	0.00	0.00
45.65	2.00	0.76	5.00	0.00	0.00	0.00
45.70	2.00	0.76	5.00	0.00	0.00	0.00
45.75	2.00	0.76	5.00	0.00	0.00	0.00
45.80	2.00	0.76	5.00	0.00	0.00	0.00
45.85	2.00	0.76	5.00	0.00	0.00	0.00
45.90	2.00	0.76	5.00	0.00	0.00	0.00
45.95	2.00	0.76	5.00	0.00	0.00	0.00
46.00	2.00	0.76	5.00	0.00	0.00	0.00
46.05	2.00	0.76	5.00	0.00	0.00	0.00
46.10	2.00	0.76	5.00	0.00	0.00	0.00
46.15	2.00	0.76	5.00	0.00	0.00	0.00
46.20	2.00	0.76	5.00	0.00	0.00	0.00
46.25	2.00	0.76	5.00	0.00	0.00	0.00
46.30	2.00	0.76	5.00	0.00	0.00	0.00
46.35	2.00	0.76	5.00	0.00	0.00	0.00
46.40	2.00	0.76	5.00	0.00	0.00	0.00
46.45	2.00	0.76	5.00	0.00	0.00	0.00
46.50	2.00	0.76	5.00	0.00	0.00	0.00
46.55	2.00	0.76	5.00	0.00	0.00	0.00
46.60	2.00	0.75	5.00	0.00	0.00	0.00
46.65	2.00	0.75	5.00	0.00	0.00	0.00
46.70	2.00	0.75	5.00	0.00	0.00	0.00
46.75	2.00	0.75	5.00	0.00	0.00	0.00

46.80	2.00	0.75	5.00	0.00	0.00	0.00
46.85	2.00	0.75	5.00	0.00	0.00	0.00
46.90	2.00	0.75	5.00	0.00	0.00	0.00
46.95	2.00	0.75	5.00	0.00	0.00	0.00
47.00	2.00	0.75	5.00	0.00	0.00	0.00
47.05	2.00	0.75	5.00	0.00	0.00	0.00
47.10	2.00	0.75	5.00	0.00	0.00	0.00
47.15	2.00	0.75	5.00	0.00	0.00	0.00
47.20	2.00	0.75	5.00	0.00	0.00	0.00
47.25	2.00	0.75	5.00	0.00	0.00	0.00
47.30	2.00	0.75	5.00	0.00	0.00	0.00
47.35	2.00	0.75	5.00	0.00	0.00	0.00
47.40	2.00	0.75	5.00	0.00	0.00	0.00
47.45	2.00	0.75	5.00	0.00	0.00	0.00
47.50	2.00	0.75	5.00	0.00	0.00	0.00
47.55	2.00	0.75	5.00	0.00	0.00	0.00
47.60	2.00	0.75	5.00	0.00	0.00	0.00
47.65	2.00	0.75	5.00	0.00	0.00	0.00
47.70	2.00	0.75	5.00	0.00	0.00	0.00
47.75	2.00	0.75	5.00	0.00	0.00	0.00
47.80	2.00	0.75	5.00	0.00	0.00	0.00
47.85	2.00	0.75	5.00	0.00	0.00	0.00
47.90	2.00	0.75	5.00	0.00	0.00	0.00
47.95	2.00	0.75	5.00	0.00	0.00	0.00
48.00	2.00	0.75	5.00	0.00	0.00	0.00
48.05	2.00	0.75	5.00	0.00	0.00	0.00
48.10	2.00	0.75	5.00	0.00	0.00	0.00
48.15	2.00	0.75	5.00	0.00	0.00	0.00
48.20	2.00	0.75	5.00	0.00	0.00	0.00
48.25	2.00	0.75	5.00	0.00	0.00	0.00
48.30	2.00	0.75	5.00	0.00	0.00	0.00
48.35	2.00	0.75	5.00	0.00	0.00	0.00
48.40	2.00	0.75	5.00	0.00	0.00	0.00
48.45	2.00	0.75	5.00	0.00	0.00	0.00
48.50	2.00	0.75	5.00	0.00	0.00	0.00
48.55	2.00	0.75	5.00	0.00	0.00	0.00
48.60	2.00	0.75	5.00	0.00	0.00	0.00
48.65	2.00	0.75	5.00	0.00	0.00	0.00
48.70	2.00	0.75	5.00	0.00	0.00	0.00
48.75	2.00	0.75	5.00	0.00	0.00	0.00
48.80	2.00	0.74	5.00	0.00	0.00	0.00
48.85	2.00	0.74	5.00	0.00	0.00	0.00
48.90	2.00	0.74	5.00	0.00	0.00	0.00
48.95	2.00	0.74	5.00	0.00	0.00	0.00
49.00	2.00	0.74	5.00	0.00	0.00	0.00
49.05	2.00	0.74	5.00	0.00	0.00	0.00
49.10	2.00	0.74	5.00	0.00	0.00	0.00
49.15	2.00	0.74	5.00	0.00	0.00	0.00
49.20	2.00	0.74	5.00	0.00	0.00	0.00
49.25	2.00	0.74	5.00	0.00	0.00	0.00
49.30	2.00	0.74	5.00	0.00	0.00	0.00
49.35	2.00	0.74	5.00	0.00	0.00	0.00
49.40	2.00	0.74	5.00	0.00	0.00	0.00
49.45	2.00	0.74	5.00	0.00	0.00	0.00
49.50	2.00	0.74	5.00	0.00	0.00	0.00
49.55	2.00	0.74	5.00	0.00	0.00	0.00
49.60	2.00	0.74	5.00	0.00	0.00	0.00
49.65	2.00	0.74	5.00	0.00	0.00	0.00
49.70	2.00	0.74	5.00	0.00	0.00	0.00
49.75	2.00	0.74	5.00	0.00	0.00	0.00
49.80	2.00	0.74	5.00	0.00	0.00	0.00
49.85	2.00	0.74	5.00	0.00	0.00	0.00
49.90	2.00	0.74	5.00	0.00	0.00	0.00
49.95	2.00	0.74	5.00	0.00	0.00	0.00
50.00	2.00	0.74	5.00	0.00	0.00	0.00

* F.S.<1, Liquefaction Potential Zone

(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

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1 atm (atmosphere) = 1 tsf (ton/ft2)

CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

APPENDIX D

EARTHWORK SPECIFICATIONS

APPENDIX D

EARTHWORK SPECIFICATIONS

D1.1 Scope of Work

The work includes all labor, supplies and construction equipment required to construct the building pads in a good, workmanlike manner, as shown on the drawings and herein specified. The major items of work covered in this section include the following:

- Site Inspection
- Authority of Geotechnical Engineer
- Site Clearing
- Excavations
- Preparation of Fill Areas
- Placement and Compaction of Fill
- Observation and Testing

D1.2 Site Inspection

1. The Contractor shall carefully examine the site and make all inspections necessary, in order to determine the full extent of the work required to make the completed work conform to the drawings and specifications. The Contractor shall satisfy himself as to the nature and location of the work, ground surface and the characteristics of equipment and facilities needed prior to and during prosecution of the work. The Contractor shall satisfy himself as to the character, quality, and quantity of surface and subsurface materials or obstacles to be encountered. Any inaccuracies or discrepancies between the actual field conditions and the drawings, or between the drawings and specifications must be brought to the Owner's attention in order to clarify the exact nature of the work to be performed.

2. This *Geoseismic/Geotechnical Study Report* by Converse Consultants may be used as a reference to the surface and subsurface conditions on this project. The information presented in this report is intended for use in design and is subject to confirmation of the conditions encountered during construction. The exploration logs and related information depict subsurface conditions only at the particular time and location designated on the boring logs. Subsurface conditions at other locations may differ from conditions encountered at the exploration locations. In addition, the passage of time may result in a change in subsurface conditions at the exploration locations. Any review of this information shall not relieve the

Contractor from performing such independent investigation and evaluation to satisfy himself as to the nature of the surface and subsurface conditions to be encountered and the procedures to be used in performing his work.

D1.3 Authority of the Geotechnical Engineer

1. The Geotechnical Engineer will observe the placement of compacted fill and will take sufficient tests to evaluate the uniformity and degree of compaction of filled ground.

2. As the Owner's representative, the Geotechnical Engineer will (a) have the authority to cause the removal and replacement of loose, soft, disturbed and other unsatisfactory soils and uncontrolled fill; (b) have the authority to approve the preparation of native ground to receive fill material; and (c) have the authority to approve or reject soils proposed for use in building areas.

3. The Civil Engineer and/or Owner will decide all questions regarding (a) the interpretation of the drawings and specifications, (b) the acceptable fulfillment of the contract on the part of the Contractor and (c) the matters of compensation.

D1.4 Site Clearing

1. Clearing and grubbing shall consist of the removal from building areas to be graded of all existing structures, pavement, utilities, and vegetation.

2. Organic and inorganic materials resulting from the clearing and grubbing operations shall be hauled away from the areas to be graded.

D1.5 Excavations

1. Based on observations made during our field explorations, the surficial soils can be excavated with conventional earthwork equipment.

D1.6 Preparation of Fill Areas

1. All organic material, organic soils, incompetent alluvium, undocumented fill soils and debris should be removed from the proposed building areas.

2. In order to provide a relative uniform bearing material below shallow foundations, over-excavation and re-compaction of below the foundations and slab-on-grade are recommended. We recommend a minimum 2 feet of onsite soils below the bottom of foundations should be removed, moisture-conditioned if necessary, and replaced as compacted fill. At least the six (6) inches of soil at bottom of over-excavation, cut and transition areas should be scarified and compacted. All

undocumented fill should be removed and replaced with compacted fill. The excavation to remove unsuitable soils should be extended to five (5) feet beyond the building limits and appendages where space is available. All loose, soft or disturbed earth materials should be removed from the bottom of excavations before placing structural fill. The actual depth of removal should be determined based on observations made during grading. After the required removals have been made, the exposed native earth materials shall be excavated to provide a zone of structural fill for the support of footings, slabs-on-grade, and exterior flatwork. The fill thickness under structures should not vary.

3. The subgrade in all areas to receive fill shall be scarified to a minimum depth of six (6) inches, the soil moisture adjusted within three (3) percent of the optimum moisture for granular soils and at above approximately three (3) percent of the optimum moisture for fine-grained soils, and then compacted to at least 90 percent for the upper 10 feet and 95 percent for fill placed 10 feet below proposed finished grade, of the laboratory maximum dry density as determined by ASTM Standard D1557 test method. Scarification may be terminated on moderately hard to hard, cemented earth materials with the approval of the Geotechnical Engineer.

4. Compacted fill may be placed on native soils that have been properly scarified and recompacted as discussed above.

5. All areas to receive compacted fill will be observed and approved by the Geotechnical Engineer before the placement of fill.

D1.7 Placement and Compaction of Fill

1. Compacted fill placed for the support of footings, slabs-on-grade, exterior concrete flatwork, and driveways will be considered structural fill. Structural fill may consist of approved on-site soils or imported fill that meets the criteria indicated below.

2. Fill consisting of selected on-site earth materials or imported soils approved by the Geotechnical Engineer shall be placed in layers on approved earth materials. Soils used as compacted structural fill shall have the following characteristics:

   a. All fill soil particles shall not exceed three (3) inches in nominal size, and shall be free of organic matter and miscellaneous inorganic debris and inert rubble.

3. Imported fill materials shall have an Expansion Index (EI) less than 20. All imported fill should be compacted to at least 90 and 95 percent of the laboratory maximum dry density (ASTM Standard D1557) at about three (3) percent above

optimum moisture for fine grained soils, and within three (3) percent of optimum for granular soils.

4. Fill soils shall be evenly spread in maximum 6-inch to 8-inch lifts, watered or dried as necessary, mixed and compacted to at least the density specified below. The fill shall be placed and compacted on a horizontal plane, unless otherwise approved by the Geotechnical Engineer.

5. All fill placed at the site shall be compacted to at least 90 or 95 percent of the laboratory maximum dry density as determined by ASTM Standard D1557 test method. The on-site soils shall be moisture conditioned within three (3) percent of the optimum moisture for granular soils and at above approximately three (3) percent of the optimum moisture for fine-grained soils. At least the upper 12 inches of subgrade soils underneath the concrete apron, pavement and parking areas should be compacted to a minimum of 95 percent relative compaction.

6. Fill exceeding five (5) feet in height shall not be placed on native slopes that are steeper than 5:1 horizontal: vertical (H:V). Where native slopes are steeper than 5:1 H:V, and the height of the fill is greater than five (5) feet, the fill shall be benched into competent materials. The height and width of the benches shall be at least two (2) feet.

7. Representative samples of materials being used, as compacted fill will be analyzed in the laboratory by the Geotechnical Engineer to obtain information on their physical properties. Maximum laboratory density of each soil type used in the compacted fill will be determined by the ASTM Standard D1557 compaction method.

8. Fill materials shall not be placed, spread or compacted during unfavorable weather conditions. When site grading is interrupted by heavy rain, filling operations shall not resume until the Geotechnical Engineer approves the moisture and density conditions of the previously placed fill.

9. It shall be the Grading Contractor's obligation to take all measures deemed necessary during grading to provide erosion control devices in order to protect slope areas and adjacent properties from storm damage and flood hazard originating on this project. It shall be the contractor's responsibility to maintain slopes in their as-graded form until all slopes are in satisfactory compliance with job specifications, all berms have been properly constructed, and all associated drainage devices meet the requirements of the Civil Engineer.

D1.8 Trench Backfill

The following specifications are recommended to provide a basis for quality control during the placement of trench backfill.

1. Trench excavations to receive backfill shall be free of trash, debris or other unsatisfactory materials at the time of backfill placement.

2. Trench backfill shall be compacted to a minimum relative compaction of 90 percent as per ASTM Standard D1557 test method.

3. Rocks larger than one (1) inch should not be placed within 12 inches of the top of the pipeline or within the upper 12 inches of pavement or structure subgrade. No more than 30 percent of the backfill volume shall be larger than 3/4-inch in largest dimension diameter and rocks shall be well mixed with finer soil.

4. The pipe design engineer should select bedding material for the pipe. Bedding materials generally should have a Sand Equivalent (SE) greater than or equal to 30, as determined by the ASTM Standard D2419 test method.

5. Trench backfill shall be compacted by mechanical methods, such as sheepsfoot, vibrating or pneumatic rollers, or mechanical tampers, to achieve the density specified herein. The backfill materials shall be brought to within three (3) percent of optimum moisture content for granular soils and fine-grained soils, then placed in horizontal layers. The thickness of uncompacted layers should not exceed eight (8) inches. Each layer shall be evenly spread, moistened or dried as necessary, and then tamped or rolled until the specified density has been achieved.

6. The contractor shall select the equipment and processes to be used to achieve the specified density without damage to adjacent ground and completed work.

7. The field density of the compacted soil shall be measured by the ASTM Standard D1556 or ASTM Standard D2922 test methods or equivalent.

8. Observation and field tests should be performed by Converse during construction to confirm that the required degree of compaction has been obtained. Where compaction is less than that specified, additional compactive effort shall be made with adjustment of the moisture content as necessary, until the specified compaction is obtained.

9. It should be the responsibility of the Contractor to maintain safe conditions during cut and/or fill operations.

10. Trench backfill shall not be placed, spread or rolled during unfavorable weather

conditions. When the work is interrupted by heavy rain, fill operations shall not be resumed until field tests by the project's geotechnical consultant indicate that the moisture content and density of the fill are as previously specified.

D1.9 Observation and Testing

1. During the progress of grading, the Geotechnical Engineer will provide observation of the fill placement operations.

2. Field density tests will be made during grading to provide an opinion on the degree of compaction being obtained by the contractor. Where compaction of less than specified herein is indicated, additional compactive effort with adjustment of the moisture content shall be made as necessary, until the required degree of compaction is obtained.

3. A sufficient number of field density tests will be performed to provide an opinion to the degree of compaction achieved. In general, density tests will be performed on each one-foot lift of fill, but not less than one for each 500 cubic yards of fill placed.

BH-3
BH-4
BH-5
BH-6
BH-7
BH-8
BH-2
BH-9
BH-1
BH-16
BH-11
BH-13
BH-12
BH-14
BH-17
BH-18
BH-19
BH-20
BH-21
BH-22
BH-15

APPROXIMATE GAS LINE UTILITY
(5'.6")
(4'.6")
(4'.7")
(6'.7")
(4'.9")
(4'.5")
(4'.4")
(5'.5")
(4'.9")
(5'.8")
(5'.11")
(6'.12")

761 PAD ELVEATION
CONSTRUCT NEW KEYWAY
GRAND AVENUE
WATER DRAIN DITCH
PROPOSED STORM DRAIN
761 PAD ELEVATION
761 PAD ELEVATION
761 PAD ELEVATION
761 PAD ELEVATION
CONSTRUCT NEW KEYWAY
CONSTRUCT NEW KEYWAY
WATER DRAIN DITCH
CONSTRUCT NEW KEYWAY
APPROXIMATE GAS LINE UTILITY
APPROXIMATE GAS LINE UTILITY
APPROXIMATE GAS LINE UTILITY
APPROXIMATE GAS LINE UTILITY
735 BENCH
TWO-FOOT RUN
ONE-FOOT RISE
HEIGHT VARIES
DISTANCE VARIES
REFERENCE: SLOPE GRADING DETAIL BY HELIX ENVIRONMENTAL PLANNING

LEGEND

- APPROXIMATE LOCATION OF BORING
- GEOLOGIC CROSS SECTION
- SLOPES TO BE GRADED TO 2:1 STEP LIKE FASHION
- PROPOSED SOLAR ARRAY
- APPROXIMATE LOCATION OF CANYON BOTTOM SUBDRAINS
- APPROXIMATE LOCATION OF FILL SLOPE STABILZATION KEYWAYS, MAINTAIN SAFE SETBACK FROM GAS MAIN

N

0 50 100
APPROXIMATE SCALE IN FEET

SITE PLAN AND APPROXIMATE LOCATIONS OF BORING

MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

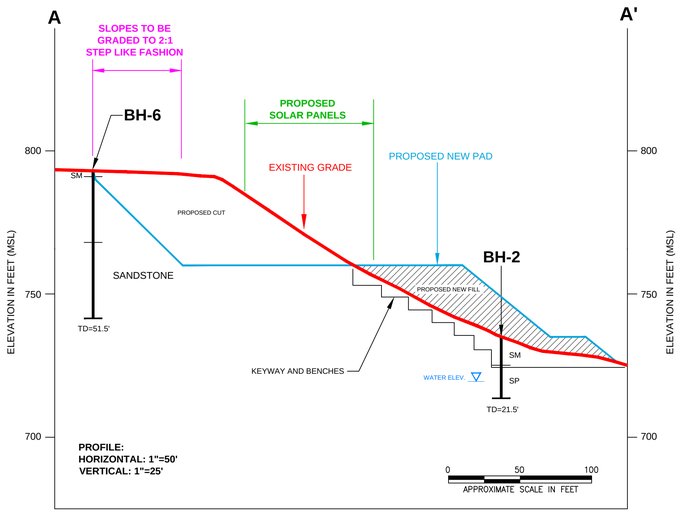
Scale 1"=50'
Date JULY 2014
12-19-14

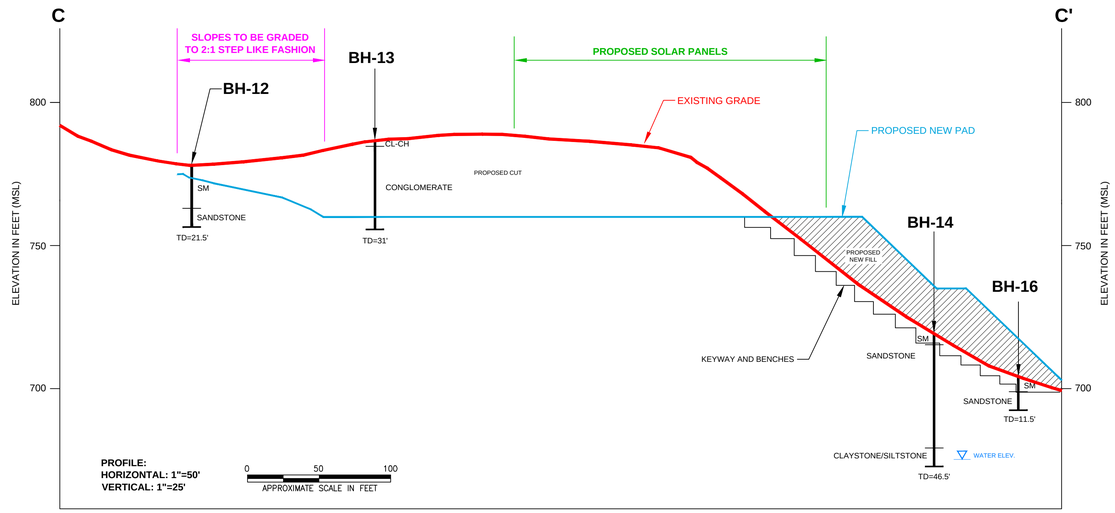
Project No. 13-31-339-01

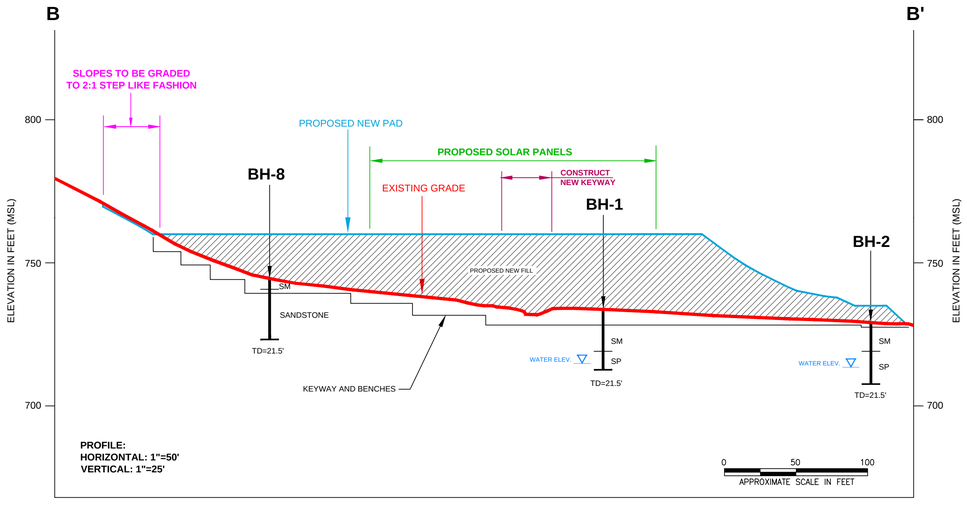
Drawing No. 2

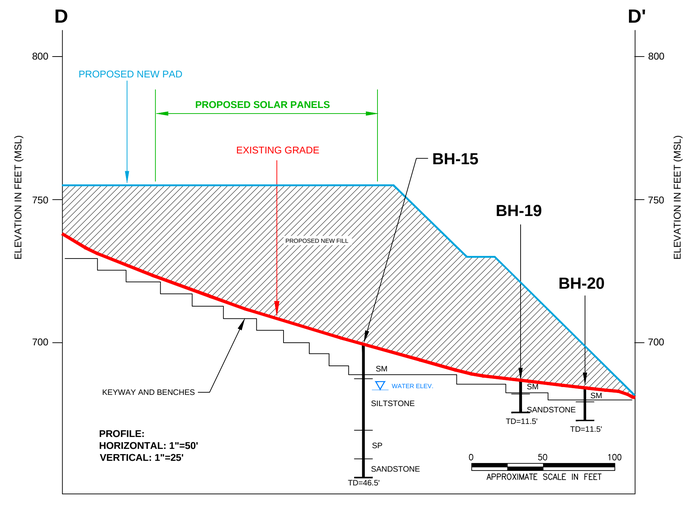
Converse Consultants

I:\ACADDRAWINGS\13\31\339\L3-31-339-01-SITE-PLAN-TOPO.DWG









CROSS SECTION A-A', B-B', C-C', D-D'

MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01
Date JULY 2014
Drawing No. 4

Converse Consultants

I:\ACAD\DRAWINGS\13\13339\13-31-339-01-SITE-PLAN-TOPO.DWG

Converse Consultants
Geotechnical Engineering, Environmental & Groundwater Science, Inspection & Testing Services

July 27, 2017

Ms. Rebecca Mitchell
Mt. San Antonio College
Facilities Planning & Management
1100 North Grand Avenue
Walnut, California 91789-5611

Subject: **WEST PARCEL - LANDSLIDE TOE TEST PIT TRENCH STUDY**
Mt. San Antonio College West Parcel Solar Project
1100 North Grand Avenue
Walnut, California 91789
Converse Project No. 13-31-339-30

Reference: Converse Consultants, Geotechnical Study Report, Proposed Fill Placement at the West Parcel, Mount San Antonio College, Walnut, California, dated December 19, 2014, Converse Project No. 13-31-339-01

Dear Ms. Mitchell,

INTRODUCTION

Converse Consultants (Converse) presents this preliminary report to summarize the findings of four (4) exploratory test pit trenches excavated along the toe of an existing road cut landslide that occurred during previous grading work to widen Grand Avenue in the late 1970's. The road cut landslide is located on a natural hillside slope on the central portion of the West Parcel site along Grand Avenue. The road cut landslide has continued to enlarge and creep downslope to Grand Avenue during the past 38 years. The unstable landslide deposits threaten Grand Avenue with slope instability and sudden ground movement. The unstable landslide deposits will be completely removed and replaced with engineered compacted fills keyed and benched into the underlying undisturbed bedrock materials during grading for the West Parcel Solar Project.

The purpose of the four (4) exploratory test pit trenches was to determine the depth and extent of landslide deposits along the toe of the landslide along Grand Avenue and to evaluate the sedimentary bedrock structure and material properties. The four (4) exploratory test pit trenches were excavated with a Kobelco SK210-9 track-mounted excavator on June 9 and June 12, 2017. The approximate location of the four (4) exploratory test pit trenches are shown on Drawing No. 1, *Road Cut Landslide Evaluation.* The four (4) test pit trench logs are presented on Drawing Nos. 1a through 1d*, Road Cut Landslide Toe - Test Pit No. 1, No. 2, No. 3, and No. 4*. This preliminary report provides information and data for the Draft Environmental Impact Report (DEIR).

BACKGROUND

The road cut landslide occurred in the late 1970's as a result of previous grading activity by others to widen Grand Avenue. Evidence of the landslide on the road cut slope above Grand Avenue is visible in historic aerial photographs starting in 1979. No drainage control devices (brow ditches, terrace drains, down drains, catch basins, etc.) were observed or constructed on the hillside cut slope at the time it was graded to collect and control surface runoff on the slope face. The landslide was likely triggered by three (3) years of above normal rainfall between 1977 and 1980. Dozer cuts were made at the top of the hillside which directed surface runoff directly into the head scarp of the landslide.

The landslide was not repaired or restored. The unrepaired landslide has gradually grown over the past 38 years since it occurred. The landslide growth over the years has caused significant damage to the West Parcel property. The landslide deposits are vulnerable to further sliding and ground movement. The landslide presents a continued hazard of slope instability and has a potential for sudden ground movement following wet weather periods to Grand Avenue.

TEST PIT TRENCH FINDINGS

The four (4) exploratory test pit trenches excavated along the toe of the existing landslide were used to identify the depths and limits of the landslide toe along the west side of Grand Avenue. As shown in Drawing Nos.1a through 1d*, Road Cut Landslide Toe – Test Pit No. 1, No. 2, No. 3, and No. 4*, the landslide slip plane generally occurs between elevations 715 feet and 720 feet along the toe of the landslide deposits. These elevations are at or near the same elevations as the west side of Grand Avenue. The proposed keyway excavations with a minimum width of 25 feet and a minimum embedment depth of approximately 5 feet should completely remove the landslide deposits and slip plane along the toe of the landslide.

The width of the proposed keyway excavations will likely be increased westward into the property from the minimum 25-foot width to keyways that are 30 to 40 feet wide. The depth of the proposed keyway of approximately 5 feet below ground surface should not impact stability of Grand Avenue during excavation. Safe setbacks will need to be maintained for buried utility lines located along Grand Avenue during keyway excavations.

The four (4) exploratory test pit trench excavations provided information on the undisturbed bedrock structure and materials beneath the landslide deposits. The trench excavations permitted direct field measurements of the strike and dip of the underlying undisturbed bedrock formations. As shown on the test pit logs, the strike of the bedding attitudes ranged from North 52 degrees East to North 88 degrees West with bedding dips ranging from 12 degrees North to 22 degrees Northwest. These bedding attitudes are similar to the previously measured bedding attitudes measured on the project site for

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undisturbed bedrock materials. These bedding attitudes will produce neutral to favorable orientations with respect to proposed temporary and permanent cut slopes.

The four (4) exploratory test pit excavations provided information on the disturbed bedrock materials above the landslide slip plane within the landslide deposits. The bedding structure above the landslide slip plane were disturbed by landslide movement, displacement and rotation. The disturbed landslide deposits exhibited localized eastward dipping bedding planes. The landslide deposits were found to be loose, disturbed, broken and unstable.

PROPOSED GRADING OF WEST PARCEL

The unstable landslide deposits will be completely removed and replaced with engineered compacted fills that are keyed and benched into the underlying undisturbed bedrock materials during grading for the West Parcel Solar Project.

The proposed grading for the West Parcel Solar Project will remove and lower the hilltop and landslide down approximately 54 feet to the solar project pad level at elevation 761 feet. The earth materials excavated from the hilltop removal will be placed as engineered compacted fills within the intervening valleys of the West Parcel.

The eastern slope face of the hillside that remains above Grand Avenue will be laid back as a 2:1 (horizontal : vertical) fill slope for the proposed access road and terrace drains. The fill slope will be buttressed with engineered compacted fills that are keyed and benched into undisturbed bedrock materials. The size, width and depth of the keyways and bench cuts will be increased during grading to remove all the disturbed landslide deposits and support the new compacted fill soils on undisturbed bedrock materials. Subdrain systems will be installed in the bottom of the keyways and along the backslope to provide subsurface drainage and prevent build-up of hydrostatic pressure behind the compacted fills. The landslide deposits will be completely removed and replaced with engineered compacted fills keyed and benched into the underlying undisturbed bedrock materials during grading of the West Parcel Solar Project.

Grading will be performed in accordance with current grading codes. Compacted fill soils will not be placed over the landslide deposits. All disturbed landslide deposits will be removed and replaced with compacted fills. Grading observations and monitoring will be performed during project grading to verify that suitable bottom materials are reached and that the compacted fills are placed in accordance with project plans and specifications.

The graded slope areas will be constructed with non-erosive drainage control devices (including brow ditches, terrace drains, down drains, catch basins, etc.) to control surface runoff, reduce infiltration into slopes and direct surface runoff to suitable disposal points.

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The graded slope areas will be landscaped to control surface erosion and improve slope appearances.

The proposed grading of the West Parcel Solar Project will improve the overall slope stability along the west side of Grand Avenue and for the adjacent offsite properties and homes along the west side of the property.

Sincerely,

CONVERSE CONSULTANTS

Mark B. Schluter, PG, CEG, CHG
Senior Engineering Geologist

Dist: 1/Addressee
Encl: Drawing No. 1, Road Cut Landslide Evaluation
Drawing No. 1a, Road Cut Landslide Toe - Test Pit No. 1
Drawing No. 1b, Road Cut Landslide Toe - Test Pit No. 2
Drawing No. 1c, Road Cut Landslide Toe - Test Pit No. 3
Drawing No. 1d, Road Cut Landslide Toe - Test Pit No. 4

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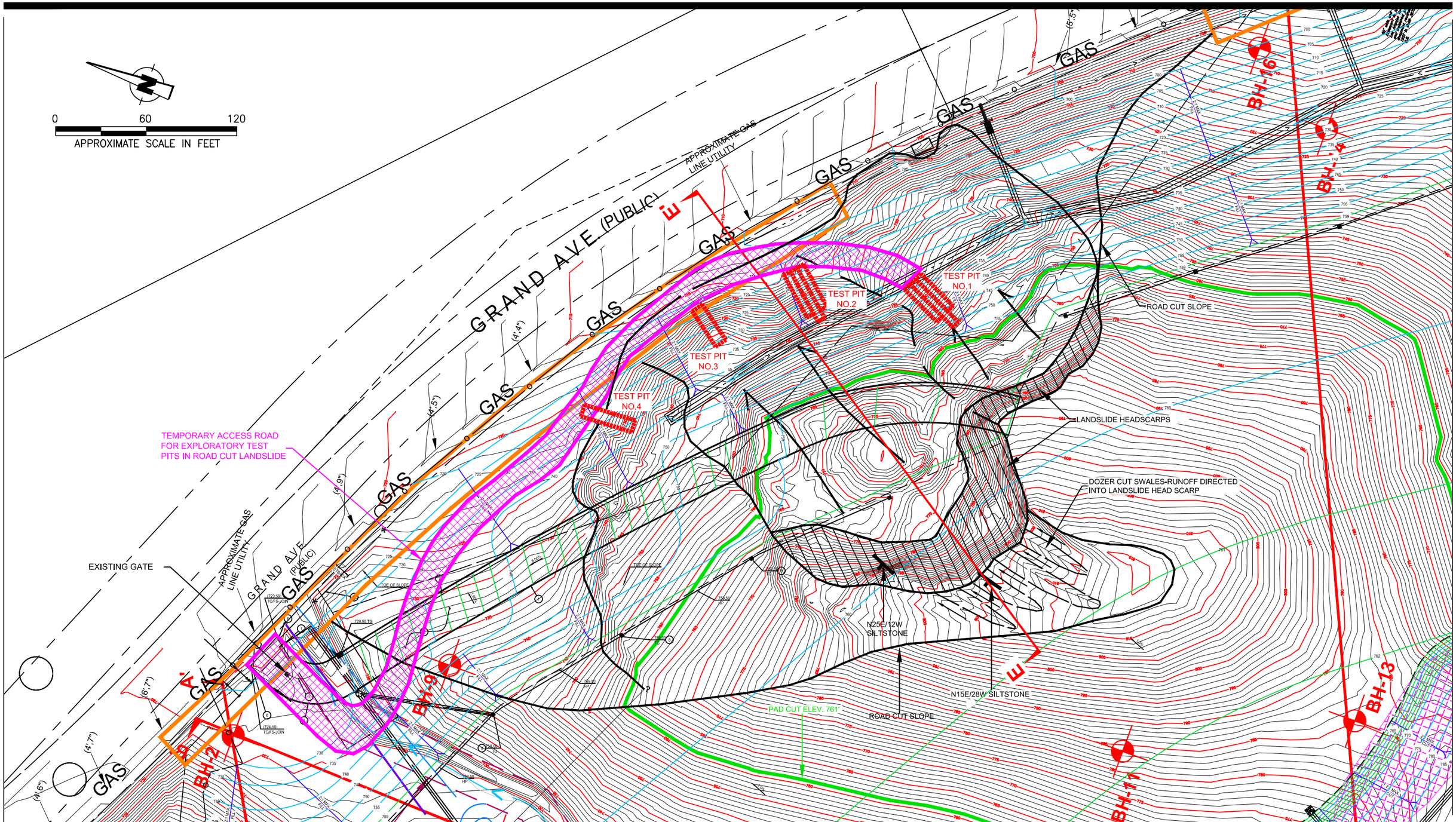
Drawings

Copyright 2017 Converse Consultants
Converse Project No. 13-31-339-30



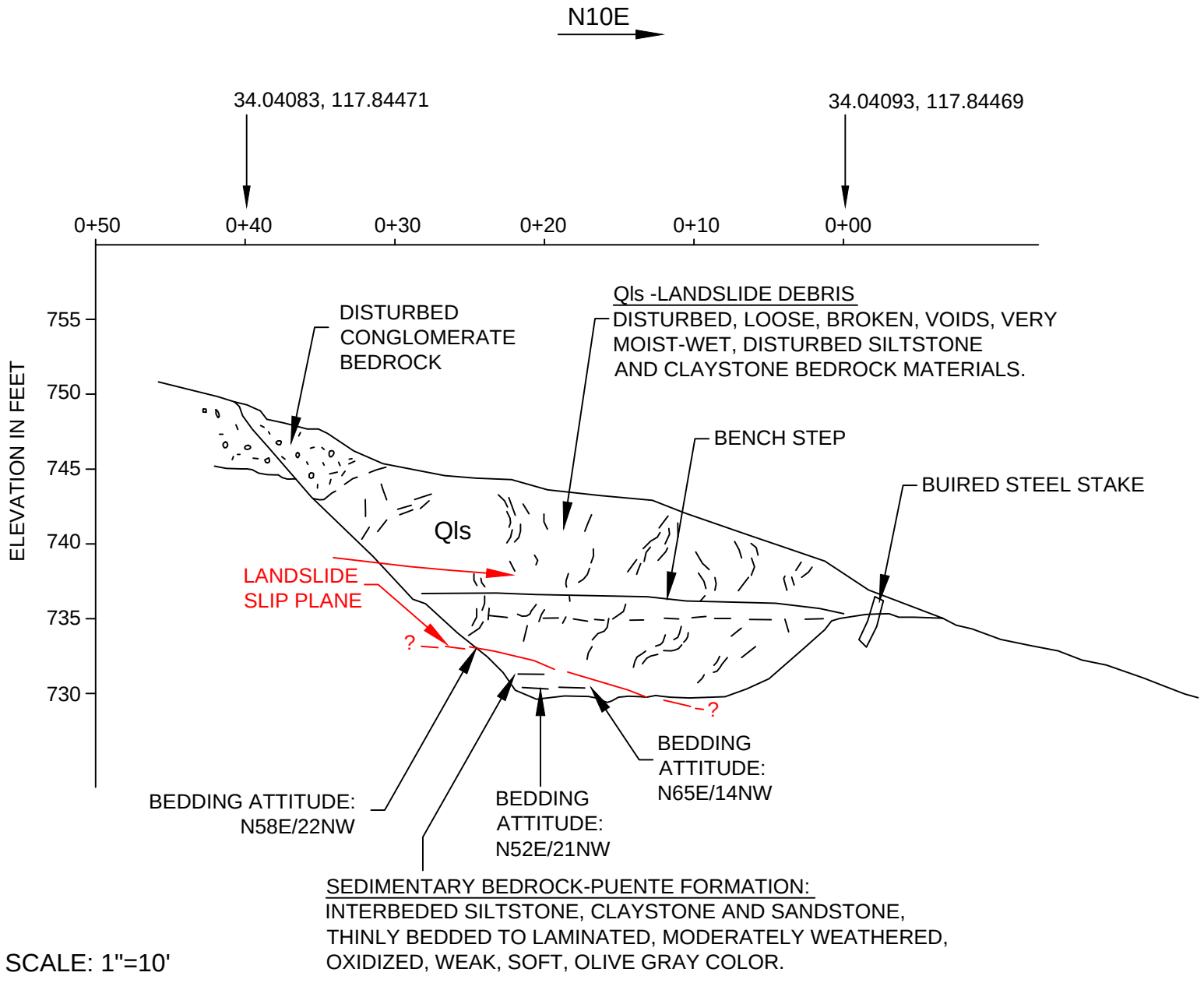
ROAD CUT LANDSLIDE EVALUATION

Converse Consultants

WEST PARCEL
MT. SAN ANTONIO COLLEGE
WALNUT, CALIFORNIA

Project No.	Drawing No.
13-31-339-02	1

I:\ACADDRAWINGS\13\31\339\13-31-339-01-LANDSLIDE LAYER-NEWBASE.DWG



SCALE: 1"=10'

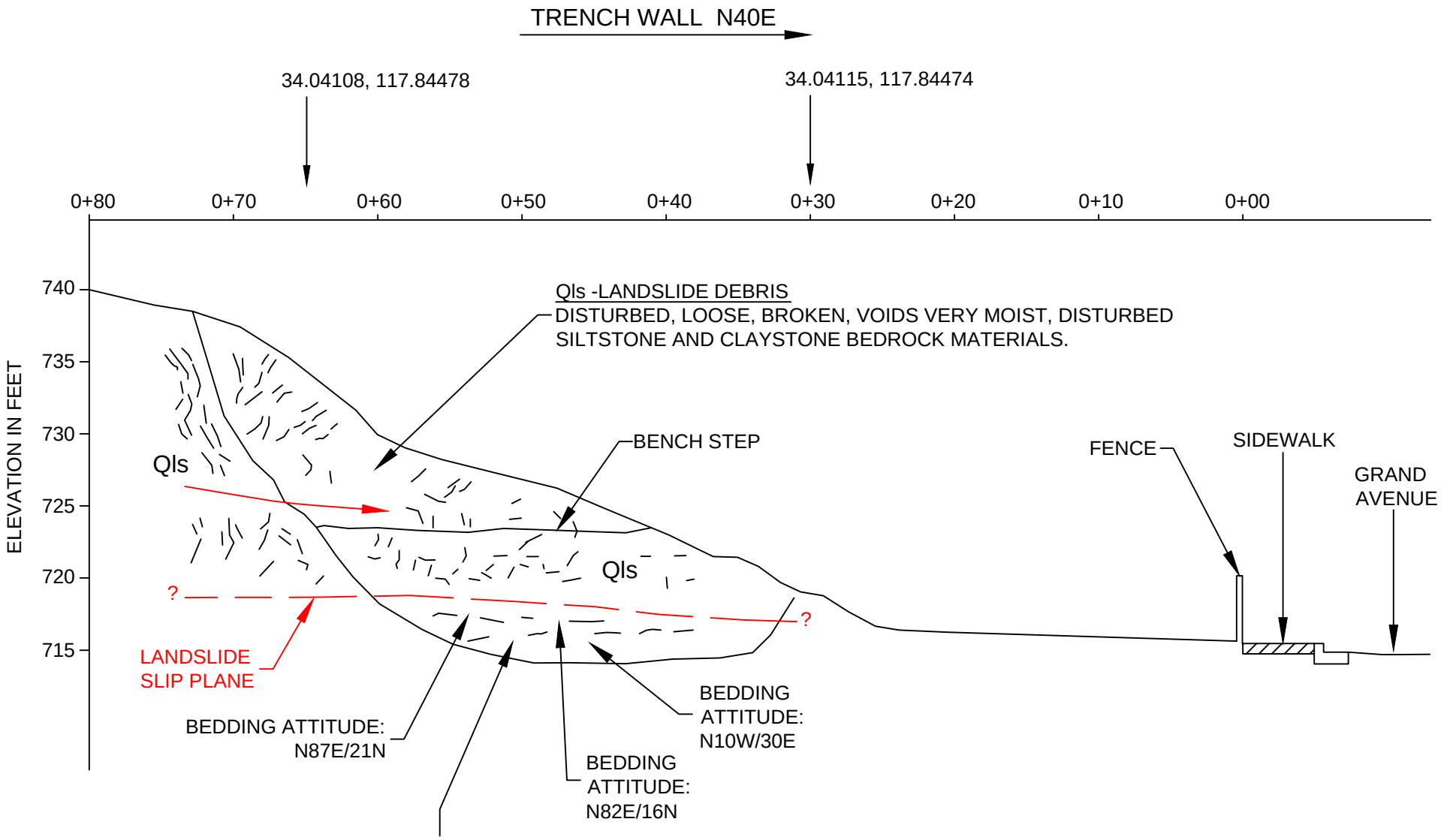
ROAD CUT LANDSLIDE TOE - TEST PIT NO. 1

Converse Consultants

MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. 1a



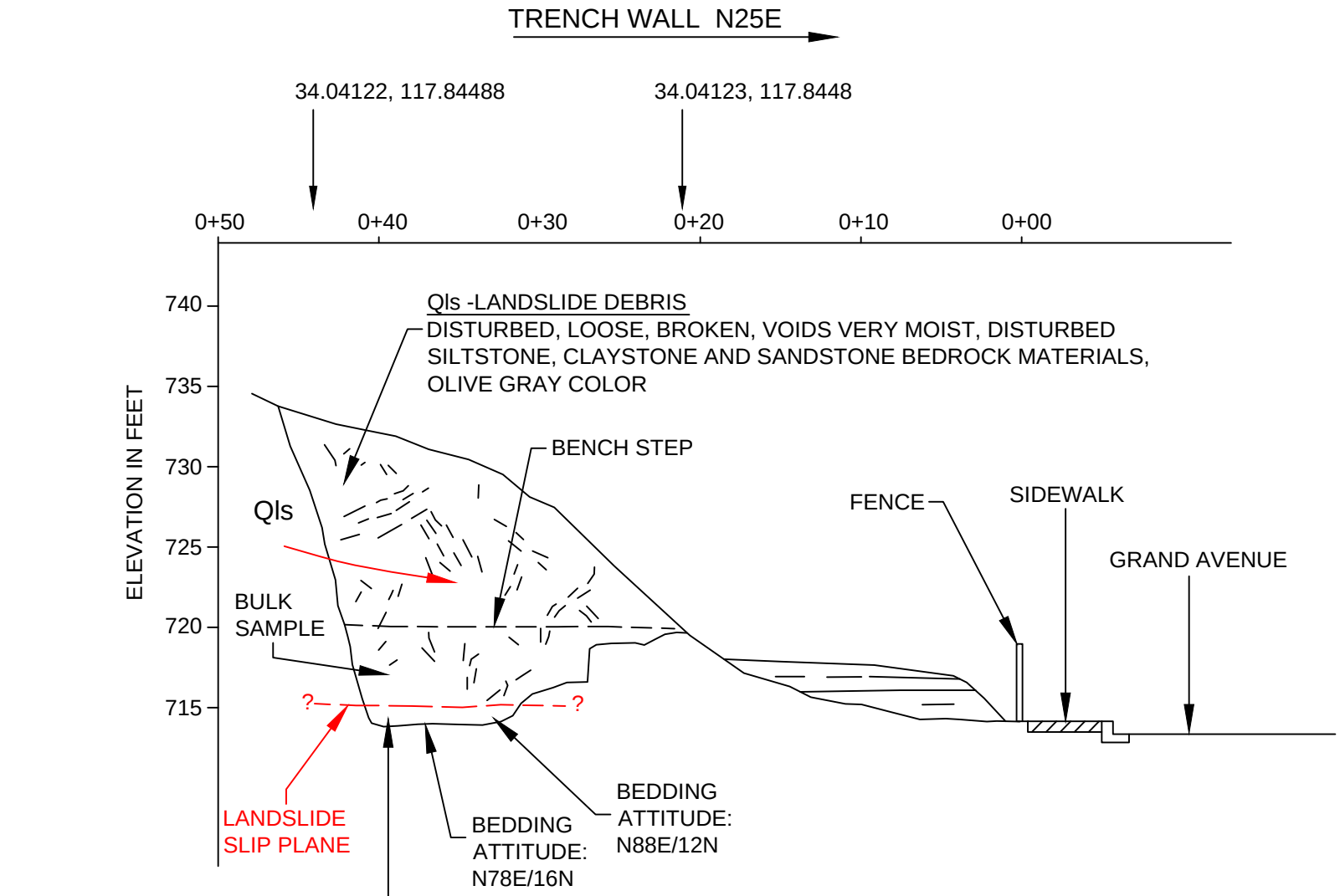
ROAD CUT LANDSLIDE TOE - TEST PIT NO. 2

Converse Consultants

MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. 1b



SCALE: 1"=10'

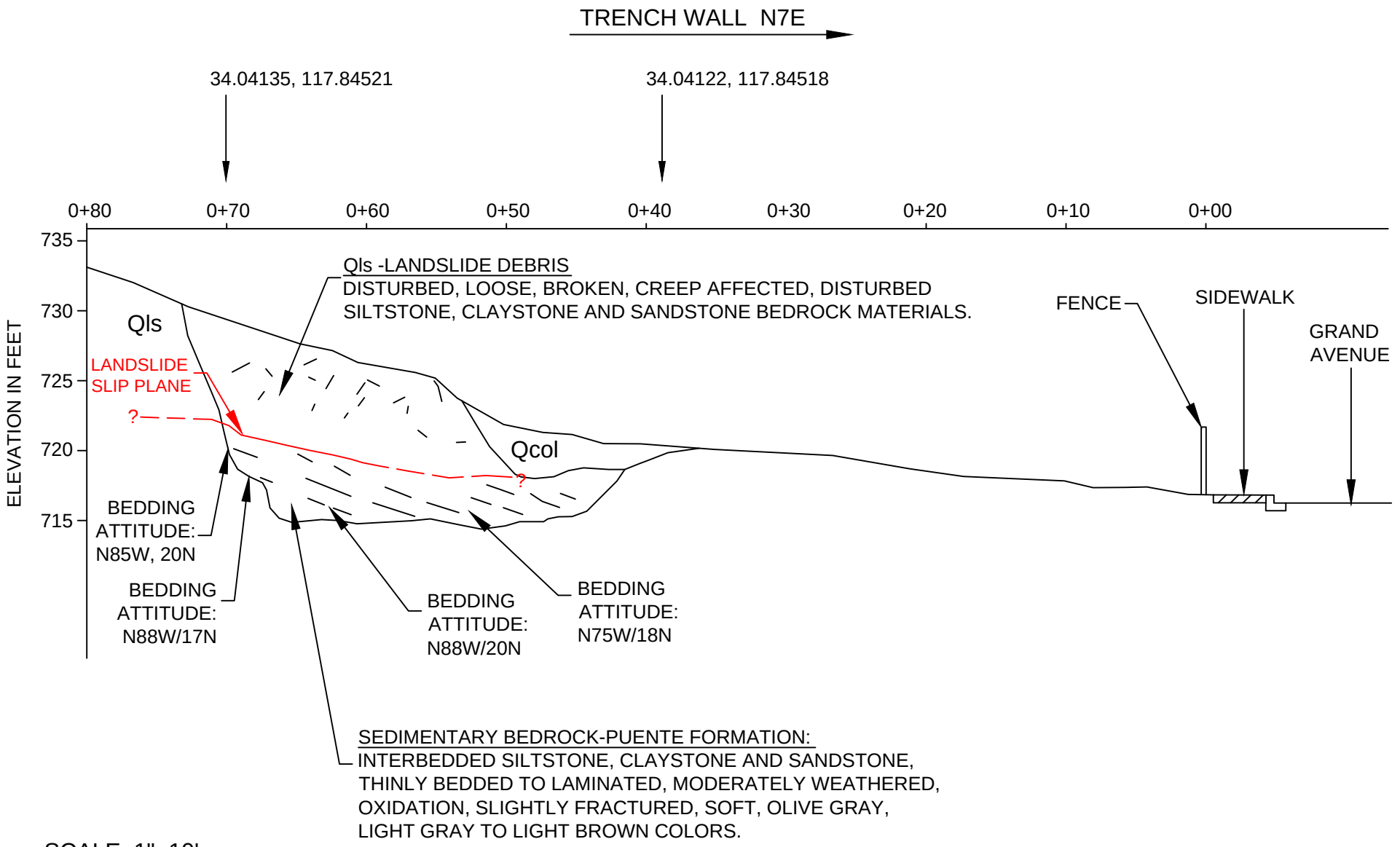
ROAD CUT LANDSLIDE TOE - TEST PIT NO. 3

Converse Consultants

MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. 1c



ROAD CUT LANDSLIDE TOE - TEST PIT NO. 4

Converse Consultants

MT. SAN ANTONIO COLLEGE
WEST PARCEL
WALNUT, CALIFORNIA

Project No. 13-31-339-01

Drawing No. 1d

BEST AND FINAL OFFER

PROPOSAL TO PROVIDE ASSESSMENT, DESIGN, INSTALLATION, AND OPERATION AND MAINTENANCE OF PHOTOVOLTAIC SYSTEM

RFQ/RFP No. 3005

MOUNT SAN ANTONIO COLLEGE

MT. SAC
Mt. San Antonio College

BORREGO SOLAR

Cameron Thorne, P.E.
Project Developer
Borrego Solar Systems, Inc.
(619) 961-4514
cthorne@borregosolar.com

BORREGO SOLAR

June 19, 2015

Teresa Patterson
Manager, Purchasing
Mt. San Antonio Community College – RFQ/RFP No. 3005
1100 North Grand Avenue
Walnut, CA 91786

Dear Teresa,

Per your request, I am pleased to share Borrego Solar's Best and Final Offer to assess, design, install and operate a 2.2 MW solar photovoltaic system to generate clean electricity at Mt. San Antonio Community College.

We understand and appreciate the College's intent to proceed with a 2.2 MW non-export configuration with the goal to transfer to the RES-BCT schedule after June 30 2017.

Our updated offering includes two options: A fixed tilt offering as well as a ground mounted single-axis tracking solution, both sized to 2.2 MW. We have provided separate layouts, pricing, and energy production estimates for both options. As requested by the College, these updated offerings exclude copper wiring or privacy slats. We have received and acknowledge receipt of both the District's request for a Best and Final Offer as well as Addendum 1 to this request.

Consistent with our previous offerings for this project, we continue to specify only the highest possible quality equipment: Premium high efficiency monocrystalline solar modules from LG and inverters from SMA. The LG modules specified for this project are some of the most efficient modules available in the world and are over 22% more efficient than standard modules. Additionally LG is one of the most bankable and stable module manufactures in the business. The SMA inverters specified for this project have a 97.8% CEC efficiency rating. SMA is not only the world's leading inverter manufacturer by market share, but also has the best reputation for quality in the industry.

Additionally, we continue to offer one the of industry's most highly regarded Operations and Maintenance programs with two washings per year, a rigorous preventive maintenance program and 24/7 web-based monitoring. Our confidence in our O&M offering enables Borrego Solar to offer one of the strongest performance guarantees in the industry. Our 35 year operating track record plus our consistent profitability means we have the demonstrated stability and longevity to stand behind our commitments.

Why Borrego Solar?
Borrego Solar offers the College several key value propositions that are unique in the industry:

- **The highest quality products:** LG modules, SMA inverters, and racking from TerraSmart and Array Technologies. These products come with some of the strongest warranties in the industry.

- **The most licensed solar firm in the state of California:** Borrego has over 9 different licenses including A (General Engineering), B (General Building), C-10 (Electrical), C-46 (Solar) and others.

- **Demonstrated Non-Export and RES-BCT interconnection experience:** We have successfully designed, constructed, and interconnected RES-BCT systems and we are actively constructing and interconnecting an on-site 3.2 MW non-export solar system for the San Diego International Airport.

- **A full team of licensed Professional Engineers:** Borrego Solar's in-house engineering staff includes a full team of licensed professional civil and electrical engineers to ensure the highest standards of quality for the College.

- **An industry-leading O&M program backed by the strongest performance guarantee in the industry:** In 2014 Borrego Solar systems produced at 102% of expected energy production.

We believe that for all of these reasons Borrego Solar is the College's lowest risk partner for this project. Additionally, we understand the District's need to meet key CSI milestones that require a successfully executed contract. Borrego Solar's executive team is standing by to personally manage a smooth and fast execution of this contract.

This project has the highest priority in our company and full support and attention at the executive level. Please do not hesitate to contact us if we can answer any further questions.

Sincerely,

Cameron Thorne, P.E.
Project Developer
Borrego Solar Systems, Inc.
(619) 961-4523
cthorne@borregosolar.com

Mike Hall
Chief Executive Officer
Borrego Solar Systems, Inc.

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PART VI Technical Proposal.....9
Revised Preliminary Layout of the System.....10

Revised Attachments:

J. Revised PVSyst Output Reports.....14

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PART V Pricing Proposal and Production Form

Attachment B.2 – Pricing Proposal and Production Form (Bid Sheet)

Bid Sheet

Proposer:	Borrego Solar Systems, Inc.

Site:	**Solar Site**
System Information:	
System Size (kWdc)	2,196.81
System Output (kWh)*	4,129,686

*Totaled from 8760 Generation Worksheet

Ownership System Pricing	
Capital Costs:	
Project Management & Administration	$ 53,109.00
All Design	$ 61,462.00
PV Modules	$ 2,405,636.00
Inverters	$ 314,509.00
Electrical Switchgear and Metering	$ 160,414.00
All Structures	$ 518,884.00
All Construction	$ 1,354,926.00
Balance of System Components (e.g., Wiring, Conduit, Junction Boxes, Fuses, Fencing, Signage, etc.)	$ 308,080.00
Monitoring System & Weather Station	$ 20,146.00
Testing (Start-up, Acceptance, Inspections, etc.)	$ 19,518.00
Other (e.g., Training, Documentation, Permits, Warranties, etc.)	$ 150,496.00
Subtotal Capital Costs	**$ 5,367,180.00**
Operations and Maintenance Costs:	
Year One Operation & Maintenance Cost	$ 31,668.02
O&M Escalator	2.00%
Performance Guarantee Costs:	
20 Year Performance Guarantee Costs:	$ -

Attachment B.2 – Pricing Proposal and Production Form (Bid Sheet)

Bid Sheet

Proposer:	Borrego Solar Systems, Inc.

Site:	**Solar Site**
System Information:	
System Size (kWdc)	2,196.81
System Output (kWh)*	4,622,355

*Totaled from 8760 Generation Worksheet

Ownership System Pricing	
Capital Costs:	
Project Management & Administration	$ 52,791.00
All Design	$ 96,045.00
PV Modules	$ 2,391,226.00
Inverters	$ 312,625.00
Electrical Switchgear and Metering	$ 159,453.00
All Structures	$ 1,016,350.00
All Construction	$ 1,504,775.00
Balance of System Components (e.g., Wiring, Conduit, Junction Boxes, Fuses, Fencing, Signage, etc.)	$ 306,235.00
Monitoring System & Weather Station	$ 32,009.00
Testing (Start-up, Acceptance, Inspections, etc.)	$ 19,400.00
Other (e.g., Training, Documentation, Permits, Warranties, etc.)	$ 167,056.00
Subtotal Capital Costs	**$ 6,057,965.00**
Operations and Maintenance Costs:	
Year One Operation & Maintenance Cost	$ 34,841.68
O&M Escalator	2.00%
Performance Guarantee Costs:	
20 Year Performance Guarantee Costs:	$ -

BORREGO SOLAR

PART VI Technical Proposal

Revised Proposed System Overview:

Proposed DC System Size & Energy Production			
Offering Type	Capacity (kWp DC)	1st Year Expected AC output (kWh)	25 Year Expected AC output (kWh)
2.2 MW Fixed Tilt System	2,203.740	4,129,686	97,278,671
2.2 MW Tracking System	2,196.810	4,622,355	108,883,975

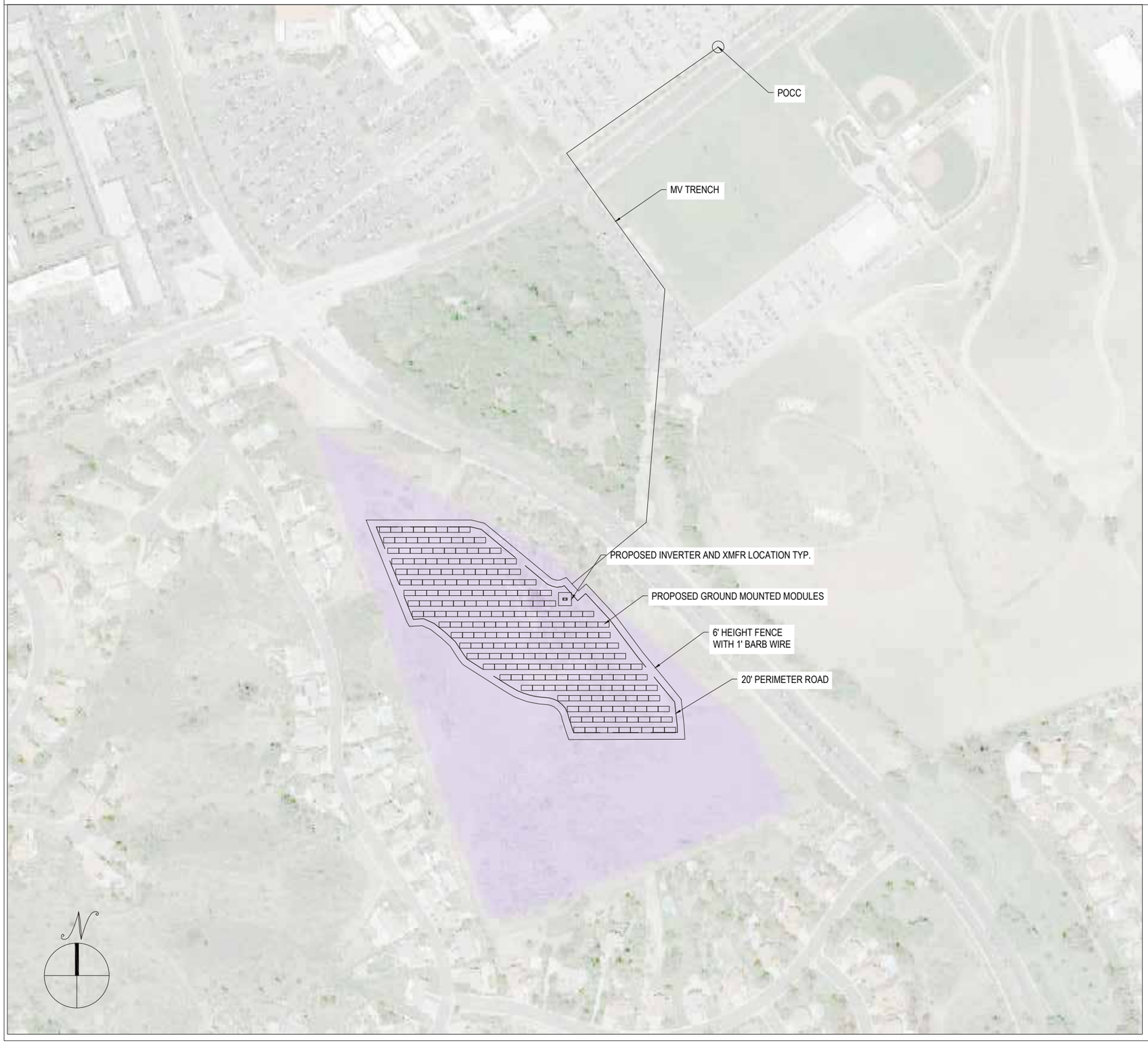
Revised Proposed Equipment List:

Equipment & Warranty Specifications			
Equipment Type	Qty	Description	Warranty
LG 315 W modules (Fixed Tilt Option)	6996	LG315N1C-G4 Premium Efficiency, Monocrystalline Solar Module.	10 Year Workmanship, 25 Year Power Output
LG 315 W modules (Tracking Option)	6974	LG315N1C-G4 Premium Efficiency, Monocrystalline Solar Module.	10 Year Workmanship, 25 Year Power Output
SMA 2200 kW Central Inverter	1	SMA SC2200-US-10 1000V Central Inverter	10 Year
DuraTrack HZ Single Axis Tracking System Solution (Tracking Option)	--	DuraTrack HZ	5 Year
TerraSmart TerraFarm Racking Solution (Fixed Tilt Option)	--	Fixed Tilt Racking Solution	1 Year Workmanship, 20 Year Ground Screw Warranty, 20 Year Product Warranty
AlsoEnergy Monitoring System	1	Gateway, Logger, & Monitoring Package	5 Year Warranty on all AlsoEnergy Equipment

Revised Preliminary Layout of the System:

Revised preliminary layouts of both options can be found on the following pages.

MT. SAN ANTONIO COLLEGE - LG 315 - FIXED TILT - EXPANDED - PV PROJECT



PROJECT INFORMATION

PROPOSAL SPECIFICATION

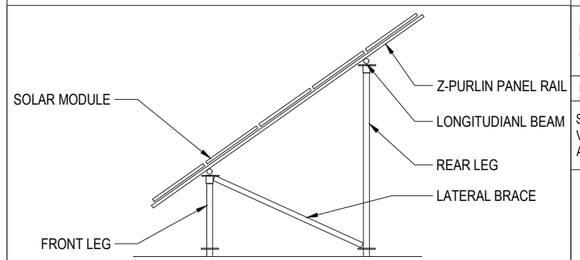
SYSTEM SIZE DC (kW)	2,203.740		
SYSTEM SIZE AC (kW)	2200		
DC TO AC RATIO	1.00		
MODULE INFORMATION	(6,996) LG315		
STRING INFORMATION	(318) PARALLELED STRINGS OF (22)		
INVERTER INFORMATION	(1) SMA 2200 - US		
TRANSFORMER INFORMATION	(1) 2000 KVA		
INTERCONNECTION VOLTAGE	12 kV		
RACKING DETAILS	GROUND MOUNTED TERRASMART		
ARRAY PITCH (METER)	9.40	SITE LATITUDE	34.02 N

ARRAY INFORMATION

ARRAY NO.	AZIMUTH	TILT ANGLE	NO. OF MODULES	NO. OF STRINGS	KW DC	INV - # CONNECTED
ARY-1	180°	20°	6,996	318	2,203.740	(1) 2200
TOTAL	-	-	6,996	318	2,203.740	-

LEGEND

GROUPING OF 30 MODULES
MOUNTED IN LANDSCAPE (5x6)



TERRASMART ELEVATION

THIS DOCUMENT IS PROVIDED BY BORREGO SOLAR SYSTEMS INC. TO FACILITATE THE SALE AND INSTALLATION OF A SOLAR POWER SYSTEM FROM BORREGO SOLAR SYSTEMS. THIS IS A PRELIMINARY LAYOUT BASED ON AERIAL IMAGERY. THE ACTUAL PARAMETERS OF THE SYSTEM MAY VARY BASED ON A SITE SPECIFIC SURVEY AND THE COMPLETION OF DUE DILIGENCE EFFORTS. THESE DRAWINGS ARE NOT FOR CONSTRUCTION. REPRODUCTION, RELEASE OR UTILIZATION FOR ANY OTHER PURPOSE, WITHOUT PRIOR WRITTEN CONSENT IS STRICTLY PROHIBITED.

BORREGO SOLAR

5005 TEXAS STREET, SUITE 400
SAN DIEGO, CA 92108
PHONE: (888) 898-6273
FAX: (888) 843-6778
WWW.BORREGOSOLAR.COM

MT. SAN ANTONIO COLLEGE
1100 N GRAND AVE
WALNUT, CA 91789

PROJECT NUMBER:
P-SD-007307

REV	DATE	DRAWN	CHECKED	RELEASE LEVEL
1	04/30/15	RD	JH	PROPOSAL LAYOUT
2	05/04/15	EH	JH	PROPOSAL REVISION 1
3	05/05/15	RD	JH	PROPOSAL REVISION 2
4	05/20/15	RD	JH	PROPOSAL REVISION 3
5	05/28/15	RD	JH	PROPOSAL REVISION 4
6	05/29/15	TAY	JH	PROPOSAL REVISION 5
7	06/17/2015	DM	DM	PROPOSAL REVISION 6

SCALE: 1"=300'
VALID ONLY WHEN PLOTTED
ANSI FULL BLEED B 11" X 17"

PV-1

L1 PROPOSAL LAYOUT

MT. SAN ANTONIO COLLEGE - PV PROJECT

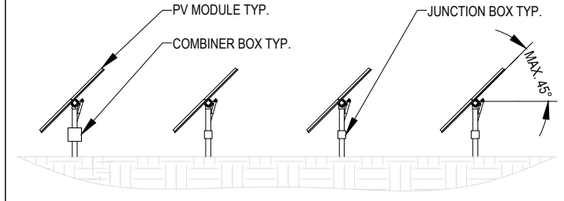
PROJECT INFORMATION

PROPOSAL SPECIFICATION

SYSTEM SIZE DC (kW)	2,196.810		
SYSTEM SIZE AC (kW)	2200		
DC TO AC RATIO	1.00		
MODULE INFORMATION	(6,974) LG 315		
STRING INFORMATION	(317) PARALLELED STRINGS OF (22)		
INVERTER INFORMATION	(1) SMA 2200-US		
TRANSFORMER INFORMATION	(1) 2000 kVA		
INTERCONNECTION VOLTAGE	12 kV		
RACKING DETAILS	GROUND MOUNTED TRACKER		
GROUND COVER RATIO	50%	SITE LATITUDE	41.07 N

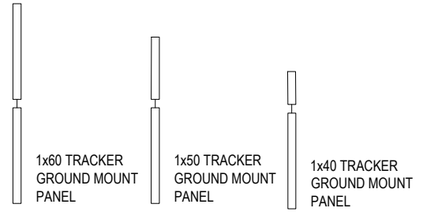
ARRAY INFORMATION

ARRAY NO.	AZIMUTH	TILT ANGLE	NO. OF MODULES	NO. OF STRINGS	KW DC	INV - # CONNECTED
ARY-1	180°	±45°	6,974	317	2,196.810	(1) 2200
TOTAL	-	-	6,974	317	2,196.810	-



TRACKER ELEVATION

LEGEND



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BORREGO SOLAR

5005 TEXAS STREET, SUITE 400
SAN DIEGO, CA 92108
PHONE: (888) 898-6273
FAX: (888) 843-6778
WWW.BORREGOSOLAR.COM

MT. SAN ANTONIO COLLEGE
1100 N GRAND AVE
WALNUT, CA 91789

PROJECT NUMBER:
P-SD-007307

REV	DATE	DRAWN	CHECKED	RELEASE LEVEL
1	04/24/15	RD	JH	PROPOSAL LAYOUT
2	06/18/15	EH	JH	PROPOSAL REVISION 1
3	06/19/15	EH	JH	PROPOSAL REVISION 2

SCALE: 1"=300'
VALID ONLY WHEN PLOTTED
ANSI FULL BLEED B 11" X 17"

PV-1

L1 PROPOSAL LAYOUT

BORREGO SOLAR

Revised Attachments:

J. Revised PVSyst Output Reports

Grid-Connected System: Simulation parameters

Project : **15036 - Mt San Antonio College**

Geographical Site	**Mt SAC**		**Country**	**United States**
Situation	Latitude	34.0°N	Longitude	117.9°W
Time defined as	Legal Time	Time zone UT-8	Altitude	236 m
	Albedo	0.20		
Meteo data :	117853405_9809, NREL SPP			

Simulation variant : **Fixed - T20 A0 - 2.2 MW**

Simulation date 19/06/15 16h02

Simulation parameters

Collector Plane Orientation	Tilt	20°	Azimuth	0°
20 Sheds	Pitch	9.40 m	Collector width	5.10 m
Inactive band	Top	0.00 m	Bottom	0.00 m
Shading limit angle	Gamma	20.74 °	Occupation Ratio	54.3 %
Shadings electrical effect	Cell size	15.6cm	Strings in width	5
Models used	Transposition	Perez	Diffuse	Measured
Horizon	Average Height	3.8°		
Near Shadings	Mutual shadings of sheds	Electrical effect		

PV Array Characteristics

PV module	Si-mono	Model	**LG315N1C-G4 BSS01**	
		Manufacturer	LG Electronics	
Number of PV modules		In series	22 modules	In parallel 318 strings
Total number of PV modules		Nb. modules	6996	Unit Nom. Power 315 Wp
Array global power		Nominal (STC)	**2204 kWp**	At operating cond. 1986 kWp (50°C)
Array operating characteristics (50°C)		U mpp	653 V	I mpp 3040 A
Total area		Module area	**11473 m²**	Cell area 10217 m²
Inverter		Model	**!SMA SC-2MVA w110 v2**	
		Manufacturer	SMA	
Characteristics		Operating Voltage	570-1000 V	Unit Nom. Power 2200 kW AC

PV Array loss factors

Thermal Loss factor		Uc (const)	25.0 W/m²K	Uv (wind) 1.2 W/m²K / m/s
=> Nominal Oper. Coll. Temp. (G=800 W/m², Tamb=20°C, Wind=1 m/s.)				NOCT 47 °C
Wiring Ohmic Loss		Global array res.	3.6 mOhm	Loss Fraction 1.5 % at STC

Array Soiling Losses

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
0.9%	0.9%	0.9%	0.9%	1.7%	0.9%	1.7%	0.9%	1.7%	2.6%	0.9%	0.9%

Module Quality Loss			Loss Fraction	-0.1 %
Module Mismatch Losses			Loss Fraction	0.5 % at MPP
Incidence effect, ASHRAE parametrization	IAM =	1 - bo (1/cos i - 1)	bo Parameter	0.04

System loss factors

AC wire loss inverter to transfo	Inverter voltage	360 Vac tri		
	Wires	69 m 3x5000 mm²	Loss Fraction	0.5 % at STC
External transformer	Iron loss (24H connection)	2150 W	Loss Fraction	0.1 % at STC
	Resistive/Inductive losses	0.6 mOhm	Loss Fraction	1.0 % at STC

Grid-Connected System: Simulation parameters (continued)

User's needs : Unlimited load (grid)

Grid-Connected System: Horizon definition

Project : **15036 - Mt San Antonio College**

Simulation variant : **Fixed - T20 A0 - 2.2 MW**

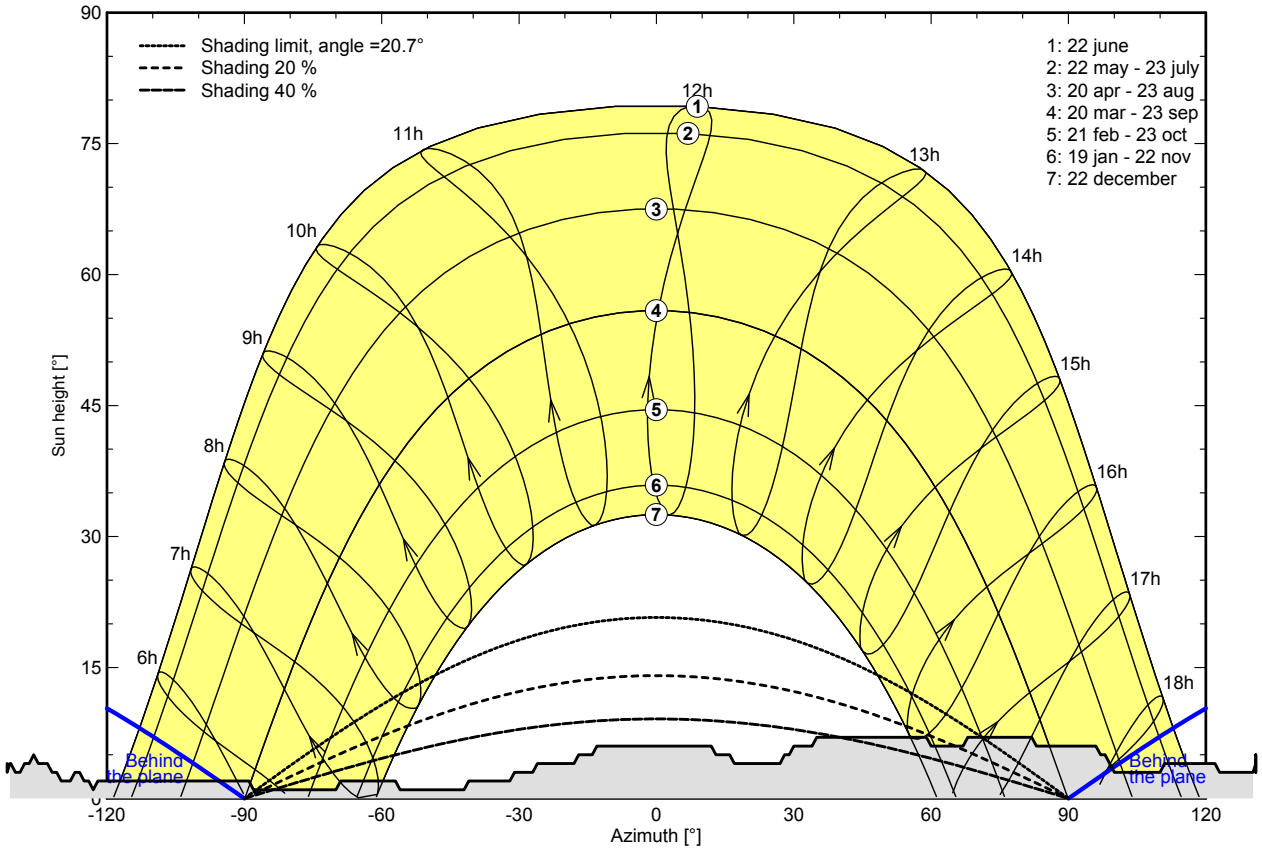
Main system parameters	System type	**Grid-Connected**			
Horizon	Average Height	3.8°			
PV Field Orientation	Sheds disposition, tilt	20°	azimuth	0°	
PV modules	Model	LG315N1C-G4 BSS01	Pnom	315 Wp	
PV Array	Nb. of modules	6996	Pnom total	**2204 kWp**	
Inverter	Model	!SMA SC-2MVA w110 v2	Pnom	2200 kW ac	
User's needs	Unlimited load (grid)				

Horizon

Average Height	3.8°	Diffuse Factor	0.98
Albedo Factor	100 %	Albedo Fraction	0.77

Height [°]	4.0	4.0	3.0	3.0	4.0	4.0	3.0	3.0	4.0	4.0	5.0	4.0	4.0
Azimuth [°]	-180	-164	-163	-145	-144	-141	-140	-139	-138	-137	-136	-135	-133
Height [°]	3.0	3.0	2.0	2.0	3.0	3.0	2.0	2.0	1.0	2.0	2.0	1.0	1.0
Azimuth [°]	-132	-131	-130	-128	-127	-126	-125	-124	-123	-122	-89	-88	-70
Height [°]	2.0	2.0	1.0	1.0	2.0	2.0	3.0	3.0	4.0	4.0	5.0	5.0	6.0
Azimuth [°]	-69	-57	-56	-42	-41	-32	-31	-27	-26	-18	-17	-14	-13
Height [°]	6.0	5.0	5.0	4.0	4.0	5.0	5.0	6.0	6.0	7.0	7.0	6.0	6.0
Azimuth [°]	12	13	16	17	27	28	29	30	34	35	59	60	67
Height [°]	7.0	7.0	6.0	6.0	5.0	5.0	3.0	3.0	4.0	4.0	3.0	3.0	4.0
Azimuth [°]	68	82	83	96	97	98	100	110	111	122	123	148	149
Height [°]	3.0	3.0	4.0	4.0	5.0	5.0	4.0	4.0					
Azimuth [°]	150	156	157	161	162	169	170	180					

Meteonorm horizon for, Lat. = 34.040°, Long. = -117.845°



Grid-Connected System: Main results

Project : **15036 - Mt San Antonio College**

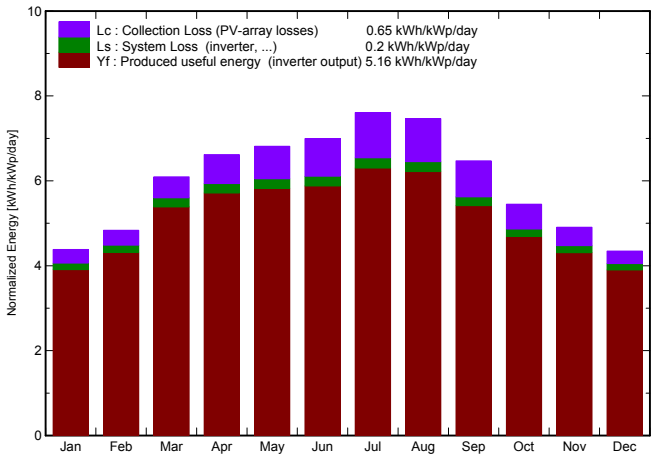
Simulation variant : **Fixed - T20 A0 - 2.2 MW**

Main system parameters	System type	**Grid-Connected**		
Horizon	Average Height	3.8°		
PV Field Orientation	Sheds disposition, tilt	20°	azimuth	0°
PV modules	Model	LG315N1C-G4 BSS01	Pnom	315 Wp
PV Array	Nb. of modules	6996	Pnom total	**2204 kWp**
Inverter	Model	!SMA SC-2MVA w110 v2	Pnom	2200 kW ac
User's needs	Unlimited load (grid)			

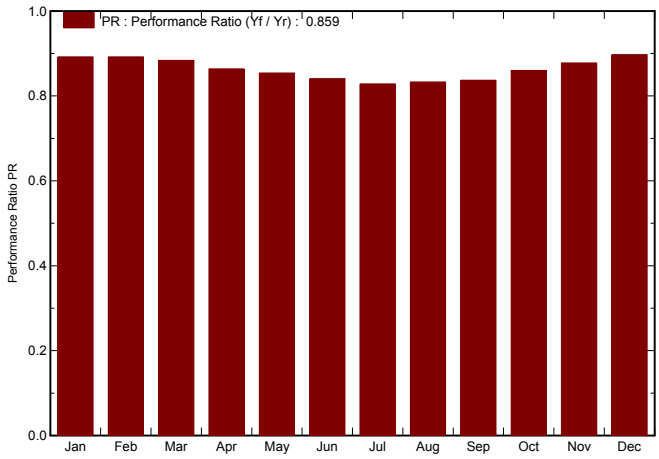
Main simulation results

System Production	**Produced Energy**	**4150 MWh/year**	Specific prod.	1883 kWh/kWp/year
	Performance Ratio PR	85.9 %		

Normalized productions (per installed kWp): Nominal power 2204 kWp



Performance Ratio PR



Fixed - T20 A0 - 2.2 MW

Balances and main results

	GlobHor kWh/m²	T Amb °C	GlobInc kWh/m²	GlobEff kWh/m²	EArray MWh	E_Grid MWh	EffArrR %	EffSysR %
January	96.8	10.33	135.9	129.0	277.5	267.1	17.80	17.13
February	106.0	8.88	135.4	129.8	276.7	266.2	17.81	17.14
March	162.6	10.49	188.9	181.6	382.5	367.9	17.65	16.98
April	186.4	14.23	198.5	191.3	392.6	377.8	17.24	16.59
May	211.4	15.48	211.3	203.2	413.2	397.7	17.04	16.40
June	215.5	20.12	209.8	201.7	403.8	388.8	16.77	16.15
July	239.3	22.96	235.8	227.7	447.0	430.5	16.52	15.91
August	221.8	23.64	231.5	223.9	440.9	424.9	16.60	16.00
September	172.7	21.05	194.2	187.2	371.8	358.2	16.69	16.08
October	136.2	14.48	169.0	162.3	332.5	320.2	17.15	16.52
November	106.7	13.71	147.2	140.5	295.8	284.7	17.51	16.86
December	92.1	7.51	134.7	126.9	276.9	266.4	17.91	17.23
Year	1947.4	15.27	2192.2	2105.1	4311.0	4150.4	17.14	16.50

Legends:

GlobHor	Horizontal global irradiation	EArray	Effective energy at the output of the array
T Amb	Ambient Temperature	E_Grid	Energy injected into grid
GlobInc	Global incident in coll. plane	EffArrR	Effic. Eout array / rough area
GlobEff	Effective Global, corr. for IAM and shadings	EffSysR	Effic. Eout system / rough area

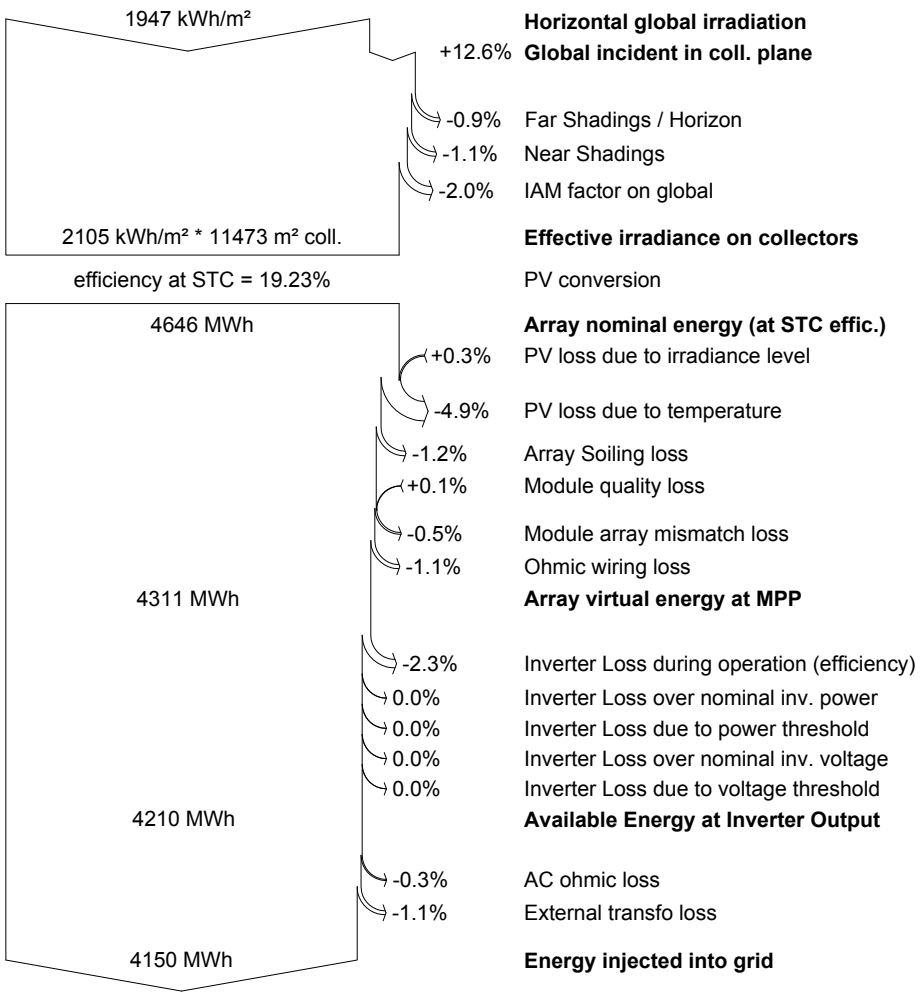
Grid-Connected System: Loss diagram

Project : **15036 - Mt San Antonio College**

Simulation variant : **Fixed - T20 A0 - 2.2 MW**

Main system parameters	System type	**Grid-Connected**		
Horizon	Average Height	3.8°		
PV Field Orientation	Sheds disposition, tilt	20°	azimuth	0°
PV modules	Model	LG315N1C-G4 BSS01	Pnom	315 Wp
PV Array	Nb. of modules	6996	Pnom total	**2204 kWp**
Inverter	Model	!SMA SC-2MVA w110 v2	Pnom	2200 kW ac
User's needs	Unlimited load (grid)			

Loss diagram over the whole year



Grid-Connected System: Simulation parameters

Project : **15036 - Mt San Antonio College**

Geographical Site	**Mt SAC**		**Country**	**United States**
Situation	Latitude	34.0°N	Longitude	117.9°W
Time defined as	Legal Time	Time zone UT-8	Altitude	236 m
	Albedo	0.20		

Meteo data : 117853405_9809, NREL SPP

Simulation variant : **Tracker - T0 A0 - 2.2 MW**

Simulation date 19/06/15 15h49

Simulation parameters

Tracking plane, tilted Axis	Axis Tilt	0°	Axis Azimuth	0°
Rotation Limitations	Minimum Phi	-45°	Maximum Phi	45°
Backtracking strategy	Tracker Spacing	3.28 m	Collector width	1.64 m
Inactive band	Left	0.00 m	Right	0.00 m
Models used	Transposition	Perez	Diffuse	Measured
Horizon	Average Height	3.8°		
Near Shadings	No Shadings			

PV Array Characteristics

PV module	Si-mono	Model	**LG315N1C-G4 BSS01**	
		Manufacturer	LG Electronics	
Number of PV modules		In series	22 modules	In parallel 317 strings
Total number of PV modules		Nb. modules	6974	Unit Nom. Power 315 Wp
Array global power		Nominal (STC)	**2197 kWp**	At operating cond. 1980 kWp (50°C)
Array operating characteristics (50°C)		U mpp	653 V	I mpp 3031 A
Total area		Module area	**11437 m²**	Cell area 10185 m²
Inverter		Model	**!SMA SC-2MVA w110 v2**	
		Manufacturer	SMA	
Characteristics		Operating Voltage	570-1000 V	Unit Nom. Power 2200 kW AC

PV Array loss factors

Thermal Loss factor		Uc (const)	25.0 W/m²K	Uv (wind) 1.2 W/m²K / m/s
=> Nominal Oper. Coll. Temp. (G=800 W/m², Tamb=20°C, Wind=1 m/s.)				NOCT 47 °C
Wiring Ohmic Loss		Global array res.	3.6 mOhm	Loss Fraction 1.5 % at STC

Array Soiling Losses

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
0.9%	0.9%	0.9%	0.9%	1.7%	0.9%	1.7%	0.9%	1.7%	2.6%	0.9%	0.9%

Module Quality Loss		Loss Fraction	-0.1 %
Module Mismatch Losses		Loss Fraction	0.5 % at MPP
Incidence effect, ASHRAE parametrization	IAM =	1 - bo (1/cos i - 1)	bo Parameter 0.04

System loss factors

AC wire loss inverter to transfo	Inverter voltage	360 Vac tri		
	Wires	34 m 3x2500 mm²	Loss Fraction	0.5 % at STC
External transformer	Iron loss (24H connection)	2144 W	Loss Fraction	0.1 % at STC
	Resistive/Inductive losses	0.6 mOhm	Loss Fraction	1.0 % at STC

User's needs : Unlimited load (grid)

Grid-Connected System: Horizon definition

Project : **15036 - Mt San Antonio College**

Simulation variant : **Tracker - T0 A0 - 2.2 MW**

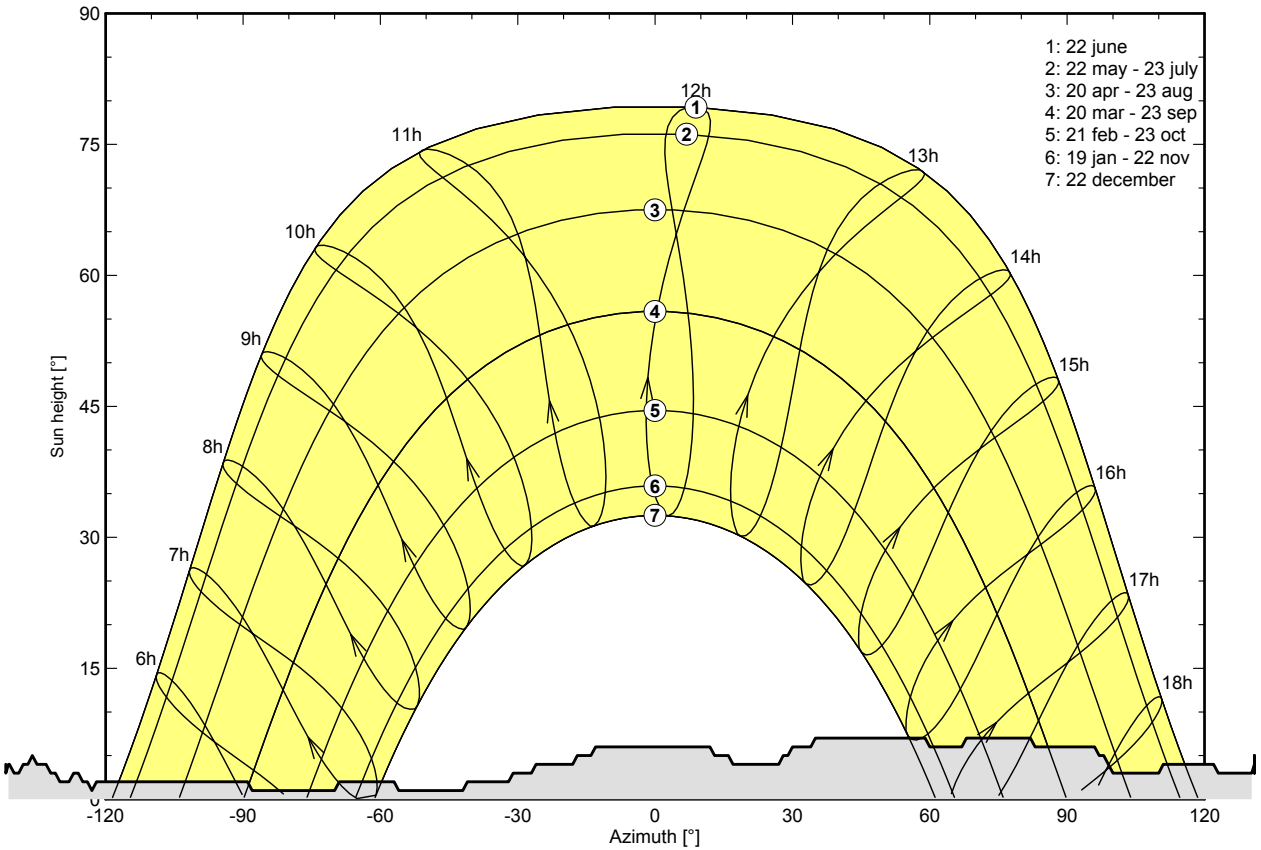
Main system parameters	System type	**Grid-Connected**			
Horizon	Average Height	3.8°			
PV Field Orientation	tracking, tilted axis, Axis Tilt	0°	Axis Azimuth	0°	
PV modules	Model	LG315N1C-G4 BSS01	Pnom	315 Wp	
PV Array	Nb. of modules	6974	Pnom total	**2197 kWp**	
Inverter	Model	!SMA SC-2MVA w110 v2	Pnom	2200 kW ac	
User's needs	Unlimited load (grid)				

Horizon

Average Height	3.8°	Diffuse Factor	1.00
Albedo Factor	100 %	Albedo Fraction	0.00

Height [°]	4.0	4.0	3.0	3.0	4.0	4.0	3.0	3.0	4.0	4.0	5.0	4.0	4.0
Azimuth [°]	-180	-164	-163	-145	-144	-141	-140	-139	-138	-137	-136	-135	-133
Height [°]	3.0	3.0	2.0	2.0	3.0	3.0	2.0	2.0	1.0	2.0	2.0	1.0	1.0
Azimuth [°]	-132	-131	-130	-128	-127	-126	-125	-124	-123	-122	-89	-88	-70
Height [°]	2.0	2.0	1.0	1.0	2.0	2.0	3.0	3.0	4.0	4.0	5.0	5.0	6.0
Azimuth [°]	-69	-57	-56	-42	-41	-32	-31	-27	-26	-18	-17	-14	-13
Height [°]	6.0	5.0	5.0	4.0	4.0	5.0	5.0	6.0	6.0	7.0	7.0	6.0	6.0
Azimuth [°]	12	13	16	17	27	28	29	30	34	35	59	60	67
Height [°]	7.0	7.0	6.0	6.0	5.0	5.0	3.0	3.0	4.0	4.0	3.0	3.0	4.0
Azimuth [°]	68	82	83	96	97	98	100	110	111	122	123	148	149
Height [°]	3.0	3.0	4.0	4.0	5.0	5.0	4.0	4.0					
Azimuth [°]	150	156	157	161	162	169	170	180					

Meteonorm horizon for, Lat. = 34.040°, Long. = -117.845°



Grid-Connected System: Main results

Project : **15036 - Mt San Antonio College**

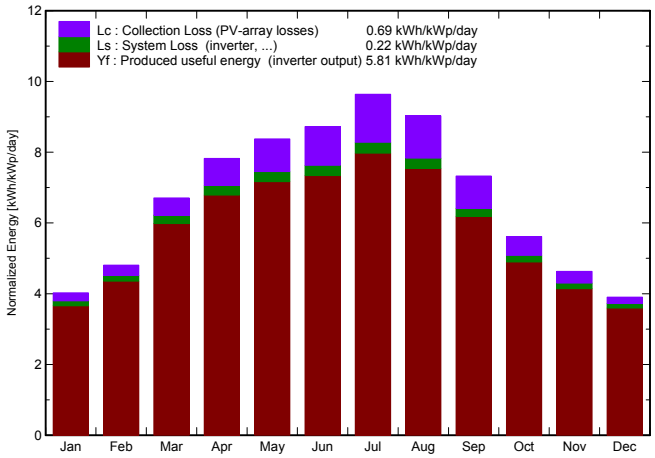
Simulation variant : **Tracker - T0 A0 - 2.2 MW**

Main system parameters		System type	**Grid-Connected**		
Horizon		Average Height	3.8°		
PV Field Orientation		tracking, tilted axis, Axis Tilt	0°	Axis Azimuth	0°
PV modules		Model	LG315N1C-G4 BSS01	Pnom	315 Wp
PV Array		Nb. of modules	6974	Pnom total	**2197 kWp**
Inverter		Model	!SMA SC-2MVA w110 v2	Pnom	2200 kW ac
User's needs		Unlimited load (grid)			

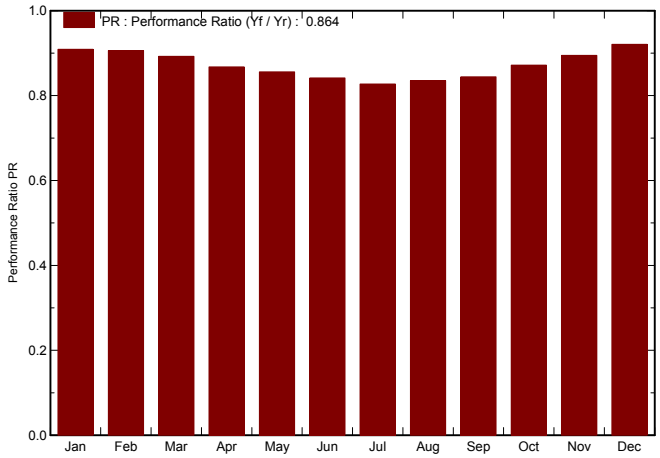
Main simulation results

System Production	**Produced Energy**	**4660 MWh/year**	Specific prod.	2121 kWh/kWp/year
	Performance Ratio PR	86.4 %		

Normalized productions (per installed kWp): Nominal power 2197 kWp



Performance Ratio PR



Tracker - T0 A0 - 2.2 MW

Balances and main results

	GlobHor kWh/m²	T Amb °C	GlobInc kWh/m²	GlobEff kWh/m²	EArray MWh	E_Grid MWh	EffArrR %	EffSysR %
January	96.8	10.33	124.8	119.3	258.6	249.2	18.12	17.46
February	106.0	8.88	134.6	130.0	278.1	267.9	18.07	17.41
March	162.6	10.49	207.9	202.1	423.7	407.6	17.82	17.14
April	186.4	14.23	234.8	229.5	465.2	447.5	17.32	16.67
May	211.4	15.48	259.7	253.9	507.7	488.2	17.09	16.44
June	215.5	20.12	261.7	256.1	502.7	483.8	16.80	16.16
July	239.3	22.96	298.7	292.8	563.9	542.9	16.50	15.89
August	221.8	23.64	279.9	274.6	533.4	513.6	16.66	16.04
September	172.7	21.05	219.8	214.4	423.0	407.6	16.82	16.21
October	136.2	14.48	174.1	168.7	346.1	333.6	17.38	16.75
November	106.7	13.71	138.9	133.6	283.3	273.0	17.83	17.18
December	92.1	7.51	121.0	115.6	254.0	244.7	18.36	17.69
Year	1947.4	15.27	2455.9	2390.7	4839.9	4659.6	17.23	16.59

Legends:

GlobHor	Horizontal global irradiation	EArray	Effective energy at the output of the array
T Amb	Ambient Temperature	E_Grid	Energy injected into grid
GlobInc	Global incident in coll. plane	EffArrR	Effic. Eout array / rough area
GlobEff	Effective Global, corr. for IAM and shadings	EffSysR	Effic. Eout system / rough area

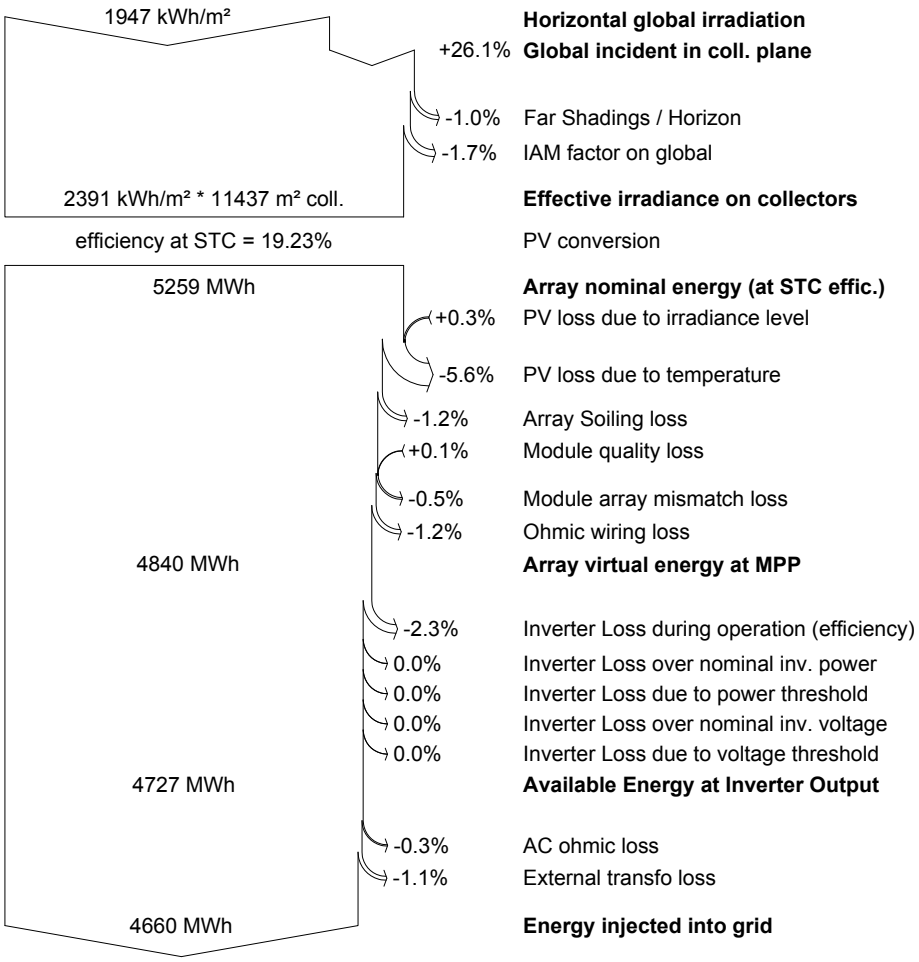
Grid-Connected System: Loss diagram

Project : **15036 - Mt San Antonio College**

Simulation variant : **Tracker - T0 A0 - 2.2 MW**

Main system parameters	System type	**Grid-Connected**			
Horizon	Average Height	3.8°			
PV Field Orientation	tracking, tilted axis, Axis Tilt	0°	Axis Azimuth	0°	
PV modules	Model	LG315N1C-G4 BSS01	Pnom	315 Wp	
PV Array	Nb. of modules	6974	Pnom total	**2197 kWp**	
Inverter	Model	!SMA SC-2MVA w110 v2	Pnom	2200 kW ac	
User's needs	Unlimited load (grid)				

Loss diagram over the whole year



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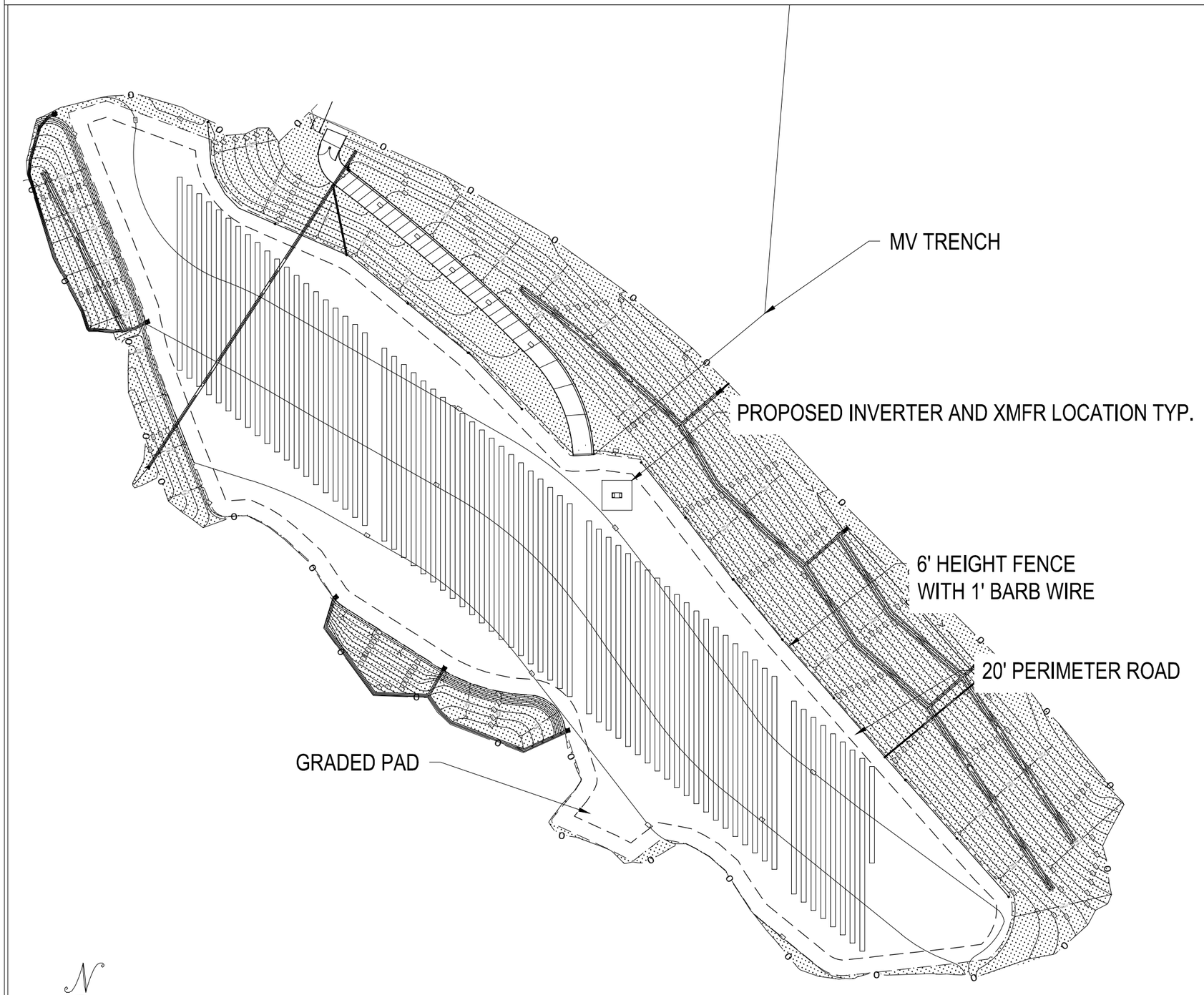
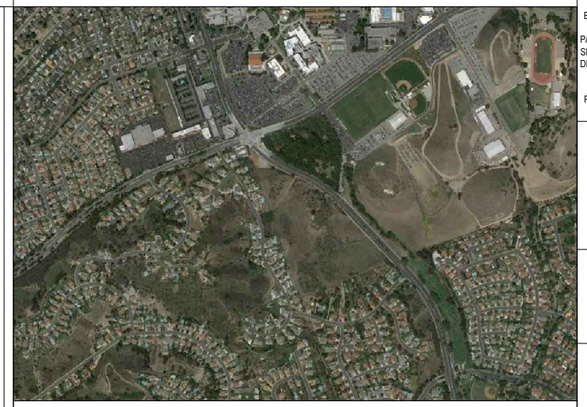
MT. SAN ANTONIO COLLEGE - SINGLE AXIS TRACKER - PV PROJECT



PROJECT INFORMATION



PROPOSAL SPECIFICATION

SYSTEM SIZE DC (kW)	1,972.800		
SYSTEM SIZE AC (kW)	1650		
DC TO AC RATIO	1.20		
MODULE INFORMATION	(4,932) LG400		
STRING INFORMATION	(274) PARALLELED STRINGS OF (18)		
INVERTER INFORMATION	(25) SG66KU-M		
TRANSFORMER INFORMATION	(1) 2000 KVA		
INTERCONNECTION VOLTAGE	12 kV		
RACKING DETAILS	SINGLE AXIS TRACKER		
GCR	50	SITE LATITUDE	34.02 N

ARRAY INFORMATION

ARRAY NO.	AZIMUTH	TILT ANGLE	NO. OF MODULES	NO. OF STRINGS	KW DC	INV - # CONNECTED
ARY-1	180°	0°	4,932	274	1,972.800	(25) SG66
TOTAL	-	-	4,932	274	1,972.800	-

LEGEND

GROUPING OF 72 MODULES MOUNTED IN PORTRAIT

GROUPING OF 36 MODULES MOUNTED IN PORTRAIT

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BORREGO SOLAR

5005 TEXAS STREET, SUITE 400
SAN DIEGO, CA 92108
PHONE: (888) 898-6273
FAX: (888) 843-6778
WWW.BORREGOSOLAR.COM

MT. SAN ANTONIO COLLEGE
1100 N GRAND AVE
WALNUT, CA 91789

PROJECT NUMBER:
P-SD-007307

REV	DATE	DRAWN	CHECKED	RELEASE LEVEL
1	04/13/17	TY	CT	PROPOSAL LAYOUT

SCALE: 0.000599
VALID ONLY WHEN PLOTTED
ANSI FULL BLEED B 11" X 17"

PV-1

L1 PROPOSAL LAYOUT

Newcomb | Anderson | McCormick
ENERGY ENGINEERING AND CONSULTING

Mt. SAC Glare Analysis

7/3/2017

This analysis looks at the potential glare impact from the latest Borrego tracking solar system at Mt. SAC. This analysis is based on the Solar Glare Hazard Analysis Tool (SGHAT) from Sandia National Labs[1]. This analysis does not consider physical obstructions between the solar system and the observation point. Buildings, tree coverage, and geographical obstructions may minimize any glare impact found.

Summary

No harmful glare was found in this analysis. The SGHAT indicates no risk for glare for all 8 observation points investigated.

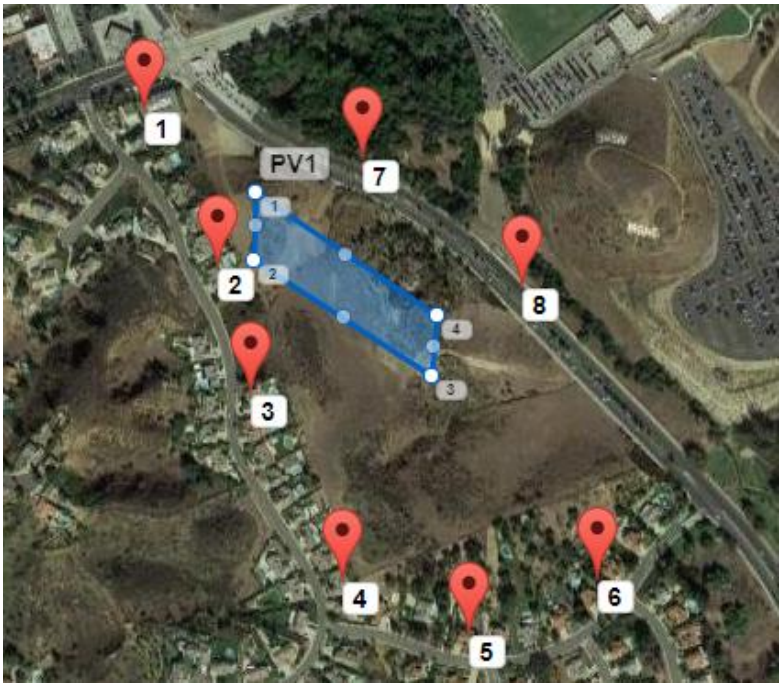
The modeled system is for a south facing single axis solar PV system with backtracking. The PV system is at 760ft elevation and a panel height of 4ft off the ground.

If the system was a fixed system, there would be glare in the homes to the west (observation points 2 and 3) in the early mornings. Additionally, if the PV system did not have backtracking, there may be minimal glare concerns in the homes to the west (observation points 2 and 3) in the early evening. However, it is important to note that even if there was glare, this type of glare is non-harmful and represent glare similar to light reflecting off a car windshield. There are also post construction means and methods that can be used to prevent the glare. For example, trees can be planted around the solar PV system to mitigate the glare by removing the line of sight to the any affected homes.

[1] Sandia National Laboratories. Solar Glare Hazard Analysis Tool. https://share.sandia.gov/phlux/sghat/

Input Parameters

Site – *the glare impact in this analysis was evaluated at these 8 sites for this PV array layout*



PV Array – *the PV array is single tracking with zero tilt and other specs listed here*

PV Array

Array name

Mt SAC PV Array

Description

Axis tracking

Single

Module surface material

Light textured glass without ARC

Tilt of tracking axis

0 deg

Reflectivity varies with incidence angle (view data)

Orientation of tracking axis

180 deg

Correlate slope error to module surface type (view data)

Offset angle of module

0 deg

Slope error

10 mrad

Limit the rotation angle?

Maximum tracking angle

60 deg

Rated power

1972.8 kW

Orientation of tracking axis: 180 deg

The panels are assumed to be constructed facing south completely and track the sun from east to west.

Maximum tracking angle: 60 deg

The tracking systems tilt in the early morning and evening to further reduce the possibility of glare. The practice of limiting tracking angles is common in the industry and is known as "backtracking". Backtracking allows solar rows to be place closer together while sacrificing minimal production capacity. An angle is 60 degrees is a conservative estimate for maximum tracking angle as with backtracking.

PV Elevation – *the panels were assumed to be built at ground elevation of 760 and 4 feet panel height*

Vertices click to expand/collapse

id	Latitude	Longitude	Ground Elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	34.04169	-117.84683	760	4	764
2	34.04103	-117.84684	760	4	764
3	34.03991	-117.84477	760	4	764
4	34.04049	-117.8447	760	4	764

Observation Points – *here are the specs on the observation points in this analysis*

It is important to note that the SGHAT analysis looks at the topography to determine the line of sight and visibility. This would not include trees or buildings that currently prevent any sight lines. So it can be assumed that if the observed cannot see the proposed PV solar system location due to obstructions, there would be no glare even if SGHAT reports glare since it doesn't take the obstructions into consideration.

Solo Observation Point(s) Saving

name	latitude	longitude	ground elevation	Eye-level height above ground	
	deg	deg	ft	ft	
1	34.04247	-117.84814	742.07	6	✖
2	34.04096	-117.84728	791.21	6	✖
3	34.03973	-117.8469	795.91	6	✖
4	34.03792	-117.84582	805.71	6	✖
5	34.0374	-117.84434	783.36	6	✖
6	34.03794	-117.84284	718.84	6	✖
7	34.04201	-117.84559	722.54	0	✖
8	34.04076	-117.84372	696.68	0	✖

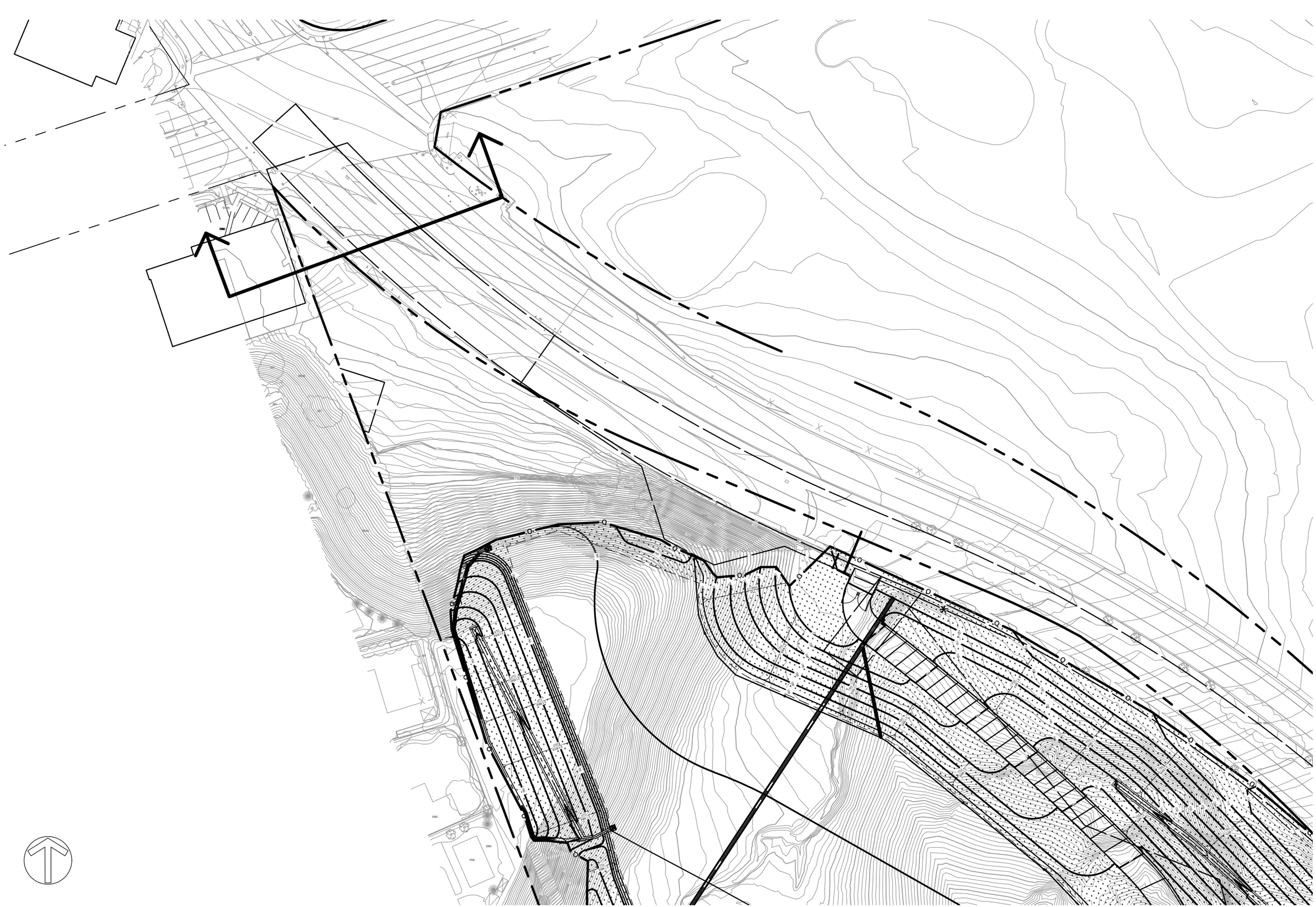
Results

There is no glare found in any of the 8 observation points.

Summary | OP: 1 | OP: 2 | OP: 3 | OP: 4 | OP: 5

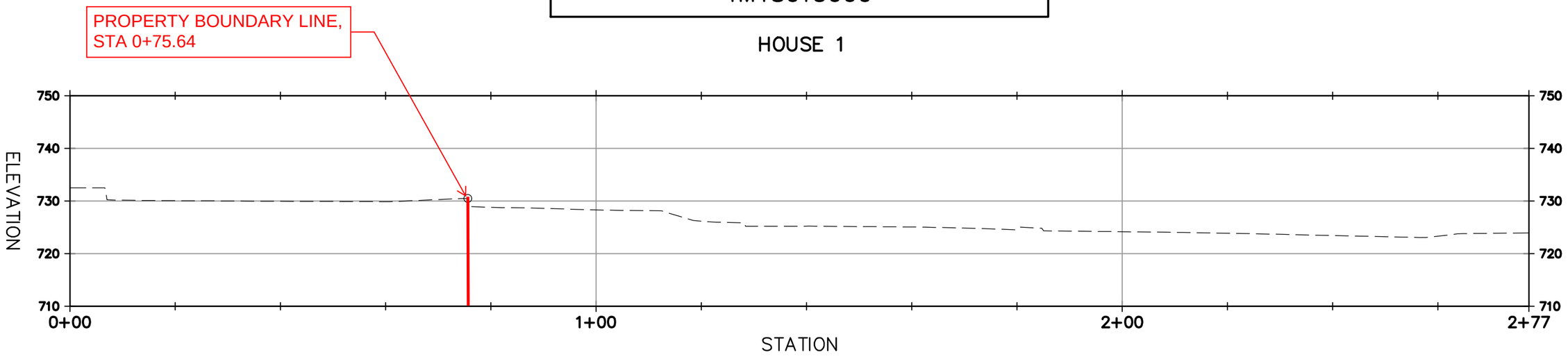
OP: 6 | OP: 7 | OP: 8

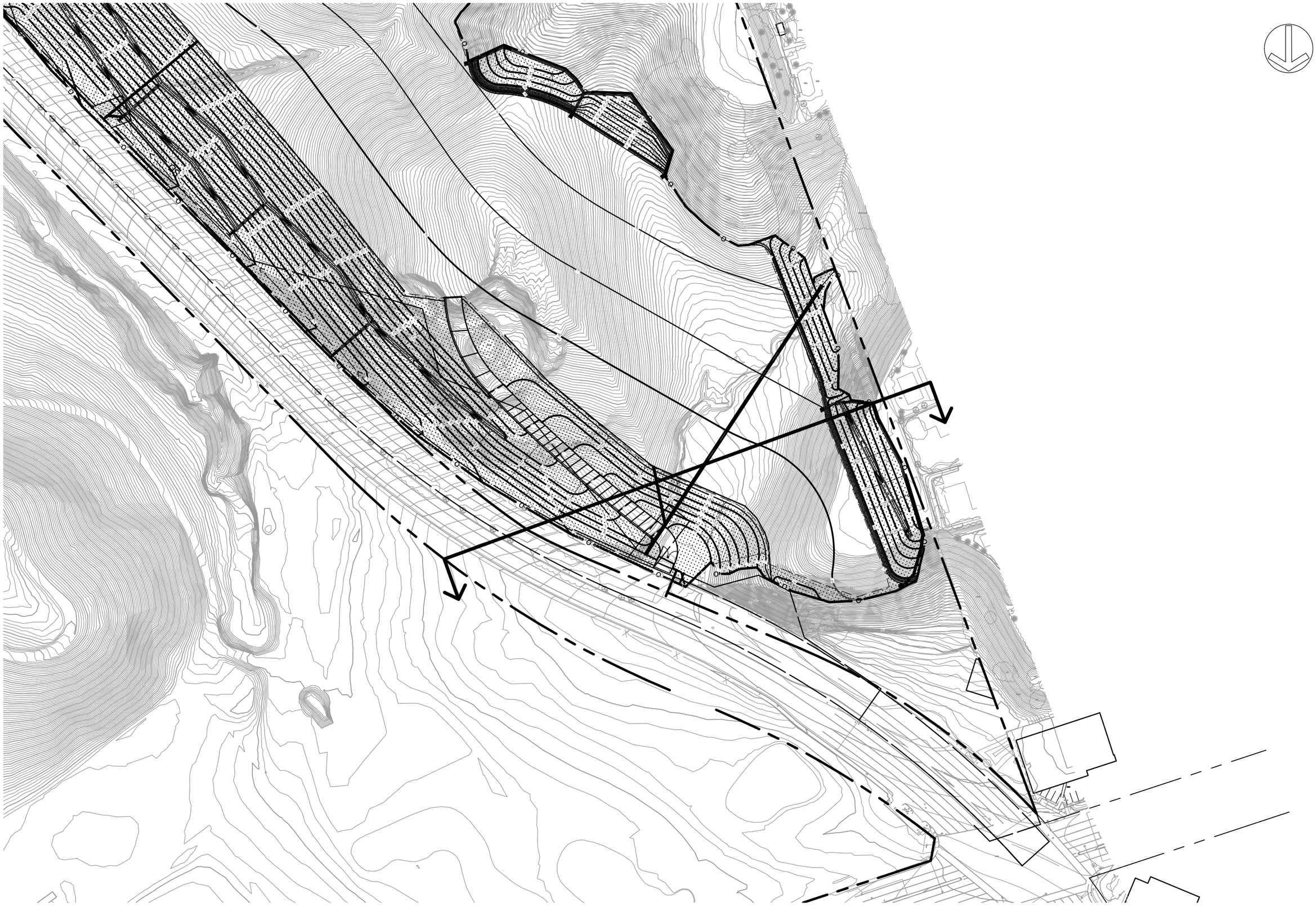
Observation	status
OP: 1	No glare
OP: 2	No glare
OP: 3	No glare
OP: 4	No glare
OP: 5	No glare
OP: 6	No glare
OP: 7	No glare
OP: 8	No glare


POOL

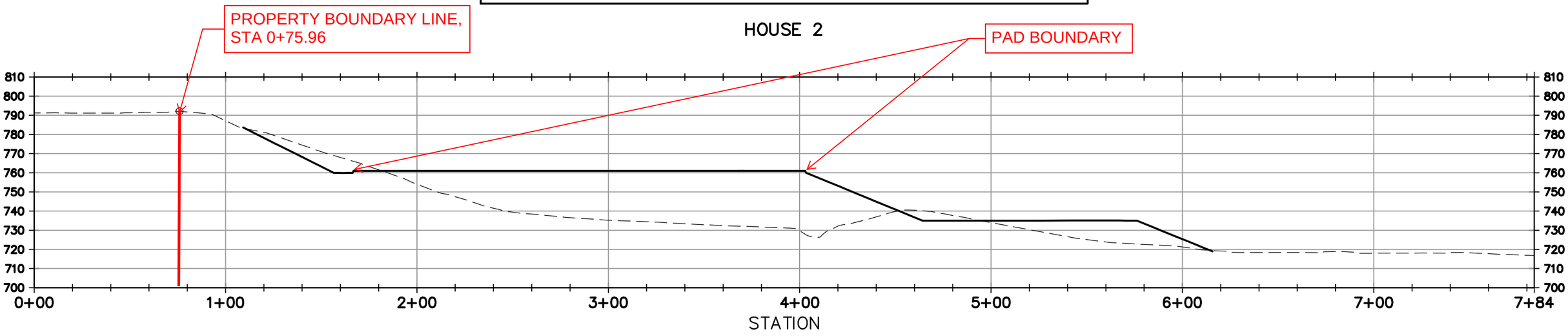
PROFILE VIEW: WEST PARCEL GRADING
1MTS015000

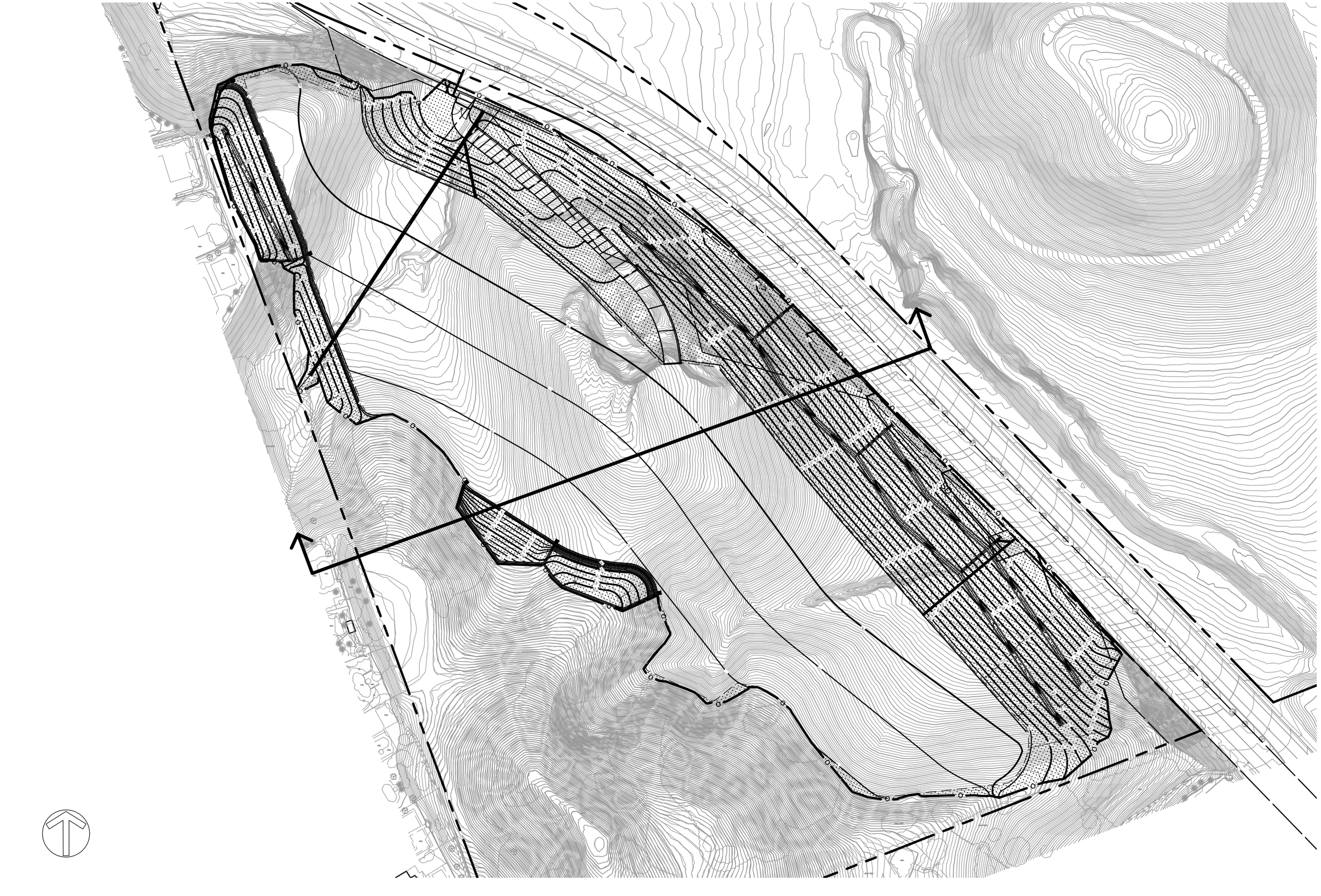
HOUSE 1





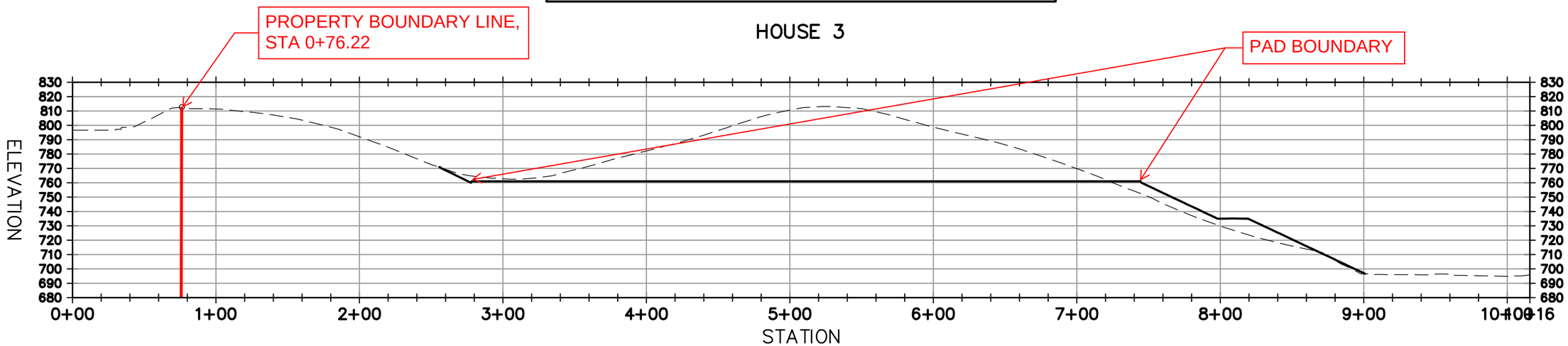
PROFILE VIEW: WEST PARCEL GRADING
1MTS015000





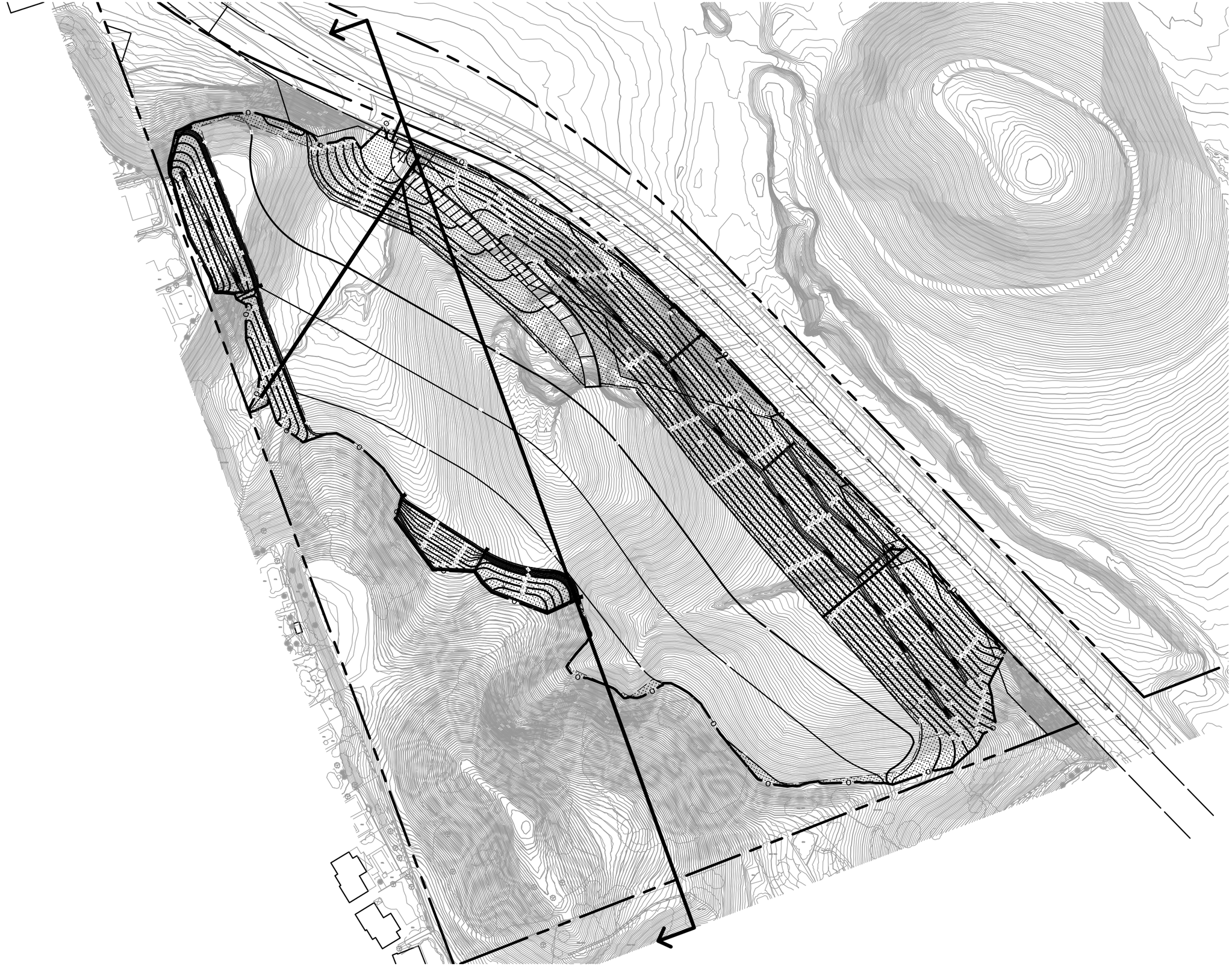
PROFILE VIEW: WEST PARCEL GRADING
1MTS015000

HOUSE 3



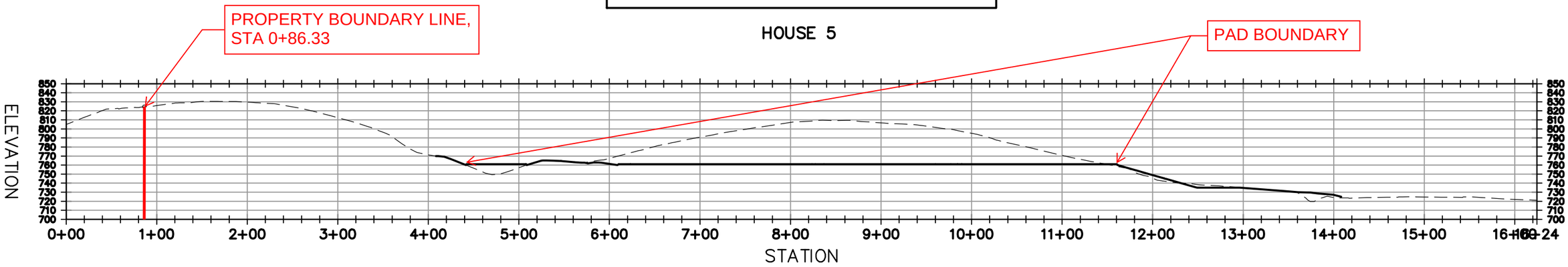
PROFILE VIEW: WEST PARCEL GRADING
1MTS015000

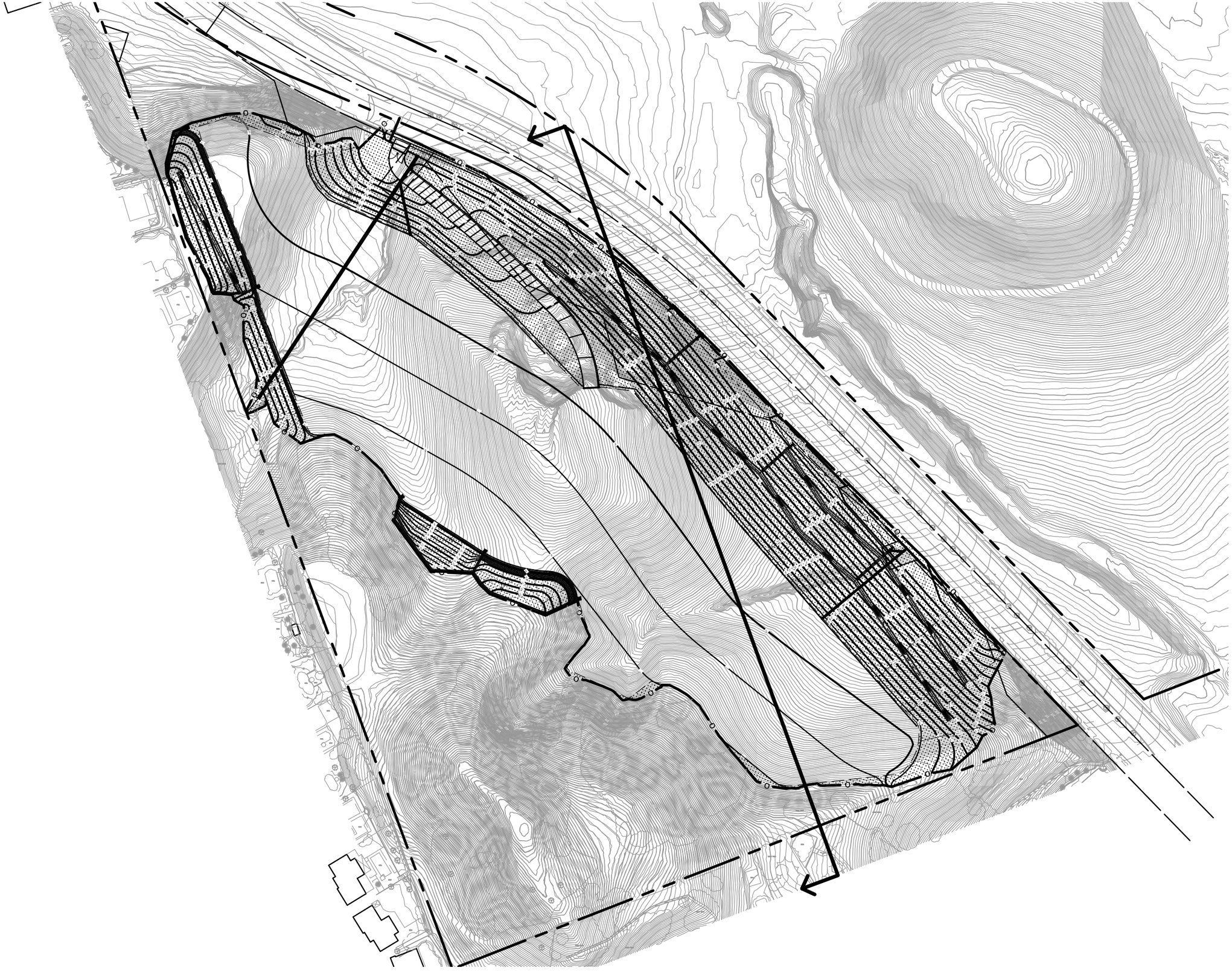
HOUSE 4



PROFILE VIEW: WEST PARCEL GRADING
1MTS015000

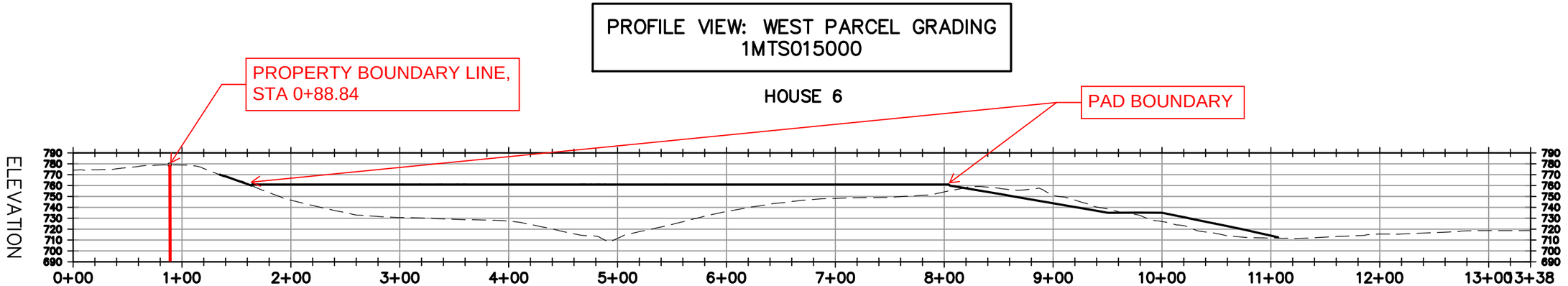
HOUSE 5





PROFILE VIEW: WEST PARCEL GRADING
1MTS015000

HOUSE 6



Ms. Mikaela Klein
Mt. San Antonio College
1100 North Grand Avenue
Walnut, CA 91789

VIA CERTIFIED MAIL
RETURN RECEIPT REQESTED
No. 7014 2870 0001 4613 6127

TECHNICALLY CONDITIONED WATER QUALITY CERTIFICATION FOR PROPOSED WEST PARCEL SOLAR PROJECT (Corps' Project No. 2015-00113-PKK), SAN JOSE CREEK, UPPER SAN GABRIEL RIVER, CITY OF WALNUT, LOS ANGELES COUNTY (File No. 15-021)

Dear Ms. Mikaela Klein:

Board staff has reviewed your request on behalf of Mt. San Antonio College (Applicant) for a Clean Water Act Section 401 Water Quality Certification for the above-referenced project. Your application was deemed complete on May 12, 2016.

I hereby issue an order certifying that any discharge from the referenced project will comply with the applicable provisions of sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 303 (Water Quality Standards and Implementation Plans), 306 (National Standards of Performance), and 307 (Toxic and Pretreatment Effluent Standards) of the Clean Water Act, and with other applicable requirements of State law. This discharge is also regulated under State Water Resources Control Board Order No. 2003 - 0017 - DWQ, "General Waste Discharge Requirements for Dredge and Fill Discharges that have received State Water Quality Certification" which requires compliance with all conditions of this Water Quality Certification.

Please read this entire document carefully. The Applicant shall be liable civilly for any violations of this Certification in accordance with the California Water Code. This Certification does not eliminate the Applicant's responsibility to comply with any other applicable laws, requirements and/or permits.

Should you have questions concerning this Certification action, please contact Valerie CarrilloZara, P.G., Lead, Section 401 Program, at (213) 576-6759.

Chief Deputy E.O.
Samuel Unger, P.E. for
Executive Officer

5-23-16
Date

DISTRIBUTION LIST

W. Larry Sward
HELIX Environmental Planning
7578 El Cajon Blvd, Suite 200
La Mesa, CA 91942

Bill Orme (via electronic copy)
State Water Resources Control Board
Division of Water Quality
P.O. Box 944213
Sacramento, CA 94244-2130

Eric Weiss (via electronic copy)
California Department of Fish and Wildlife
Streambed Alteration Team
3883 Ruffin Rd Suite A
San Diego, CA. 92123-4813

Pamela Kostka
U.S. Army Corps of Engineers
Regulatory Branch, Los Angeles District
915 Wilshire Blvd., Suite 1101
Los Angeles, CA 90017

Elizabeth Goldmann (via electronic copy)
U.S. Environmental Protection Agency, Region 9
75 Hawthorne Street, WRT-2-4
San Francisco, CA 94105

Melissa Scianni (via electronic copy)
600 Wilshire Blvd, Suite 1460
Los Angeles, CA 90017
213-244-1817

G. Mendel Stewart
Johnathan Snyder
U.S. Fish and Wildlife Service
2177 Salk Avenue
Carlsbad, CA 92008

Tom Weiner (via electronic copy)
Community Development Director
City of Walnut
21201 La Puente Road, P.O. Box 682, Walnut, CA 91789

Dennis Majors (via electronic copy)
Board Member
United Walnut Taxpayers
IRS Nonprofit, Tax Exempt Corporation

ATTACHMENT A

Project Information
File No. 15-021

1. Applicant:

Ms. Mikaela Klein
Mt. San Antonio College
1100 North Grand Avenue
Walnut, CA 91789

Phone: (909) 274-5720 Fax: (909) 274-2931

2. Applicant's Agent:

W. Larry Sward
HELIX Environmental Planning
7578 El Cajon Blvd, Ste 200
La Mesa, CA 91942

Phone: (619) 462-1515 Fax: (619) 462-0552

3. Project Name:

West Parcel Solar

4. Project Location:

City of Walnut, Los Angeles County

Latitude	Longitude
34.0428	117.8478
34.0412	117.8446
34.0391	117.8421
34.0380	117.8456
34.0412	117.8446
34.0391	117.8421
34.0380	117.8456
34.0428	117.8478

5. Type of Project:

Construction of a solar power generating station

6. Project Purpose:

The Applicant plans to subsidize its energy consumption by constructing a solar power generating station in order to reduce costs and greenhouse gasses.

7. Project Description:

The San Antonio College (SAC) campus is located in the San Gabriel Valley, north of State Route 60, south of Interstate 10, east

of the City of West Covina, and west of the City of Pomona in southeast Los Angeles, County, California. The proposed project is located on the Mt. SAC campus, on undeveloped land that is west of North Grand Avenue and south of Amar Road (Site).

The West Parcel Solar Project will consist of grading approximately 10-acres and constructing a solar power generation system. The project footprint affects 18.22 acres of the 27.65 acre West Parcel. The parcel is currently undeveloped and occasionally used for cattle grazing. A small area (approximately 0.71 acre) at the northern tip of the property has been graded flat. The remainder of the Site consists of rolling hills with intervening swales. Vegetation on the Site consists of coastal sage scrub (14.20 acres), agriculture (12.43 acres), mule fat scrub (0.06 acre), disturbed habitat (0.71 acre), and developed areas (0.25 acres). The sage scrub on Site provides habitat for the coastal California gnatcatcher.

There are two ephemeral streambeds on the Site that are Waters of the U.S. The northern streambed transverses the Site from west to east. It enters the Site from an unimproved streambed and exits the Site via a culvert under North Grand Avenue. The culvert connects the drainage to Snow Creek, which flows north to south, just east of North Grand Avenue. The southern streambed originates on-site and also drains to the east and flows into Snow Creek via a culvert under North Grand Avenue.

Grading will be performed using standard earth moving equipment. The grading will impact nearly all of the two ephemeral streambeds A small section (23 linear feet) of the northern streambed will not be affected by the project. The small watershed for the southern streambed is contained on-site. The northern streambed's watershed is also small, but extends a short distance off-site to the west.

Drainage from the site following construction will also be provided via the culverts that connect to Snow Creek.

A federally listed animal species, the threatened coastal California gnatcatcher (*Polioptila californica californica*), has been observed on the project Site. Construction would impact habitat on Site that supports the gnatcatcher. Potential impacts and effect on the gnatcatcher would be regarded as significant and potentially adverse. Therefore, project effects on gnatcatcher are being be

	evaluated through formal consultation between the USACE and U.S Fish and Wildlife Service pursuant to Section 7 of the Endangered Species Act.
8. Federal Agency/Permit:	U.S. Army Corps of Engineers NWP No.51 (Permit No. 2015-00113-PKK)
9. Other Required Regulatory Approvals:	California Department of Fish and Wildlife Streambed Alteration Agreement
10. California Environmental Quality Act Compliance:	Mt. San Antonio College approved the project's Final Environmental Impact Report (SCH No. 2002041161). A Notice of Determination was filed with the Los Angeles County Clerk on December 26, 2013. The Los Angeles Regional Water Quality Control Board is a responsible agency under CEQA (Pub. Resources Code, § 21069) and in making its determinations and findings, must presume that Mt. San Antonio College's certified environmental document comports with the requirements of CEQA and is valid. (Pub. Resources Code, § 21167.3.) The Los Angeles Regional Water Quality Control Board has reviewed and considered the environmental document and finding that the environmental document prepared by Mt. San Antonio College addresses the Project's impacts to water quality. (Cal. Code Regs., tit. 14, § 15096, subd. (f).) The environmental document includes the mitigation monitoring program (MMP) developed by Mt. San Antonio College for all mitigation measures that have been adopted for the Project to reduce potential significant impacts. (Pub. Resources Code, § 21081.6, subd. (a)(1); Cal. Code Regs., tit. 14, § 15091, subd. (d).) The Los Angeles Regional Water Quality Control Board has also reviewed the Habitat Mitigation Plan for the West Solar Project at Mt. San Antonio College, Helix Environmental Engineering (December 8, 2014) and the Biological Technical Report for the Mt. San Antonio College West Parcel Solar Project, Helix Environmental Engineering (May 29, 2015). The Los Angeles Regional Water Quality Control Board has determined that the Project, when implemented in accordance with the MMP, Habitat Mitigation Plan and the conditions in this Order,

	will not result in any significant adverse water quality impacts. (Cal. Code Regs., tit. 14, § 15096, subd. (h).). The Los Angeles Regional Water Quality Control Board will file a notice of determination with the State Clearinghouse within five (5) working days from the issuance of this Order. (Cal. Code Regs., tit. 14, § 15096, subd. (i).)
11. Receiving Water:	San Jose Creek, San Gabriel River Reach 3 (Hydrologic Unit Code: 180701060601)
12. Designated Beneficial Uses:	MUN*, GWR, FRSH, REC-1, REC-2, WARM, WILD *Conditional beneficial use
13. Impacted Waters of the United States:	Non-wetland waters (vegetated streambed): 0.06 permanent acres (875 linear feet)
14. Dredge Volume:	None
15. Related Projects Implemented/to be Implemented by the Applicant:	The Applicant is currently installing a parking lot in the area east of Snow Creek. This project will not directly affect any Waters of the U.S or Waters of the State. Construction and project's BMPs are expected to prevent any adverse water quality affects to Snow Creek.
16. Avoidance/ Minimization Activities:	The Applicant has proposed to implement several Best Management Practices, including, but not limited to, the following: • Use of water during construction of the project shall be in a manner that avoids causing erosion and the transport of pollutants offsite. • Vehicle and equipment cleaning procedures and practices shall be implemented to eliminate or reduce the discharge of pollutants to stormwater from vehicle and equipment cleaning operations. Procedures and practices shall include, but are not limited to: using offsite facilities; washing in designated, contained areas only; and training employees and subcontractors in proper cleaning procedures.

- Vehicle and equipment fueling procedures and practices shall be implemented to prevent fuel spills and leaks, and reduce or eliminate contamination of stormwater. This will be accomplished by using offsite facilities, fueling in designated areas only, enclosing or covering stored fuel, implementing spill controls, and training employees and subcontractors in proper fueling procedures.

- This project will prevent or reduce the contamination of stormwater resulting from vehicle and equipment maintenance by running a "dry and clean site". The preferred option would be to perform all maintenance activities at an offsite facility. If this option is not available then work should be performed in designated areas only, while providing cover for materials stored outside, checking for leaks and spills, and containing and cleaning up spills immediately. Employees and subcontractors must be trained in proper procedures.

- Silt fences shall be installed during construction along most of the project perimeter.

- Fiber rolls shall be installed on all disturbed slopes during construction.

- Gravel bag berms shall be implemented at various locations during construction.

- Street sweeping and vacuuming shall be implemented during project construction and includes use of self-propelled and walk-behind equipment to remove sediment from streets and roadways.

- Stabilized construction access, defined by a point of entrance/exit to a construction site that is stabilized to reduce off-site tracking of mud and dirt by construction vehicles, shall be provided for this project.

- Dust and wind erosion shall be controlled by applying water or other dust palliatives as necessary to prevent or alleviate dust nuisance generated by construction activities. Covering small stockpiles or areas is an alternative to applying water or other dust palliatives.

- This project will prevent, reduce, or eliminate the discharge of pollutants from material delivery and storage to the stormwater system or watercourses by minimizing the storage of hazardous materials onsite, storing materials in a designated area, installing

secondary containment, conducting regular inspections, and training employees and subcontractors.

- This project will prevent or reduce the discharge of pollutants to the storm drain system or watercourses from material use by using alternative products, minimizing hazardous material use onsite, and training employees and subcontractors.

- Stockpile Management procedures and practices shall be implemented in order to reduce or eliminate air and stormwater pollution from stockpiles of materials such as soil.

- Solid waste management procedures and practices shall be enacted to prevent or reduce the discharge of pollutants to stormwater from solid or construction waste by providing designated waste collection areas and containers, arranging for regular disposal, and training employees and subcontractors.

- Proper sanitary and septic waste management practices shall be followed to prevent the discharge of pollutants to stormwater from sanitary and septic waste by providing convenient, well-maintained facilities, and arranging for regular service and disposal.

17. Proposed Compensatory Mitigation:

Mitigation is proposed along Snow Creek per the "West Parcel Solar Project at Mt. San Antonio College Habitat Mitigation Plan," dated December 8, 2014 (Mitigation Plan). The Mitigation Plan includes 0.31 acres of compensatory mitigation for impacts to waters of the US and riparian areas including at least 0.18 acres of created mule fat scrub. The mule fat scrub will be created by grading along the upland banks of Snow Creek to create the proper surface and subsurface hydrology to support mule fat scrub. Mule fat scrub will be established and maintained in this area in perpetuity. The Mitigation Plan also includes mitigation for loss of coastal scrub habitat and gnatcatcher habitat.

In addition, the portions of the West Parcel that are not part of the solar pad or the slopes adjacent to North Grand Avenue, and contain native vegetation, will be preserved. The areas that are similarly situated but do not contain native habitat will be restored to native coastal sage scrub habitat and preserved.

18. Required

The Applicant shall provide 0.31 acres of compensatory mitigation

ATTACHMENT A

Project Information
File No. 15-021

Compensatory Mitigation:	for impacts to waters of the state and U.S. See *Attachment B, Conditions of Certifications, Additional Conditions* for modifications and additions to the above proposed compensatory mitigation.

ATTACHMENT B

Conditions of Certification
File No. 15-021

STANDARD CONDITIONS

Pursuant to §3860 of Title 23 of the California Code of Regulations (23 CCR), the following three standard conditions shall apply to this project:

1. This Certification action is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to §13330 of the California Water Code and Article 6 (commencing with 23 CCR §3867).

2. This Certification action is not intended and shall not be construed to apply to any activity involving a hydroelectric facility and requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license unless the pertinent Certification application was filed pursuant to 23 CCR Subsection 3855(b) and the application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.

3. Certification is conditioned upon total payment of any fee required pursuant to 23 CCR Chapter 28 and owed by the Applicant.

ADDITIONAL CONDITIONS

Pursuant to 23 CCR §3859(a), the Applicant shall comply with the following additional conditions:

1. The Applicant shall submit to this Regional Board copies of any other final permits and agreements required for this project, including, but not limited to, the U.S. Army Corps of Engineers' (ACOE) Section 404 Permit and the California Department of Fish and Wildlife's (CDFW) Streambed Alteration Agreement. **These documents shall be submitted prior to any discharge to waters of the State.**

2. The Applicant shall adhere to the most stringent conditions indicated with either this Certification, the CDFW's Streambed Alteration Agreement, or the ACOE Section 404 Permit.

3. The Applicant shall comply with all water quality objectives, prohibitions, and policies set forth in the *Water Quality Control Plan, Los Angeles Region (1994),* as amended.

4. The Avoidance/Minimization activities proposed by the Applicant as described in Attachment A, No. **16**, are incorporated as additional conditions herein.

5. The Applicant and all contractors employed by the Applicant shall have copies of this Certification, and all other regulatory approvals for this project on site at all times and shall be familiar with all conditions set forth.

6. Fueling, lubrication, maintenance, operation, and storage of vehicles and equipment shall not result in a discharge or a threatened discharge to waters of the State. At no time shall the Applicant use any vehicle or equipment which leaks any substance that may impact water quality. Staging and storage areas for vehicles and equipment shall be located outside of waters of the State.

7. All excavation, construction, or maintenance activities shall follow best management practices to minimize impacts to water quality and beneficial uses. Dust control activities shall be conducted in such a manner that will not produce downstream runoff.

8. No construction material, spoils, debris, or any other substances associated with this project that may adversely impact water quality standards, shall be located in a manner which may result in a discharge or a threatened discharge to waters of the State. Designated spoil and waste areas shall be visually marked prior to any excavation and/or construction activity, and storage of the materials shall be confined to these areas.

9. All waste or dredged material removed shall be relocated to a legal point of disposal if applicable. A legal point of disposal is defined as one for which Waste Discharge Requirements have been established by a California Regional Water Quality Control Board, and is in full compliance therewith.

10. The Applicant shall implement all necessary control measures to prevent the degradation of water quality from the proposed project in order to maintain compliance with the Basin Plan. The discharge shall meet all effluent limitations and toxic and effluent standards established to comply with the applicable water quality standards and other appropriate requirements, including the provisions of Sections 301, 302, 303, 306, and 307 of the Clean Water Act. This Certification does not authorize the discharge by the applicant for any other activity than specifically described in the 404 Permit.

11. The discharge shall not: a) degrade surface water communities and populations including vertebrate, invertebrate, and plant species; b) promote the breeding of mosquitoes, gnats, black flies, midges, or other pests; c) alter the color, create visual contrast with the natural appearance, nor cause aesthetically undesirable discoloration of the receiving waters; d) cause formation of sludge deposits; or e) adversely affect any designated beneficial uses.

12. The Applicant shall allow the Regional Board and its authorized representative entry to the premises, including all mitigation sites, to inspect and undertake any activity to determine compliance with this Certification, or as otherwise authorized by the California Water Code.

13. The Applicant shall not conduct any construction activities within waters of the State during a rainfall event. The Applicant shall maintain **a five-day (5-day) clear weather forecast** before conducting any operations within waters of the State.

14. If rain is predicted after operations have begun, grading activities must cease immediately and the site must be stabilized to prevent impacts to water quality, and minimize erosion and runoff from the site.

15. The grading, stabilization and re-vegetation will be phased to limit the exposed or working face such that the graded area can be stabilized within 24 hours after the first prediction of rain during the 5-day forecast or within 24 hours after final grading of the phased area.

16. The Applicant shall utilize the services of a qualified biologist with expertise in riparian assessments during any vegetation clearing activities. The biologist shall be available on site during construction activities to ensure that all protected areas are marked properly and ensure that no vegetation outside the specified areas is removed. The biologist shall have the authority to stop the work, as necessary, if instructions are not followed. The biologist shall be available upon request from this Regional Board for consultation within 24 hours of request of consultation.

17. No activities shall involve wet excavations (i.e., no excavations shall occur below the seasonal high water table). A minimum **5-foot** buffer zone shall be maintained above the existing groundwater level. If construction or groundwater dewatering is proposed or anticipated, the Applicant shall file a **Report of Waste Discharge** (ROWD) to this Regional Board and obtain any necessary NPDES permits/Waste Discharge Requirements prior to discharging waste.

    Sufficient time should be allowed to obtain any such permits (generally 180 days). If groundwater is encountered without the benefit of appropriate permits, the Applicant shall cease all activities in the areas where groundwater is present, file a Report of Waste Discharge to this Regional Board, and obtain any necessary permits prior to discharging waste.

18. All project and construction activities not included in this Certification, and which may require a permit, must be reported to the Regional Board for appropriate permitting. Bank stabilization and grading, as well as any other ground disturbances, are subject to restoration and revegetation requirements, and may require additional Certification action.

19. All surface waters, including ponded waters, shall be diverted away from areas undergoing grading, construction, excavation, vegetation removal, and/or any other activity which may result in a discharge to the receiving water. If surface water diversions are anticipated, the Applicant shall develop and submit a **Surface Water Diversion Plan** (plan) to this Regional Board. The plan shall include the proposed method and duration of diversion activities, structure configuration, construction materials, equipment, erosion and sediment controls, and a map or drawing indicating the locations of diversion and discharge points. Contingency measures shall be a part of this plan to address various flow discharge rates.

The plan shall be submitted prior to any surface water diversions. If surface flows are present, then upstream and downstream monitoring for the following shall be implemented:

- pH
- temperature
- dissolved oxygen
- turbidity
- total suspended solids (TSS)

Analyses must be performed using approved US Environmental Protection Agency methods, where applicable. These constituents shall be measured at least once prior to diversion and then monitored for on a daily basis during the first week of diversion and/or dewatering activities, and then on a weekly basis, thereafter, until the in-stream work is complete.

Results of the analyses shall be submitted to this Regional Board by the 15th day of each subsequent sampling month. A map or drawing indicating the locations of sampling points shall be included with each submittal. Diversion activities shall not result in the degradation of beneficial uses or exceedance of water quality objectives of the receiving waters. Downstream TSS shall be maintained at ambient levels. Where natural turbidity is between 0 and 50 Nephelometric Turbidity Units (NTU), increases shall not exceed 20%. Where natural turbidity is greater than 50 NTU, increases shall not exceed 10%. Any such violations may result in corrective and/or enforcement actions, including increased monitoring and sample collection.

20. The Applicant shall restore **all acres** of TEMPORARY IMPACTS to waters of the United States and all other areas of temporary disturbance which could result in a discharge or a threatened discharge to waters of the State. Restoration shall include grading of disturbed areas to pre-project contours and revegetation with native species. Restored areas shall be monitored and maintained with native species as necessary for five years.

21. The Applicant shall also provide compensatory mitigation for the proposed permanent impacts to **0.06 acres** of vegetation within waters of the United States by creating or restoring riparian habitat including a minimum **0.31** acres of waters or riparian habitat including **0.18 acres** of mule fat scrub habitat. The Applicant shall submit a final **Mitigation Report after** all agency permit requirements are established which shall include:

    (a) The boundary of the mitigation site shall be clearly identified on a map of suitable resolution and quality and shall also be defined by latitude and longitude.
    (b) The type(s) of mitigation shall be described (e.g., removal of exotics and/or replanting with native species, etc.)
    (c) Success criteria shall be established.

    This information shall be submitted to this Regional Board for approval prior to any disturbance within waters of the United States and shall include copies of all agreements

made between the Applicant and a third party organization regarding compensatory mitigation efforts.

22. All open space and mitigation areas shall be placed within a conservation easement to ensure preservation in perpetuity. Documentation of proper easement placement shall be submitted to the Regional Board within one year.

23. The Applicant shall submit to this Regional Board **Annual Mitigation Monitoring Reports** (Annual Reports) by **January 1st** of each year for a minimum period of **five (5) years** following this issuance of 401 Certification or until mitigation and project success has been achieved and documented. The Annual Reports shall describe in detail all of the project/construction activities performed during the previous year and all restoration and mitigation efforts; including percent survival by plant species and percent cover. The Annual Reports shall describe the status of other agreements (e.g., mitigation banking) or any delays in the mitigation process. At a minimum the Annual Reports shall include the following documentation:

    (a) Color photo documentation of the pre- and post-project and mitigation site conditions;

    (b) Geographical Positioning System (GPS) coordinates in decimal-degrees format outlining the boundary of the project and mitigation areas;

    (c) The overall status of project including whether or not work has begun on the Project and a detailed schedule;

    (d) Copies of all permits revised as required in Additional Condition 1;

    (e) Water quality monitoring results for each reach (as required) compiled in a spreadsheet format;

    (f) A certified Statement of "no net loss" of wetlands associated with this project;

    (g) Discussion of any monitoring activities and exotic plant control efforts; and

    (h) A certified Statement from the permittee or his/her representative that all conditions of this Certification have been met.

24. All applications, reports, or information submitted to the Regional Board shall be signed:

    (a) For corporations, by a principal executive officer at least of the level of vice president or his duly authorized representative, if such representative is responsible for the overall operation of the facility from which discharge originates.

(b) For a partnership, by a general partner.

(c) For a sole proprietorship, by the proprietor.

(d) For a municipal, State, or other public facility, by either a principal executive officer, ranking elected official, or other duly authorized employee.

25. Each and any report submitted in accordance with this Certification shall contain the following completed declaration:

"I declare under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who managed the system or those directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Executed on the _____ day of _____ at _____.

_____ (Signature)
_____ (Title)"

26. All communications regarding this project and submitted to this Regional Board shall identify the Project File Number **15-021**. Submittals shall be sent to the attention of the 401 Certification Unit.

27. Any modifications of the proposed project may require submittal of a new Clean Water Act Section 401 Water Quality Certification application and appropriate filing fee.

28. The project shall comply with the local regulations associated with the Regional Board's **Municipal Stormwater Permit** issued to Los Angeles County and co-permittees under NPDES No. CAS004001 and Waste Discharge Requirements Order No. R4-2012-0175. The project shall also comply with all requirements of the National Pollutant Discharge Elimination System (NPDES) **General Permit** for Storm Water Discharges Associated with Construction Activity, Order No. 2012-0011-DWQ. All stormwater treatment systems shall be located outside of any water of the State and shall not be used as a wetland or riparian mitigation credit.

29. Coverage under this Certification may be transferred to the extent the underlying federal permit may legally be transferred and further provided that the Applicant notifies the Executive Officer at least 30 days before the proposed transfer date, and the notice includes

a written agreement between the existing and new Applicants containing a specific date of coverage, responsibility for compliance with this Certification, and liability between them.

30. The Applicant or their agents shall report any noncompliance. Any such information shall be provided verbally to the Executive Officer within 24 hours from the time the Applicant becomes aware of the circumstances. A written submission shall also be provided within five days of the time the Applicant becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected; the anticipated time it is expected to continue and steps taken or planned to reduce, eliminate and prevent recurrence of the noncompliance. The Executive Officer, or an authorized representative, may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

31. *Enforcement:*

    (a) In the event of any violation or threatened violation of the conditions of this Certification, the violation or threatened violation shall be subject to any remedies, penalties, process or sanctions as provided for under State law. For purposes of section 401(d) of the Clean Water Act, the applicability of any State law authorizing remedies, penalties, process or sanctions for the violation or threatened violation constitutes a limitation necessary to assure compliance with the water quality standards and other pertinent requirements incorporated into this Certification.

    (b) In response to a suspected violation of any condition of this Certification, the State Water Resources Control Board (SWRCB) or Regional Water Quality Control Board (RWQCB) may require the holder of any permit or license subject to this Certification to furnish, under penalty of perjury, any technical or monitoring reports the SWRCB deems appropriate, provided that the burden, including costs, of the reports shall be a reasonable relationship to the need for the reports and the benefits to be obtained from the reports.

    (c) In response to any violation of the conditions of this Certification, the SWRCB or RWQCB may add to or modify the conditions of this Certification as appropriate to ensure compliance.

32. This Certification shall expire **five (5) years** from date of this Certification. The Applicant shall submit a complete application at least 90 days prior to termination of this Certification if renewal is requested.

State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
South Coast Region
3883 Ruffin Road
San Diego, CA 92123
(858) 467-4201
www.wildlife.ca.gov

EDMUND G. BROWN JR., Governor
CHARLTON H. BONHAM, Director

August 26, 2016

Michael Gregoryk
Mt. San Antonio Community College District
1100 North Grand Ave.
Walnut, CA 91789
E-mail: Michael.Gregoryk@mtsac.edu

Subject: Final Lake or Streambed Alteration Agreement
Notification No. 1600-2015-0022-R5
West Parcel Solar Project

Dear Mr. Gregoryk:

Enclosed is the final Streambed Alteration Agreement (Agreement) for the West Parcel Solar Project (Project). Before the California Department of Fish and Wildlife (Department) may issue an Agreement, it must comply with the California Environmental Quality Act (CEQA). In this case, the Department, acting as a responsible agency, filed a Notice of Determination (NOD) within five working days of signing the Agreement. The NOD was based on information contained in the final Environmental Impact Report prepared by the lead agency.

Under CEQA, the filing of an NOD triggers a 30-day statute of limitations period during which an interested party may challenge the filing agency's approval of the Project. You may begin the Project before the statute of limitations expires if you have obtained all necessary local, state, and federal permits or other authorizations. However, if you elect to do so, it will be at your own risk.

If you have any questions regarding this matter, please contact Victoria Chau, Environmental Scientist, at 562-430-5082 or Victoria.Chau@wildlife.ca.gov.

Sincerely,

Betty Courtney
Environmental Program Manager
Department of Fish and Wildlife

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE
SOUTH COAST REGION
3883 RUFFIN ROAD
SAN DIEGO, CA 92123

STREAMBED ALTERATION AGREEMENT
NOTIFICATION NO. 1600-2015-0022-R5, Rev. 2

MOUNT SAN ANTONIO COMMUNITY COLLEGE DISTRICT
WEST PARCEL SOLAR PROJECT

This Streambed Alteration Agreement (Agreement) is entered into between the California Department of Fish and Wildlife (CDFW) and Mount San Antonio Community College District, as represented by Mr. Michael Gregoryk (Permittee).

RECITALS

WHEREAS, pursuant to Fish and Game Code (FGC) section 1602, Permittee notified CDFW on February 9, 2015 that Permittee intends to complete the project described herein. On March 9, 2015 CDFW determined that the application submitted was incomplete. On June 3, 2015 the Streambed Alteration Agreement Application was updated and resubmitted to CDFW. On September 29, 2015, the Permittee provided an updated information for the application.

WHEREAS, pursuant to FGC section 1603, CDFW has determined that the project could substantially adversely affect existing fish or wildlife resources and has included measures in this Agreement necessary to protect those resources.

WHEREAS, Permittee has reviewed this Agreement and accepts its terms and conditions, including the measures to protect fish and wildlife resources.

NOW THEREFORE, Permittee agrees to complete the project in accordance with the Agreement.

PROJECT LOCATION

The project is located on property owned by Permittee within the City of Walnut, a roughly triangular footprint abutted to the northeast by North Grand Avenue between its intersections with West Temple Avenue and Stonybrook Drive, west of Regal Canyon, and north of Stony Brook Drive just south of the main Mount San Antonio College Campus. The project would impact two unnamed tributaries to Snow Creek, in the County of Los Angeles, State of California; Latitude 34.0428, Longitude -117.8478; Assessor's Parcel Number 870-902-3917.

PROJECT DESCRIPTION

The project is limited to the grading of two, unimproved and unnamed ephemeral

streambeds (tributaries to Snow Creek). The northern streambed traverses the 27.65 acre parcel from west to east and exits the project site via a culvert under North Grand Avenue, discharging into Snow Creek. The second streambed originates onsite and also drains to the east, discharging in Snow Creek via an existing culvert under Grand Avenue. The grading of the ephemeral streambeds has been identified by the Permittee as necessary to accommodate future access and to accommodate a building pad for the approximately two (2) megawatt photovoltaic solar project on approximately 17.22 acres. The Permittee intends to fill 575 feet of the northern ephemeral drainage into a culvert of unspecified size, design, or inlet and outfall design.

The natural channel in the northern portion of the project site will be replaced over most of its length by an 18-inch reinforced concrete pipe culvert. Water will be directed into the pipe on the upper end by a 4-foot tall set of wingwalls. The lower end of this culvert will attach to the existing culvert under Grand Avenue. A conceptual drawing dated January 1, 2014 provides a general alignment of the proposed culvert. This Agreement does not authorize any culvert design or placement until CDFW receives and approves a final culvert design that incorporates commensurate avoidance, minimization, and mitigation measures.

Receiving waters (Snow Creek) shall not be subject to increased flow rates or turbidity post-project. Should erosion of the streambed occur adjacent to, or in the localized vicinity of the outlet, then this erosion could be reasonably attributed to the project, and the Permittee will take corrective maintenance action to remedy the situation in a manner that maintains or enhances the biological values of the stream and surrounding upland habitat.

Additionally, the project includes the restoration of approximately 0.32 acre of mule fat scrub creation (minimum 0.06 acre), enhancement (minimum of 0.12 acre), and streambed creation (minimum of 0.14 acre) associated with planting and limited weeding activities specified as mitigation required pursuant this Agreement. No earthwork is authorized associated with restoration activities.

PROJECT IMPACTS

The proposed project would impact 0.06 acres of mule fat scrub, and 0.14 acres of sparsely vegetated ephemeral streambed.

Existing fish or wildlife resources the project could substantially adversely affect include: Burrowing owl (*Athene* cunicularia), California gnatcatcher (*Polioptila californica*), coastal cactus wren (*Campylorhynchus brunneicapillus sandiegensis*), California horned lark (*Eremophila alpestris actia*), southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*), San Diego pocket mouse (*Chaetodipus fallax*), San Diego black-tailed jackrabbit (*Lepus californicus bennettii*), general raptor foraging habitat and behaviors, and general avian nesting activities. Existing vegetation resources which may

be impacted by the proposed project include: California sagebrush (*Artemisia californica*), buckwheat species (*Eriogonum sp.*), white sage (*Salvia apiana*), black sage (*Salvia mellifera*), lemonade berry (*Rhus integrifolia*), arroyo willow (*Salix lasiolepis),* blue elderberry (*Sambucus nigra canadensis*), mule fat (*Baccharis salicifolia*), and coast prickly pear (*Opuntia littoralis*).

The adverse effects the project could have on the fish or wildlife resources identified above include:

a) Impacts to the bed, bank, and channel through the loss of natural bed or bank;
b) Change in gradient of bed, channel, or bank;
c) Debris transport impedance (from culverts)
d) Impacts to water quality through: Increased turbidity; increase in water velocity; short-term release of contaminants (e.g., incidental from construction);
e) Impacts to the bed, channel and direct impacts to wildlife and their habitat through: loss or decline of riparian and/or emergent marsh habitat; loss or decline of instream channel habitat;
f) Change to, or loss or decline of natural bed substrate; construction pits and trenches that can capture terrestrial organisms; disruption to nesting birds and other wildlife; direct take of terrestrial species;
g) Loss of wildlife connectivity to water source; loss or impediment of terrestrial animal species travel routes due to permanent structures
h) Impacts to natural flow and effects of habitat structure and process through: change in stream flow (Q); change in sediment delivery below intake; change in flow depth, width or velocity; or,
i) Change in percolation; and a cumulative effect when other diversions on the same watercourse are considered.

MEASURES TO PROTECT FISH AND WILDLIFE RESOURCES

1. Administrative Measures

Permittee shall meet each administrative requirement described below.

1.1 Documentation at Project Site. Permittee shall make this Agreement, any extensions and amendments to this Agreement, and all related notification materials and California Environmental Quality Act (CEQA) documents, readily available at the project site at all times and shall be presented to CDFW personnel, or personnel from another state, federal, or local agency upon request.

1.2 Providing Agreement to Persons at Project Site. Permittee shall provide copies of this Agreement and any extensions and amendments to this Agreement to all persons who will be working on the project at the project site on behalf of Permittee, including but not limited to contractors, subcontractors, inspectors, and monitors.

1.3 Notification of Conflicting Provisions. Permittee shall notify CDFW if Permittee determines or learns that a provision in this Agreement might conflict with a provision imposed on the project by another local, state, or federal agency. In that event, CDFW shall contact Permittee to resolve any conflict.

1.4 Project Site Entry. Permittee agrees that CDFW personnel may enter the project site at any time to verify compliance with this Agreement.

1.5 Stream and Lake Defined. A stream is defined as a body of water that flows perennially, intermittently, or ephemerally. Streams can include a channel, banks, bed, and floodplains where these features are present. Lake is defined as a perennial, intermittent, or ephemeral body of water substantially at rest within a defined basin.

1.6 Construction/Work Schedule. The Permittee shall submit a construction/work schedule to CDFW (mail, or email, with reference to Agreement 1600-2015-0022- R5) prior to beginning any activities covered by this Agreement. The Permittee shall also notify CDFW upon the completion of the activities covered by this Agreement.

1.7 Notification Prior to Work. The Permittee shall notify CDFW, in writing, at least 5 days prior to initiation of construction (Project) activities and at least 5 days prior to completion of construction (Project) activities. Notification shall be sent to CDFW's South Coast Office at the address above, ATTN: Streambed Alteration Program – SAA No# 1600-2015-0022-R5.

1.8 Notification of Completion. The Permittee shall notify CDFW upon completion of this project. A final inspection shall be made when all construction work is completed and revegetation efforts have begun.

1.9 Annual Notification. The Permittee shall provide written annual notification (Calendar year) to CDFW, of all impact areas covered by his agreement.

1.10 Fuel Modification Zones. This Agreement does not authorize impacts associated with fuel modifications zones not specifically identified within the notification package.

1.11 Culvert Designs. The Permittee shall submit final culvert designs to CDFW for written approval no more than sixty (60) days after execution of this Agreement. The Permittee shall resolve all CDFW comments on the culvert designs prior to initiation of project activities, including site preparation.

2. Avoidance and Minimization Measures

To avoid or minimize adverse impacts to fish and wildlife resources identified above, Permittee shall implement each measure listed below.

Limits of Disturbance

2.1 Designate Representative. Before initiating ground- or vegetation-disturbing project activities, Permittee shall designate a representative (Designated Representative) responsible for communications with CDFW and overseeing compliance with this Agreement. The Permittee shall notify CDFW in writing thirty (30) days prior to commencement of ground- or vegetation-disturbing activities of the Designated Representative's name, business address, and contact information. Permittee shall notify CDFW in writing if a substitute Designated Representative is selected or identified at any time during the term of this Agreement.

2.2 Designated Biologist. At least thirty (30) days before initiating ground- or vegetation-disturbing activities, Permittee shall submit to CDFW in writing the name, qualifications, business address, and contact information for a biological monitor (Designated Biologist). Permittee shall obtain CDFW's written approval of the Designated Biologist prior to the commencement of project activities in the stream. The Designated Biologist shall be knowledgeable and experienced in the biology and natural history of local fish and wildlife resources present at the project site. The Designated Biologist shall be responsible for monitoring all project activities, including construction and any ground- or vegetation-disturbing activities in areas subject to this Agreement.

2.3 Designated Biologist Authority. The Designated Biologist shall have authority to immediately stop any activity that is not in compliance with this Agreement, and/or to order any reasonable measure to avoid or minimize impacts to fish and wildlife resources. Neither the Designated Biologist nor CDFW shall be liable for any costs incurred as a result of compliance with this measure. This includes cease-work orders issued by CDFW. If there is a threat of harm to any sensitive species, or other aquatic wildlife the biologist shall halt construction and notify (or leave a message for) Senior Environmental Scientist, Erinn Wilson. Consultation with CDFW is required before re-commencing work.

2.4 Minimize Disturbance to Stream Zone. Disturbance or removal of vegetation shall not exceed the limits approved by CDFW. Within the stream zone, the area of disturbance shall be confined to the smallest practical area considering topography; placement of facilities; locations of burrows, nesting sites or dens; public health and safety; and other limiting factors. The development of all access shall be minimized and constructed without the clearing of vegetation and blading where feasible. Wherever possible, rather than clearing vegetation and grading, equipment and vehicles shall use existing surfaces or previously disturbed areas. The Designated Biologist shall ensure that blading is conducted

only where necessary. All new roadways not necessary for continued facility maintenance shall be blocked, ripped, and revegetated following completion of construction to restore habitat and prevent public use. Where grading is necessary, surface soils shall be stockpiled and replaced following construction to facilitate habitat restoration. To the extent possible, disturbance of shrubs and surface soils due to stockpiling shall be minimized.

2.5 Demarcate Work Area and Access Boundaries. In consultation with a qualified biologist, the Permittee or Designated Representative shall demarcate the boundaries of the confirmed disturbance area within the stream zone. The area shall be marked at intervals of no less than 15 feet and not to exceed twenty-five (25) feet upstream or twenty-five (25) feet downstream from the centerline of the work area. All forms of markings shall be in place prior to and during periods of operation. All persons employed or otherwise working on the project site shall be instructed by Permittee or Designated Representative about the restrictions that the flagging represents.

2.6 Vegetation Marked for Protection. Prior to clearing and grubbing operations, Designated Biologist shall clearly mark vegetation within the project area that shall be avoided. Cactus intended for salvage shall be marked prior to clearing or grubbing operations.

2.7 Location of Surface-Disturbance Activities. To the extent possible, previously disturbed areas within the project sites shall be used for stockpiling excavated materials, vegetation, equipment storage, borrow pits, locations of trailers, parking, and any other surface-disturbing activity.

2.8 Remove Cleared Material from Stream. All trimmed or cleared material/vegetation shall be removed from the area and deposited where it cannot re-enter the stream.

2.9 Worker Environmental Awareness Program (WEAP). Permittee shall utilize the WEAP for all phases of construction (e.g., surveys, monitoring, site mobilization, ground disturbance, grading, construction, operation, site cleanup, and restoration activities). The WEAP shall identify biological resources and BMPs specific to those activities authorized under this agreement for minimizing impacts to fish and wildlife resources. Interpretation shall be provided for non-English speaking workers, and the same instruction shall be provided for any new workers prior to their working on-site. The names of all on-site personnel (e.g. surveyors, construction engineers, employees, contractors, contractor's employees, subcontractors) who have participated in the education program shall be kept on file and made available to CDFW at the project field construction office. The program shall include but not be limited to the following:

- Photographs and habitat descriptions for all special status species

that may occur on the project site, information on their distribution, general behavior, and ecology;

- The sensitivity of these species to human activities; legal protections afforded these species;
- BMPs for protecting species; penalties for violation of state and federal laws; worker responsibilities for trash disposal and safe and humane treatment of any special status species found on the project site; reporting requirements;
- Any specific measures required of workers to prevent taking of threatened or endangered species;
- Handout materials summarizing all the contractual obligations and protective requirements specified in project permits and approvals; and,
- Requirements and penalties regarding adherence to speed limits on the project site.

2.10 Secure Work Area. The work area shall be secured from trespass when determined by CDFW that fish or wildlife resources are vulnerable to damage from unsupervised public access.

Timing and Seasonal Restrictions

2.11 Work Period in Dry Weather Only. Work within the stream zone shall be restricted to periods of no stream flow and dry weather. Precipitation forecasts and potential increases in stream flow shall be considered when planning construction activities. Construction activities shall cease and all necessary erosion control measures shall be implemented prior to the onset of precipitation. Construction activities halted due to precipitation may resume when precipitation ceases and the National Weather Service 72 hour weather forecast indicates a 20% or less chance of precipitation, provided no work occurs in the stream bed if water is flowing. If a construction phase may cause the introduction of sediments into the stream no phase of the project shall commence unless all equipment and materials are removed from the channel at least 12 hours prior to the onset of precipitation and all associated erosion control measures are in place prior to the onset of precipitation. No work shall occur during a dry-out period of 24 hours after the above referenced wet weather. Weather forecasts shall be documented upon request by CDFW.

2.12 Post Storm Event Inspection. After any storm event, Permittee shall inspect all sites where construction has occurred, is scheduled to begin or scheduled to continue construction within the next 72 hours. Corrective action for erosion and sedimentation shall be taken as needed and reported to CDFW. National Weather Service 72 hour weather forecasts shall be reviewed prior to the start of any phase of the project that may result in

sediment runoff to the stream, and construction plans adjusted to meet this requirement. The National Weather Service forecast can be found at http://www.weather.gov.

Avoid/Minimize Effects of Equipment

2.13 Minimize Vehicle Parking. Vehicles may enter and exit the Work Area as necessary for project activities, but may not be parked overnight within ten (10) feet of the drip line of any trees; nor shall vehicles be parked where mechanical fluid leaks may potentially enter the waters of the state.

2.14 Building Material Storage. Project building material and/or construction equipment shall not be placed where materials could pass into the waters of the state or where they may cover aquatic or riparian vegetation.

2.15 Spoil Sites. Spoil sites shall not be located within a stream, where spoils may be washed back into a stream, or where it may cover aquatic or riparian vegetation.

2.16 Hours of Operation and Lighting. Permittee's construction activities shall take place during daylight hours only. No night work or lights are authorized. Work is allowed one hour after sunrise, and must stop one hour prior to sunset.

2.17 Authorized Vehicles. Vehicles shall not be driven or equipment operated in water- covered portions of a stream, or where wetland vegetation, riparian vegetation, or aquatic organisms may be harmed or destroyed, except where authorized by this agreement.

2.18 Pick Up Debris. Permittee shall pick up all debris and waste daily.

2.19 Trash Receptacles. The Permittee shall install and use fully covered trash receptacles with secure lids (wildlife proof) that contain all food, food scrapes, food wrappers, beverage and other miscellaneous trash generated by work force personnel.

Species Measures

2.20 Leave Wildlife Unharmed. If any wildlife is encountered during the course of construction, said wildlife shall be allowed to leave the construction area unharmed. If any listed wildlife is encountered, the Permittee shall contact CDFW immediately.

2.21 Cover Trenches and Other Hazards. All steep-walled trenches or

excavations used during the project shall be covered at all times, except when being actively used, to prevent entrapment of wildlife (e.g., reptiles and small mammals). If trenches cannot be covered, exclusion fencing shall be installed around the trench or excavation. Open trenches, or other excavations, shall be inspected by the qualified biologist a minimum two times per day, once at the start of the work day and once immediately prior to concluding the day's work, and immediately before backfilling. All employees, contractors, or visitors shall look under their vehicles and equipment before movement. If wildlife is observed, no vehicles or equipment would be moved until the animal has left the area voluntarily or can be moved by a qualified biologist. If any life stages of any native vertebrate species are found in the path of construction, the monitor shall make every effort to relocate the species to a safe location. Exclusionary devices shall be erected to prevent the migration into or the return of species into open trenches or excavations. Should no biological monitor be available, these activities shall be halted until the biological monitor is present.

2.22 Check for Wildlife in Pipes/Construction Materials. Permittee shall visually check all cavities and construction materials for the presence of wildlife sheltering within them prior to the moving the material, or shall have the crevices capped while stored on site so as to prevent wildlife from entering. All permanent pipes shall be capped and maintained for the life of the project or until they are removed.

Nesting Bird Surveys

2.23 Vegetation Removal and Construction Outside or the Bird Nesting Season. Vegetation removal shall not occur in riparian/ riparian scrub habitats during the avian breeding season (February 1 through September 1) when nests are present within 500 feet of the proposed work. For construction activities during the avian breeding season, in other less dense habitats and within 500 feet of streams, vegetation removal may occur, if necessary (refer to Condition 2.4 when determining if vegetation removal is necessary), after a pre-construction bird nesting survey has been conducted and no nests covered under Fish and Game Code sections 3503, 3503.5, 3511, and 3513 are detected. Surveys shall be conducted no more than 3 days prior to the start of any phase of construction at locations that have not been "active" for a week (7 days). For the purpose of this Agreement, "active" construction means primary construction activities including, but not limited to, grading, grubbing, pile driving, or excavation. It does not include; BMP inspections, monitoring, road watering, and surveys.

Surveys during the avian breeding season shall be conducted within a 500-foot-buffer area for the presence/absence of breeding avian species, as

well as nests or nest-building activity. The biologist will primarily inspect project areas proposed for physical disturbance within and near the unnamed streams; including vegetation that may support nesting birds. The biologist will conduct surveys during weather that is conducive to observing birds and will avoid conducting surveys during heavy rain, high winds (> 20 MPH), dense fog, or extreme temperatures (over 95° F or 35° C). Data recorded on standardized field monitoring logs during each survey will include a notation of the date and time of the survey; investigators present; weather conditions; evidence of species presence (observation, vocalization, etc.); all other bird species or signs of such observed; avian behavior; habitat type; representative photo (if possible); and disturbance regime present.

If breeding activities and/or an active bird nest(s) are located within 500 feet of active construction adjacent to streams the following systematic methods for safeguarding relevant avian species protected by international treaty under the Federal Migratory Bird Treaty Act (MBTA) of 1918(50 C.F.R. Section 10.13) and Fish and Game Codes sections 3503, 3503.5, 3511, and 3513 will be implemented by the Permittee. The Permittee shall implement appropriate buffers as established by the avian biologist and accepted by the Permittee. This plan applies to avian species found within the 500-foot-buffer surrounding active project construction areas. A weekly Nest Monitoring Log of all active nests within 500 feet of jurisdiction streams will be provided to CDFW.

2.24 Burrowing Owl. Pursuant to CDFW's 2012 Staff Report on Burrowing owl, a Phase 1 burrowing owl survey shall be conducted prior to the start of construction, the results of which will be provided to CDFW a minimum of thirty (30) days prior to the start of construction. If burrowing owl are identified, a minimum of 19.5 acres of suitable burrowing owl habitat shall be provided for each impacted burrow. For each 19.5 acres provided, a minimum of 3 burrowing owl suitable burrows or artificial burrows shall be provided.

2.25 Coast Prickly Pear Cactus. Coast prickly pear cactus (*Opuntia littoralis*) within the stream zone that cannot be avoided shall be translocated to a CDFW approved mitigation site (i.e., coastal sage scrub restoration areas on Attachment A).

2.25.1 Translocated Cactus. All translocated prickly pear cactus shall monitored for survival for a minimum of five (5) years. Should translocations fail, pads shall be collected from an appropriate donor site and monitored for success for a minimum of fifteen (15) years. Translocations shall be protected from herbivory.

Protected Species

2.26 Protected Species Defined. This Agreement does not authorize take, incidental or otherwise, of any protected species including least Bell's vireo (*Vireo pusillus),* coastal cactus wren *(Campylorhynchus brunneicapillus sandiegensis),* or California gnatcatcher (*Polioptila californica*). For the purpose of this Agreement, "protected species" means the following: a species fully protected under state law; a species listed under the California Endangered Species Act (Fish & G. Code § 2050 et seq.) and/or Endangered Species Act (16 U.S.C. § 1531 et seq.); a species identified by CDFW as a species of special concern; or any other species for which take is prohibited under state or federal law.

2.27 Survey Completed by Qualified Biologist. In areas with suitable habitat, the Permittee shall have a qualified biologist survey the proposed work area to verify the presence or absence of special-status including least Bell's vireo, coastal cactus wren, and California gnatcatcher. The results of these surveys shall be provided to CDFW, along with copies of all field notes, and an evaluation matrix prior to the initiation of work within jurisdictional streams. The surveys shall be conducted pursuant to protocol survey guidelines established by the CDFW, U.S. Fish and Wildlife Service (USFWS). The biologist shall possess all required permits.

2.28 California Native Species Field Survey Form. If any protected species are observed during project surveys, the Permittee shall submit a California Native Species Field Survey Form and survey map to the Natural Diversity Database (CNDDB) within 30 working days of the sightings. The form is available online at https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=25739&inline=1. Instructions for completing and submitting the form are available at http://www.dfg.ca.gov/biogeodata/cnddb/submitting_data_to_cnddb.asp.

2.29 Submittal of CNDDB forms to Region. All CNDDB forms shall also be submitted electronically to the CDFW regional staff representative at R5LSACompliance@wildlife.ca.gov within 30 days.

2.30 Dead or Injured Protected Species. Any dead or injured protected species found along project roads or in project disturbance areas shall be reported electronically to the regional CDFW representative at Erinn.Wilson@wildlife.ca.gov within 48 hours. The biologist shall report the location, cause of death, species found, and any other relevant information.

Fill and Erosion

2.31 Minimum Fill Necessary. Fill shall be limited to the minimal amount

necessary to accomplish the agreed activities. Excess fill material shall be moved off-site at Project completion.

2.32 Trenching/Excavation Spoils. No castings or spoil from the trenching / excavation operations shall be placed on the stream side of the trenching / excavation site.

2.33 Disturbed Soils. Permittee shall stabilize all disturbed soils within the Project site to reduce erosion potential, both during and following construction. Planting, seeding with native species, sterile seed mix, and mulching is acceptable. Where suitable vegetation cannot reasonably be expected to become established, non- erodible materials, such as coconut fiber matting, shall be used for such stabilization.

2.34 No Work During Rain. No work within the banks of the stream will be conducted during or immediately following large rainfall events. All disturbed soils within the Project site shall be stabilized to reduce erosion potential, both during and following construction. Temporary erosion control devices, such as straw bales, silt fencing, and sand bags, may be used, as appropriate, to prevent siltation of the stream. Any installation of non-erodible materials not described in the original Project description shall be coordinated with CDFW.

2.35 Silty Water. Silty water shall not be discharged into the stream, or created within the stream. The Permittee's ability to minimize siltation shall be the subject of preconstruction planning and feature implementation. Precautions to minimize siltation may require that the work site be isolated so that silt, or other deleterious materials are not allowed to pass to downstream reaches. The placement of any structure or materials in the stream for this purpose, not included in the original Project description, shall be coordinated with CDFW. If it is determined that silt levels resulting from Project-related activities constitute a threat to aquatic life, activities associated with the siltation shall be halted until effective CDFW- approved control devices are installed, or abatement procedures are initiated.

Flow Diversions and Dewatering

2.36 Flow Diversions and Dewatering. Flow Diversion and Dewatering are not authorized under this agreement.

Equipment and Access

2.37 Equipment, Vehicle Spills, and Contaminants. Any equipment or vehicles driven and/or operated within or adjacent to the stream zone shall be checked and maintained daily, to prevent leaks of materials that if

introduced to water could be deleterious biological resources. The Permittee shall maintain all vehicles and equipment in proper working condition to minimize fugitive emissions and accidental spills from motor oil, antifreeze, hydraulic fluid, grease, or other fluids or hazardous materials. All fuel or hazardous waste leaks, spills, or releases shall be stopped or repaired immediately and cleaned up at the time of occurrence. The Permittee shall be responsible for spill material removal and disposal to an approved offsite landfill and spill reporting to the permitting agencies. Service construction equipment shall be stored at designated areas only. Service/maintenance vehicles shall carry appropriate equipment and materials to isolate and remediate leaks or spills. A spill containment kit shall be available onsite for all fueling, maintenance, and construction activities.

2.38 Drip Pans. Stationary equipment such as cranes, motors, pumps, generators, and welders located within or adjacent to the stream shall be positioned over drip pans.

Pollution Sediment and Litter

2.39 Keep Polluted Water from Entering Stream Zone. Water containing mud, silt, or other pollutants from aggregate washing or other activities shall not be allowed to enter a flowing stream or placed in locations that may be subject to high storm flows.

2.40 Keep Pollutants Out of Stream Zone. No debris, soil, silt, sand, bark, slash, sawdust, rubbish, construction waste, cement or concrete or washings thereof, asphalt, paint, oil or other petroleum products, or any other substances/materials associated with any project-related activity shall be allowed to contaminate the soil and/or enter into or be placed where they may be washed by rainfall or runoff into a stream or lake. Any of these substances/materials, placed within or where they may enter a stream or lake, by the Permittee or any party working under contract, or with the permission of the Permittee, shall be removed immediately upon observation of their presence. When operations are completed, any excess materials or debris shall be removed from the work area.

2.41 Litter and Pollution Control. The Permittee shall comply with all litter and pollution laws. All contractors, subcontractors, and employees shall also obey these laws and it shall be the responsibility of the Permittee to ensure compliance. All trash and food-related items shall be disposed in containers with secure lids to prevent wind and wildlife from opening containers. Trash containers shall be emptied daily and removed from the project site when construction is complete.

2.42 Work in Wetted Areas. Equipment shall not be operated in wetted areas

(including but not limited to ponded, flowing, or wetland areas) without the prior written approval of CDFW.

2.43 Restore Normal Flows. Permittee shall restore normal flows to the effected stream immediately upon completion of work at that location.

2.44 Discharge Sites. Permittee shall control flow rates at the discharge location along Snow Creek via upstream engineering options (e.g. flow controls, widening the channel/conduit for flows) within the footprint of the proposed impacts to the ephemeral streams.

3. Compensatory Measures

To compensate for adverse impacts to fish and wildlife resources identified above that cannot be avoided or minimized, Permittee shall implement each measure listed below.

3.1 Mitigation for Impacts to 0.06 acre of mule fat scrub and 0.14 acre of ephemeral streambed. The Permittee shall mitigate 0.20 acre of impacts to streams through the creation (at least 0.20 acre for impacts), and restoration and preservation of no less than 0.12 acre of mule fat scrub. The Permittee intends to satisfy this condition through the preservation and restoration of approximately 0.32 acre of creation of mule fat scrub (minimum 0.06 acre), enhancement (minimum of 0.12 acre), and streambed creation (minimum of 0.14 acre) along Snow Creek associated with planting and limited weeding activities specified as mitigation required pursuant this Agreement.

3.2 Mitigation for Unauthorized Impacts. The Permittee shall mitigate at a minimum 5:1 ratio for impacts beyond those authorized in this Agreement. In the event that additional mitigation is required, the type of mitigation shall be determined by CDFW and may include creation, restoration, enhancement and/or preservation.

3.3 Proposed Mitigation Options. CDFW retains the right to require more mitigation should the proposed mitigation not be adequate to compensate for the impacts. Additional mitigation may be required if enhancement or preservation is proposed and/or the habitat proposed for mitigation is of lower functions and values than the habitat being impacted. If the chosen site is out of the watershed and not consistent with the habitats lost, the acreage amount required shall be increased.

Selection and Approval of Mitigation Sites

3.4 Conceptual Mitigation Plan. The Permittee has submitted a draft Habitat Mitigation Plan for the West Parcel Solar Project at Mount San Antonio College, dated June 2016. Within 60 days of executing this Agreement, the Permittee shall

update the Conceptual Mitigation Plan for project impacts permitted pursuant to this Agreement and comply with the relevant mitigation requirements. The mitigation proposal shall include the location of the mitigation, creation and restoration locations, maintenance and monitoring, and long-term preservation of the habitat. Permittee has identified its Director of Grounds and Transportation as the land manager who will be responsible for managing the mitigation property in perpetuity. A conservation easement or other land protection instrument shall be identified by Permittee to CDFW's satisfaction. The details of this proposal, any agreements, and documentation generated by this process shall be submitted to the CDFW as part of the overall mitigation plan. To avoid delays in approving the Final Habitat Mitigation Plan, Permittee shall consult with CDFW while updating the Conceptual Mitigation Plan.

3.5 Final Habitat Mitigation Plan. To minimize temporal loss of fish and wildlife resources, all comments to the draft Habitat Mitigation Plan shall be resolved and the Final Mitigation Plan shall be provided to CDFW within 3 months of executing this Agreement. Any delay in the mitigation shall require an amendment to this Agreement and may result in the application of higher mitigation ratios than are currently required by this Agreement to offset the additional temporal loss of habitat function.

3.5.1 Mitigation Site Protection and Management. The Final Mitigation Plan shall detail the mechanisms of protection and management of the mitigation property in perpetuity, to the satisfaction of CDFW.

3.5.2 Property Management Cost Estimate. The Final Mitigation Plan shall include a PAR (Property Analysis Report) or PAR-like analysis that includes dollars necessary to annually fund mitigation, monitoring and management by the land manager in perpetuity.

3.5.3 CDFW Approval of Proposed Mitigation. Permittee shall submit a draft mitigation plan, PAR or PAR-equivalent analysis, and a Preliminary Title Report with a map of all existing encumbrances/easements for the proposed mitigation areas to CDFW for approval a minimum of three months prior to construction.

3.5.4 Conservation Easement. A wildlife conservation easement or its equivalent shall be recorded to CDFW's satisfaction to protect fish and wildlife resources in perpetuity. The easement or its equivalent shall be completed within 3 months of providing the Final Mitigation Plan. The form and content of the easement or its equivalent shall be approved by CDFW's Office of General Counsel prior to its execution. The easement or equivalent shall be binding and enforceable on successive parties. The submittal shall include an electronic version of the easement, with changes to the template shown in redline strikeout format in addition to providing a clean version with all

applicable exhibits, and shall be sent to CDFW at 4665 Lampson Avenue Los Alamitos, CA 90720, Attn: Streambed Alteration Program – SAA # 1600-2015-0022-R5 or Erinn.Wilson@wildlife.ca.gov.

3.5.5 Conservation Requirements. The Permittee shall cause a conservation easement or its equivalent to be conveyed such that the easement's position on the property title shall not be inferior to any existing monetary liens on the land (e.g., deeds of trust are to be subordinated to the conservation easement, etc.). A plan drawn to scale that depicts the conservation easement and delineates the metes and bounds easement description shall be prepared by, or under the supervision of a professional certified land surveyor or civil engineer, and the plat shall be attached to the conservation easement as an exhibit.

3.5.6 Documents Required. Documents required for the transfer of mitigation site/conservation easement will be determined once a final mitigation plan has been submitted and approved by CDFW.

3.5.7 Expenses. The Permittee is responsible for all land easement acquisition costs, including title document cost, escrow fees, recording fees, title insurance premiums, phase one environmental site assessment reports, and any other escrow-related fees and costs.

3.6 Mitigation Site Protection and Management. The Mitigation Agreement and Mitigation Plan shall detail the mechanisms of protection and management of the mitigation property, to the satisfaction of the CDFW.

3.7 Time Restrictions and Consequences. All compensatory mitigation shall be installed or acquired within 12 months of the execution of this Agreement. Any delay in the installation of mitigation shall require an amendment to this Agreement and may result in the application of higher mitigation ratios than are currently required by this Agreement to offset the additional temporal loss of habitat function.

3.8 Release Criteria. The Permittee shall not be released from these maintenance and monitoring obligations until such time as the Permittee has requested and received written concurrence from CDFW that the success criteria have been met.

Preservation and Management of Compensatory Mitigation and Site Securities

3.9 Surety Bond. Within 30 days of executing this Agreement, the Permittee shall establish in favor of CDFW a Surety Bond in the amount of $500,000 for the cost of the Permittee's mitigation obligations under this Agreement. The Permittee shall prepare a draft Surety Bond using the CDFW-approved form and submit to CDFW for its approval. The Surety Bond shall allow CDFW to immediately make a claim

on the Surety Bond if CDFW determines in its sole discretion that the Permittee has failed to meet its mitigation obligations.

3.10 Approval of Surety Bond. After CDFW approves the draft Surety Bond, it will notify the Permittee, after which the Permittee's surety may finalize and execute the Surety Bond. Upon receipt of the original Surety Bond in the principal sum and form approved by CDFW, CDFW shall notify the Permittee that it may begin the project, provided the Permittee has complied with any other pre-project requirements this Agreement specifies.

3.11 Renewal or Replacement of Surety Bond. If the Permittee has not met its mitigation obligations within 90 days prior to the Surety Bond's expiration date, the Permittee shall confirm with its surety that the expiration date will be extended. If the surety elects not to extend the expiration date, the Permittee shall establish a new Surety Bond to replace the original in the same principal sum, unless CDFW agrees otherwise. The new Surety Bond shall be subject to CDFW's approval following the same procedure described above. The Permittee shall have in place a Surety Bond as described above until it has met its mitigation obligation.

3.12 Financial Assurance. Within 30 days of executing this Agreement, the Permittee shall provide sufficient annual budgetary appropriation information to CDFW to assure adequate commitment of financial resources for the establishment, maintenance, and management of the required mitigation habitat. If the information does not adequately assure financial resources for the mitigation habitat, the Permittee shall conduct a PAR-like analysis to determine the appropriate endowment amount to fund the management of the mitigation site in perpetuity. After CDFW approves the PAR, Permittee shall provide the required endowment to either: 1) CDFW (interest from the endowment shall be available for the long-term operation, management, and protection of the mitigation lands, including reasonalle administrative overhead, biological monitoring, improvements to biological carrying capacity, law enforcement measures, and any other action designed to protect or improve the habitat values of the mitigation lands. Monies received by CDFW pursuant to this Condition shall be deposited in a special deposit account established pursuant to Fish and Game Code section 13014.); or 2) a non-profit conservation entity authorized to hold such funds.

4. Reporting Measures

Permittee shall meet each reporting requirement described below.

4.1 NotificationNumber. All reports shall include the Streambed Alteration Agreement Notification Number 1600-2015-0022-R5.

4.2 Photographs, Surveys. The Permittee shall submit pre-construction surveys and photograph documentation showing the condition and boundaries of streams

and associated habitat, and identifying their specific location(s).

4.3 Post-Compliance Report. The Permittee shall submit a post-compliance Report to CDFW within thirty (30) days from the date construction is completed. The post- compliance report shall include: 1) A comparison including map overlays of and a discussion on the pre- and post-construction conditions (with supporting photograph documentation) within the stream zone and 2) a summary of project compliance (including noncompliance and corrective actions taken to achieve compliance).

4.4 Wildlife Use Survey Report. The semiannual wildlife use survey reports shall be submitted to CDFW along with, and/or as a component of, the annual mitigation monitoring report.

4.5 Mitigation Report. Permittee shall submit to CDFW an annual mitigation status report by April 1st of each year. This report shall include the survival, percent cover, and height of both tree and shrub species. The number by species of plants replaced, an overview of the revegetation effort, and the method used to assess these parameters shall also be included. The report shall include photos from designated photo stations and other relevant information such as: a summary of invasive species control, methods used to remove non-native plants, and a list of wildlife observed on site.

4.6 Monitoring Reporting—Revegetation. Permittee shall submit an annual status report on the revegetation efforts to CDFW by April 1st each year. All plant materials that die within the five-year monitoring period shall be replaced within the same year it was determined to have failed. The report shall specify the effectiveness of the mitigation measures and any corrective actions recommended or taken.

4.7 Revegetation Remediation. If revegetation survival and/or cover requirements do not meet established goals, Permittee is responsible for replacement planting, additional watering, weeding, invasive exotic eradication, or any other practice, to achieve these requirements. Replacement plants shall be monitored with the same survival and growth requirements for five years after planting.

4.8 Format of Reports. All Reports shall be submitted in both hard copies and electronic versions. The information submitted electronically shall be placed on a compact disc. The electronic files shall include geographic information system (GIS) shapefiles, along with the appropriate metadata, of the project area and mitigation area. Click or paste this link in your browser for more details on creating shapefiles: http://www.esri.com/library/whitepapers/pdfs/shapefile.pdf.

CONTACT INFORMATION

Any communication that Permittee or CDFW submits to the other shall be in writing and any communication or documentation shall be delivered to the address below by U.S. mail, fax, or email, or to such other address as Permittee or CDFW specifies by written notice to the other.

To Permittee:
Mt. San Antonio Community College District
Attn: Mr. Michael Gregoryk
1100 North Grand
Ave. Walnut, CA
91789 (909) 274-5720
Michael.Gregoryk@mtsac.edu

To CDFW:
Department of Fish and Wildlife
South Coast Region
3883 Ruffin Road
San Diego, CA 92123
Attn: Lake and Streambed Alteration Program – Erinn Wilson
Notification #1600-2015-0022-R5
R5LSACompliance@wildlife.ca.gov

LIABILITY

Permittee shall be solely liable for any violations of this Agreement, whether committed by Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents or contractors and subcontractors, to complete the project or any activity related to it that this Agreement authorizes.

This Agreement does not constitute CDFW's endorsement of, or require Permittee to proceed with the project. The decision to proceed with the project is Permittee's alone.

SUSPENSION AND REVOCATION

CDFW may suspend or revoke in its entirety this Agreement if it determines that Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, is not in compliance with this Agreement.

Before CDFW suspends or revokes this Agreement, it shall provide Permittee written notice by certified or registered mail that it intends to suspend or revoke. The notice shall state the reason(s) for the proposed suspension or revocation, provide Permittee an opportunity to correct any deficiency before CDFW suspends or revokes this Agreement, and include instructions to Permittee, if necessary, including but not limited to a directive to immediately cease the specific activity or activities that caused CDFW

to issue the notice.

ENFORCEMENT

Nothing in this Agreement precludes CDFW from pursuing an enforcement action against Permittee instead of, or in addition to, suspending or revoking this Agreement.

Nothing in this Agreement limits or otherwise affects CDFW's enforcement authority or that of its enforcement personnel.

OTHER LEGAL OBLIGATIONS

This Agreement does not relieve Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, from obtaining any other permits or authorizations that might be required under other federal, state, or local laws or regulations before beginning the project or an activity related to it.

This Agreement does not relieve Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, from complying with other applicable statutes in the FGC including, but not limited to, FGC sections 2050 *et seq*. (threatened and endangered species), 3503 (bird nests and eggs), 3503.5 (birds of prey), 5650 (water pollution), 5652 (refuse disposal into water), 5901 (fish passage), 5937 (sufficient water for fish), and 5948 (obstruction of stream).

Nothing in this Agreement authorizes Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, to trespass.

AMENDMENT

CDFW, with Permittee consultation, may amend this Agreement at any time during its term if CDFW determines the amendment is necessary to protect an existing fish or wildlife resource.

Permittee may amend this Agreement at any time during its term, provided the amendment is mutually agreed to in writing by CDFW and Permittee. To request an amendment, Permittee shall submit to CDFW a completed CDFW "Request to Amend Lake or Streambed Alteration" form and include with the completed form payment of the corresponding amendment fee identified in CDFW's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5).

TRANSFER AND ASSIGNMENT

This Agreement may not be transferred or assigned to another entity, and any purported transfer or assignment of this Agreement to another entity shall not be valid or effective, unless the transfer or assignment is requested by Permittee in writing, as specified below, and thereafter CDFW approves the transfer or assignment in writing.

The transfer or assignment of this Agreement to another entity shall constitute a minor amendment, and therefore to request a transfer or assignment, Permittee shall submit to CDFW a completed CDFW "Request to Amend Lake or Streambed Alteration" form and include with the completed form payment of the minor amendment fee identified in CDFW's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5).

EXTENSIONS

In accordance with FGC section 1605(b), Permittee may request one extension of this Agreement, provided the request is made prior to the expiration of this Agreement's term. To request an extension, Permittee shall submit to CDFW a completed CDFW "Request to Extend Lake or Streambed Alteration" form and include with the completed form payment of the extension fee identified in CDFW's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5). CDFW shall process the extension request in accordance with FGC 1605(b) through (e).

If Permittee fails to submit a request to extend this Agreement prior to its expiration, Permittee must submit a new notification and notification fee before beginning or continuing the project this Agreement covers (FGC section 1605(f)).

EFFECTIVE DATE

This Agreement becomes effective on the date of CDFW's signature, which shall be: 1) after Permittee's signature; 2) after CDFW complies with all applicable requirements under the California Environmental Quality Act (CEQA); and 3) after payment of the applicable FGC section 711.4 filing fee listed at https://www.wildlife.ca.gov/Conservation/CEQA/Fees.

TERM

This Agreement shall expire on June 15, 2021 unless it is terminated or extended before then. All provisions in this Agreement shall remain in force throughout its term. Permittee shall remain responsible for implementing any provisions specified herein to protect fish and wildlife resources after this Agreement expires or is terminated, as FGC section 1605(a)(2) requires.

EXHIBITS

The documents listed below are included as exhibits to this Agreement and

incorporated herein by reference.

A. Exhibit A: "Draft Mitigation Site"

AUTHORITY

If the person signing this Agreement (signatory) is doing so as a representative of Permittee, the signatory hereby acknowledges that he or she is doing so on Permittee's behalf and represents and warrants that he or she has the authority to legally bind Permittee to the provisions herein through official action of Permittee's governing body.

AUTHORIZATION

This Agreement authorizes only the project described herein. If Permittee begins or completes a project different from the project this Agreement authorizes, Permittee may be subject to civil or criminal prosecution for failing to notify CDFW in accordance with FGC section 1602.

CONCURRENCE

The undersigned accepts and agrees to comply with all provisions contained herein.

FOR MOUNT SAN ANTONIO COMMUNITY COLLEGE DISTRICT

William T. Scroggins, PhD
President and CEO

8/22/16
Date

FOR DEPARTMENT OF FISH AND WILDLIFE

Betty J. Courtney
Environmental Program Manager I

Aug. 24, 2016
Date

Prepared by: Eric Weiss
Senior Environmental Scientist

Exhibit A: Draft Mitigation Site

GABRIELEÑO BAND OF MISSION INDIANS - KIZH NATION
Historically known as The San Gabriel Band of Mission Indians
recognized by the State of California as the aboriginal tribe of the Los Angeles basin

Mt. Sac
Facilities Planning and Management
1100 North Grand Ave
Walnut, CA 91789

July 14, 2017

Re: AB52 Consultation request for the West Parcel Scholar Project located west of Grand

Dear Rebecca Mitchell,

Please find this letter as a written request for consultation regarding the above-mentioned project pursuant to Public Resources Code § 21080.3.1, subd. (d). Your project lies within our ancestral tribal territory, meaning descending from, or a higher degree of kinship than traditional or cultural affiliation. Your project is located within a sensitive area and may cause a substantial adverse change in the significance of our tribal cultural resources. Most often, a records search for our tribal cultural resources will result in a "no records found" for the project area. The Native American Heritage Commission, ethnographers, historians, and professional archaeologists can only provide limited information that has been previously documented about California Native Tribes. This is the reason the Native American Heritage Commission (NAHC) will always refer the lead agency to the respective Native American Tribe of the area because the NAHC is only aware of general information and are not the experts on each California Tribe. Our Elder Committee & tribal historians are the experts for our Tribe and are able to provide a more complete history (both written and oral) regarding the location of historic villages, trade routes, cemeteries and sacred/religious sites in the project area. Therefore, to avoid adverse effects to our tribal cultural resources, we would like to consult with you and your staff to provide you with a more complete understanding of the prehistoric use(s) of the project area and the potential risks for causing a substantial adverse change to the significance of our tribal cultural resources.

Consultation appointments are available on Wednesdays and Thursdays at our offices at 901 N. Citrus Ave. Covina, CA 91722 or over the phone. Please call toll free 1-844-390-0787 or email gabrielenoindians@yahoo.com to schedule an appointment.

** Prior to the first consultation with our Tribe, we ask all those individuals participating in the consultation to view a video produced and provided by CalEPA and the NAHC for sensitivity and understanding of AB52. You can view the video at: http://nahc.ca.gov/2015/12/ab-52-tribal-training/

With Respect,

Andrew Salas, Chairman

Andrew Salas, Chairman | Nadine Salas, Vice-Chairman | Christina Swindall Martinez, secretary
Albert Perez, treasurer I | Martha Gonzalez Lemos, treasurer II | Richard Gradias, Chairman of the Council of Elders
PO Box 393, Covina, CA 91723 | www.gabrielenoindians.org | gabrielenoindians@yahoo.com

MT. SAC
Mt. San Antonio College

1100 North Grand Avenue
Walnut, CA 91789-1399
909.274.7500 • www.mtsac.edu

July 27, 2017

Andrew Salas, Chairman
Gabrieleño Band of Mission Indians – Kizh Nation
PO Box 393
Covina, CA 91723

Subject: **West Parcel Solar Project: Initiation of Consultation Pursuant to Public Resource Code Section 20180.3.1 and 21080.3.2 (Assembly Bill [AB] 52)**

Dear Mr. Salas:

I have received your request to consult on the Mt. San Antonio College's (Mt. SAC) proposed West Parcel Solar Project, which is subject to compliance with the California Environmental Quality Act (CEQA). The Mt. San Antonio Community College District (District) is the lead CEQA agency for the proposed project and is responsible for consulting with California Native American Tribes pursuant to Public Resources Codes Section 2108.3.1 and 21080.3.2 (AB 52). The proposed project involves a 27.65-acre parcel of undeveloped land located west of Grand Avenue, south of the main campus. The project proposes to grade on 17.25 acres to create a 9.9-acre pad for a 2.2 MW ground mounted solar panel system. Earth import for the project from the stadium area of the campus is estimated as 139,000 cubic yards. The West Parcel Solar Project will provide up to 4.6 million kwh of electricity annually for the campus during its first year of operation.

As the District's point of contact for the purpose of AB 52 consultation for the West Parcel Solar Project, I would like to propose a formal meeting with you at the District's Facilities Planning and Management Department office to discuss the project. The purpose of this meeting would be to begin consultation with you and discuss Tribal concerns regarding the proposed project and potential impacts to tribal cultural resources. Early identification of the Tribe's concerns will allow the District to consider ways to avoid and minimize potential impacts to tribal cultural resources as project planning and alternatives are developed and refined. If you prefer, consultation may also be conducted by email, letter, or telephone.

I understand that you may have concerns regarding the confidentiality of information on areas or resources of religious, traditional and cultural importance to the Tribe. During the consultation meeting, I would be happy to discuss these concerns and develop procedures to ensure the confidentiality of such information is maintained.

BOARD OF TRUSTEES

Dr. Manuel Baca • Rosanne M. Bader • Jay F. Chen • Judy Chen Haggerty, *Esq.*
Dr. David K. Hall • Robert F. Hildago • Laura L. Santos

COLLEGE PRESIDENT / CEO – Dr. William T. Scroggins

Please be advised the consultation does not limit the ability of you or the Tribe to informally submit information to the District regarding the significance of tribal cultural resources, the significance of the project's impact on tribal cultural resources, or any appropriate measures to mitigate the potential impacts. If you wish to informally submit information, written comments may be sent to me at the address below. General comments may also be sent to me at the address below.

Please contact me at your earliest convenience in order to arrange a date and time for a consultation meeting. I can be reached at 1100 North Grand Avenue, Walnut, CA 91789, (909) 274-5175, or bmitchell@mtsac.edu.

Sincerely,

Rebecca Mitchell
Manager, Facilities Support Services

Solar Power Options for Mt. San Antonio College
November 2013

Background

Since 2003, Mt. San Antonio College has been a leader among all California Community Colleges in the areas of sustainability, energy conservation, and reducing greenhouse gas emissions. Since then, over 50 distinct energy savings projects have been completed on campus; including the chilled water central plant, the cogeneration facility, the campus wide energy management system, various lighting upgrade projects, and several LEED certified new construction projects. Together, these projects have resulted in a net ongoing general fund savings of over $1 million per year. When adjusted for inflation and campus growth, this figure approaches $1.4 million per year. To help pay for these projects, public utility commission and other incentives totaling over $3 million have been received.

Each of these projects has been evaluated using specific criteria such as simple payback, return on investment, maintenance savings, operating costs, life cycle cost analysis, first cost, and opportunity cost comparisons. The projects have generally been completed in logical order, with the highest return projects funded first. During the last decade, staff has periodically evaluated opportunities for solar power generation on campus, using the same rigorous criteria as all other energy conservation projects. During this time, local solar power generation has evolved from a high cost, high-risk venture to a potential project that compares well with other successful energy conservation projects. Staff now believes that it is time invest in solar power generation at Mt. San Antonio College.

In developing this analysis, the following three sites on campus have been considered: a 2 million watt ground mounted system, located on the parcel of land to the west of Grand Avenue, a 330,000 watt system mounted on the top deck of the planed parking structure, and a 1.5 million watt carport type system located in student lot F. While these three scenarios do not represent all possible options for implementing solar power generation on campus, they are representative of the various available options.

Analysis

First Cost

Two engineering firms were engaged to assist in the study of on campus solar power generation options. Each firm presented a separate order of magnitude cost opinion for the three scenarios, and produced estimates of the value of the power that would be generated. Very conservative estimates of the energy savings are used in this analysis, considering our already very low cost of energy for comparison purposes. Staff has added additional information regarding site conditions and specific infrastructure elements to complete the cost estimates. The first cost for each of the three systems, without utility incentives or other grants, is as follows.

Cost Basis	2 MW Ground	1.5 MW Car Port	0.33 MW Structure
Total Cost Per Watt	$4.20	$5.85	$8.09
Escalated Cost	$4.20	$6.91	$8.33

Site Specific Conditions

Each of the three projects would present unique challenges. The large project on the west parcel requires significant environmental mitigation efforts, expected to cost over $2 million. While the mitigation efforts will result in over 11 acres of buildable land that can be used in perpetuity by the College, the mitigation costs should be considered when comparing the first cost of each project. The carport scenario would require larger concrete footings and extensive earthwork to meet the specific requirements of the Division of the State Architect, estimated to cost nearly $500,000. Similarly, the parking structure scenario would require structural enhancements costing an estimated $450,000 to support the additional loads on the top deck. When these costs are considered, the cost per watt increases as shown below.

Cost Basis	2 MW Ground	1.5 MW Car Port	0.33 MW Structure
Total Cost Per Watt	$5.70	$6.72	$10.09

Financial Summary

For our purposes, each of the three scenarios was evaluated in terms of return on investment (ROI), net cost after incentives, simple payback, and actual energy savings. The return on investment is calculated as the net present value (NPV) of the future cash flows generated by the solar power facility, divided by the total first cost of the project after incentives, expressed as a percentage. Since we expect the cost of energy to increase at a greater rate than the standard inflation rate, we use a discount rate of 3% and an energy inflation rate of 4.5%. The service life of the solar facilities is expected to be 25 years.

Cost Basis	2 MW Ground	1.5 MW Solar	0.33 MW Structure
Total Cost	$8,400,000	$10,080,000	$3,329,700
Utility Incentives	($1,100,000)	($800,000)	($363,000)
Prop. 39 Funds	($1,050,000)	$0	($1,050,000)
Net Cost	$6,250,000	$9,280,000	$1,916,700
Initial Service Year	2016	2021	2018
First Year Savings	$455,061	$418,533	$79,657
NPV Savings	*$13,209,275*	*$12,148,972*	*$2,312,262*
ROI	211%	131%	120%
Simple Payback	11 Years	15.5 years	16.5 years

Opportunity Cost

Implementing any of the three scenarios above would result in some secondary effects or opportunity costs. While these effects are difficult to quantify financially, where possible

the financial opportunity costs were taken into account in the above financial summary. For the parking structure scenario, the additional structural costs were considered in the project cost estimates. The impact on the neighboring homes was not. Adding solar to the top deck would increase the height of the structure and may result in complaints. A corresponding reduction in height of the structure would be cost prohibitive or would reduce the number of spaces available for students and staff. For this reason it is not recommended.

The carport scenario presents a viable option for solar power generation, but due to the scarcity of parking on campus, especially considering the upcoming construction activities, solar facility construction in any of the student lots would not be able to begin until 2019, with solar power generation beginning in 2021. The delay effectively reduces available incentives, as the Proposition 39 monies are not available after 2016–17 fiscal year. This effect, along with the increasing cost of construction reduces the carport option to the second choice. Should the College determine that additional solar generation could be effectively utilized in 2021, this scenario should be reconsidered.

While the west parcel scenario is clearly the most attractive option from a financial standpoint, other uses for the land should be considered. In 2008, before the economic downturn began, options for utilizing the land for a housing development were evaluated. Working with a prominent local homebuilder, it was determined that the site could produce positive cash flows to the college of up to $78,000 per year for 30 years. Not only is the $78,000 less than the energy savings that will be realized by utilizing the land for solar power generation, the proposal also required the College to remove over 300,000 cubic yards of earth from the site. Exporting such a large quantity of earth would effectively eliminate the positive cash flows from the housing option. The use of the site for solar generation also provides an opportunity for the College to transfer soil from other construction projects on campus. Finally, using the land to develop housing would be permanent. Utilizing the land for solar generation allows the district to reconsider its use after several years, once the solar power facility has paid for itself, and at that time a new use could be considered.

The west parcel option not only produces an ideal site for solar, creating ongoing savings of nearly $500,000 per year beginning in 2016, but it also saves approximately $1.5 million in soil export costs on other projects. For these reasons, the west parcel is the recommended site, for a 2 MW solar generating facility.

Recommendation

It is recommended that the Board approve the use of the west parcel site for solar generation. No expenditures are approved in this item. Contracts for construction will be presented for approval through the normal process.

DATE: June 16, 2017

PROJECT TITLE: West Parcel Solar Project

TO: All Interested Agencies, Organizations and Individuals

FROM: Rebecca Mitchell, Manager
Facilities Planning & Management
Mt. San Antonio College
1100 North Grand Avenue
Walnut, California 91789-1399

SUBJECT: Notice of Preparation (NOP) of a Tiered Draft EIR for the Mt. San Antonio College West Parcel Solar Project and Notice of Second Public Scoping Session on July 11, 2017

The Mt. San Antonio Community College District (District) is the lead agency and will prepare a Tiered Draft Environmental Impact Report (Draft SEIR) for the Mt. San Antonio College West Parcel Solar Project (West Parcel Solar Project) under the terms and requirements of the California Environmental Quality Act (CEQA) and the implementing CEQA regulations.

The Draft SEIR will be tiered to the 2012 Master Plan's Subsequent Environmental Impact Report ("2012 Master Plan EIR") (SCH 2002041161) certified as a programmatic EIR by action of the District Board of Trustees in December 2013 and the 2015 Facilities Master Plan Update and Physical Education Projects (PEP) Subsequent Program/Project Environmental Impact Report ("2015 Master Plan EIR") certified as a programmatic/PEP project EIR (SCH 2002041161) by action of the District Board of Trustees in October 2016. Under CEQA Guidelines Section 15152, tiering refers to using the analysis of general matters contained in broader EIRs, such as the 2012 Master Plan EIR and the 2015 Master Plan EIR, with a project specific EIR on later, site-specific projects, such as the Draft EIR for the proposed West Parcel Solar Project. This NOP is being sent to the California Governor's Office of Planning and Research, each responsible and trustee agency, as well as to other interested parties.

The District is soliciting comments from responsible and trustee agencies and members of the public regarding the scope, preparation and content of the Draft SEIR, environmental issues to be addressed in the Draft SEIR, and other related issues. Agencies will need to use the Draft EIR when considering permits or other approvals for the West Parcel Solar Project, if any.

The West Parcel Solar Project description, location and discussion indicating the probable environmental effects of the proposed project are included in the complete NOP documents which are posted on the District's website (see below for website address).

A CEQA Initial Study Checklist for the West Parcel Solar Project is attached, which further describes which identifies and discusses the potential environmental effects of implementation of the West Parcel Solar Project.

<u>Documents Available for Review:</u>

The complete NOP document is also posted on the District's website:

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In an effort to provide agencies the public adequate time to provide comments, the District is providing a 30-day public comment period for this NOP and Initial Study. All comments must be received within 30 days of the start of the public comment period, which starts June 16, 2017 and ends on July 17, 2017. The District requests that the name of the contact person be provided by commenting agencies. Please send your comments to Rebecca Mitchell, Manager, at the address above.

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The District is the largest single-campus public community college in California (over 420 acres) with an estimated 2014–2015 fall enrollment of 35,986 students (headcount). The campus regional location is shown in Exhibit 1. The District serves sixteen cities and unincorporated areas in the eastern part of Los Angeles County. However, the District's larger effective service area extends beyond the District's boundaries. The District includes ten (10) unified school districts. The District passed a Measure R Bond ($221 million) in November 2001 and a Measure RR Bond ($353 million) in November 2008 to fund its facilities programs.

The District's Facilities Planning & Management Department (FP&M) projects the campus will have a fall student enrollment of 39,731 (headcount) in 2020. The increased enrollment of 3,745 students will result in an increase of 4,606 trips in 2020. FP&M completed the 2015 Facilities Master Plan Update SEIR to address new planning elements not previously included in the *2012* Facility Master Plan Update SEIR.

PROJECT DESCRIPTION

The West Parcel Solar Project is located on a portion of a 27.65-acre parcel of undeveloped land located west of Grand Avenue. The District has zoned the site Solar & Retail (Exhibit 2). The 27.65-acre parcel contains primarily coastal sage scrub, habitat for the threatened coastal California gnatcatcher. (Exhibit 3). Replacement and restored habitat will be implemented onsite and east of Grand Avenue. Grading will occur on 17.25 acres to create a 9.9 acre pad at 761 feet mean sea level for a 2.2 MW ground mounted solar panel system. Earth import for the project from the stadium area of the campus is estimated as 139,000 cubic yards. The West Parcel Solar Project will provide up to 4.6 million kwh of electricity annually for the campus during its first year of operation.

Two local drainages are located onsite. The northern intermittent drainage, which conveys offsite storm flows to the storm drain along Grand Avenue, is three feet in width and approximately 550 linear feet. The southern ephemeral drainage is one foot in width and approximately 300 linear feet.

Grading of the West Parcel will result in the removal of 9.45 acres of Non-Native Grassland (NNG) and removal of 8.07 acres of Venturan Coastal Sage Scrub (CSS). Loss of CSS may result in a corresponding

loss of habitat for the coastal California gnatcatcher (CGN). The CGN is listed as a Species of Concern by the California Department of Fish and Wildlife, and listed as threatened by the U. S. Fish and Wildlife Service.

The total obligation of the project for coastal sage scrub habitat resulting from the permit applications to Responsible Agencies is 17.04 acres. This obligation will be met with 8.68 acres of preservation and 8.36 acres of restoration. 8.04 acres of coastal sage scrub restoration will occur on- and off-site and 0.32 acres of riparian restoration will occur along Snow Creek on campus.

SOLAR PANEL CHARACTERISTICS

The West Parcel Solar Project will be designed and constructed through a design-build agreement for the purchase and installation of a ground-mount solar photovoltaic system, which will provide clean electric power for the campus. The 2.2-MW system; will have both fixed solar panels and panels that tilt to better capture sunlight while minimizing glare. The tracked solar photovoltaic panels are Dura Track HZ Single Axis Solution System, which can tilt 45 degrees. The proposed solar array layout, is shown in Exhibit 4. The solar array consists of 274 rows (strings) of panels, with eighteen panels in each row. The system has a projected output of 4,622,000 kwh.

PV solar panels are designed to absorb sunlight to convert it into electricity. The more sunlight that is absorbed, the more energy can be produced. A mono-crystalline silicon solar cell absorbs two-thirds of the sunlight reaching the panel's surface. This means that only one-third of the sunlight reaching the surface of a solar panel has a chance to be reflected. The tracked system eliminates glare by changing the angle of the panel in relationship to the sun.

An interconnect system transmits solar power from the project site to the campus by an underground conduit. The conduit will cross under Grand Avenue from the project site to the road south of the Wildlife Sanctuary. The conduit will proceed north along Mt. SAC Way, cross under Temple Avenue and extend along the north side of Temple Avenue to the main switchgear near Temple Avenue.

The major potential environmental issues associated with the project are grading, biological resources, truck hauling and construction related noise and air quality impacts. The District has submitted and received approvals for several permit applications to state and federal agencies for biological resources, wetlands and riparian issues. In addition, traffic, air quality, noise, biological resource surveys, soils/geotechnical reports, water quality reports, cultural resource study, landscape plans, a solar light and glare study and habitat mitigation plans are being finalized for the project. The project will include submission of a grading plan to the City of Walnut for review and approval of drainage and grading improvements. A Truck Hauling Plan will be a part of the grading plan submissions.

The Draft EIR will address the potential significant effects that are peculiar to the West Parcel Solar Project and potential significant effects that were not addressed in the previous 2012 and 2015 Program EIRs. Four exhibits germane to the project and an Initial Study Checklist for the project are attached.

NOTICE OF SCOPING SESSION

The CEQA Guidelines encourage agencies to conduct early public consultation directly with any person or organization it believes will be concerned with the environmental effects of a project. This early consultation may be called scoping. Scoping may help other agencies and the public better understand the project and to identify the range of actions, alternatives, mitigation measures and significant effects that may need to

be analyzed in the Draft EIR. The scoping process may also eliminate from detail study issues found not to be important.

The District will conduct a second public Scoping Session on July 11 from 6:00 – 7:30 pm. The meeting will be held at 6:00 pm in Room 1050 in Building 46, located south of Temple Avenue along Bonita Avenue. Comments submitted from the June 7, 2017 Scoping Session are already on the record and do not need to be submitted again.

Comments may be submitted in writing before or at the Scoping Session, or citizens and agency representatives may express their comments publicly. Attendees are encouraged to submit their comments in writing or forward their comments directly to facilitiesplanning@mtsac.edu.

At the scoping meeting, the District will present a short presentation of the project, the existing conditions onsite and the design of the proposed project; however, the primary purpose of the Scoping Session is to encourage agencies and the public to provide written and public comments on the project.

Scoping Session::

Project Title:	Mt. San Antonio College West Parcel Solar Project
Project Applicant:	Mt. San Antonio Community College District
Project Location:	West of Grand Avenue on an undeveloped parcel
Place:	Building 46, Room 1050, Mt. San Antonio College
Date:	July 11, 2017
Time:	6:00 – 7:30 pm

Staff Contact:	Rebecca Mitchell, Manager
Telephone:	(909) 274-5175
Facsimile:	(909) 274-2931
E-Mail Address:	facilitiesplanning@mtsac.edu

MT. SAC
Mt. San Antonio College

Facilities Planning & Management
1100 North Grand Avenue • Walnut, CA 91789
909-274-4850 • www.mtsac.edu

Notice of a Scoping Session for the Mt. San Antonio College West Parcel Solar Project

Responsible and Concerned Agencies

The Mt. San Antonio Community College District (District) is the Lead Agency and will prepare a Draft Environmental Impact Report (DEIR) on 27.65-acres of land located on campus west of Grand Avenue. The project site is undeveloped and contains primarily coastal sage scrub and habitat for the endangered coastal California gnatcatcher. Replacement and restored habitat will be implemented onsite and east of Grand Avenue. Grading will occur on 17.25 acres to create a 9.9 acre pad at 761 feet mean sea level for a 2.0 MW solar panel system. Earth import for the project is estimated as 139,000 cubic yards. The project will provide up to 4.6 million kwh of electricity for the campus during its first year of operation.

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Therefore, the District will conduct a Scoping Session on June 7, 2017 at 5:00 p.m. at the Facilities Planning and Managements Offices, Bldg. 46, Room 1050. Bldg. 46 is on the north side of Bonita Drive, south of Temple Avenue. Visitor parking is available in the lot north of the building. The purpose of the meeting is to solicit comments from the public and other agencies concerning the potential environmental impacts of the project. Those comments may be submitted in writing before or at the Scoping Session, or citizens and agency representatives may express their comments publicly. If attendance is large, your oral comments will be limited to four (4) minutes until all persons desiring to provide public comments have expressed their comments. Attendees are encouraged to submit their comments in writing or forward their comments directly to facilitiesplanning@mtsac.edu.

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Scoping Session:

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Project Applicant:	Mt. San Antonio Community College District
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Place:	Bldg. 46, Room 1050, Mt. San Antonio College
Date:	June 7, 2017
Time:	5:00 – 7:30 pm

Staff Contact:	Rebecca Mitchell, Manager
Telephone:	(909) 274-5175
Facsimile:	(909) 274-2931
E-Mail Address:	facilitiesplanning@mtsac.edu

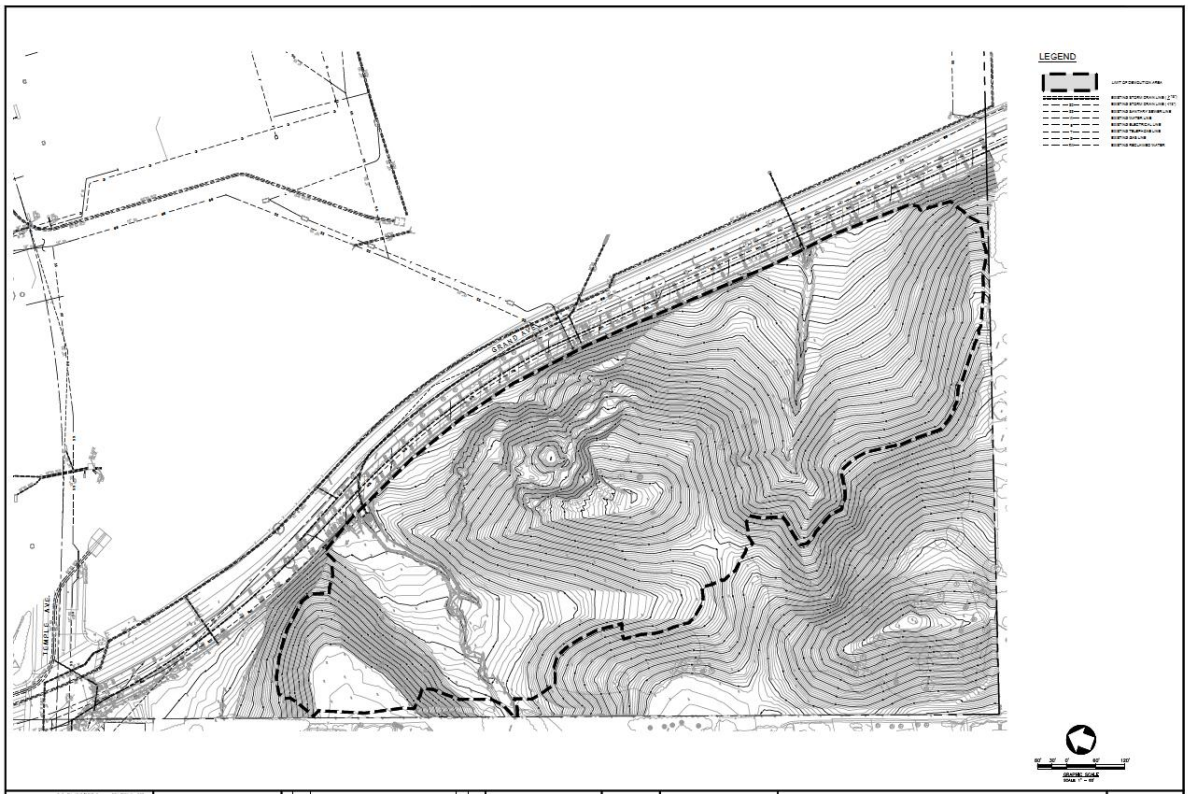


Exhibit 1: Site Topography

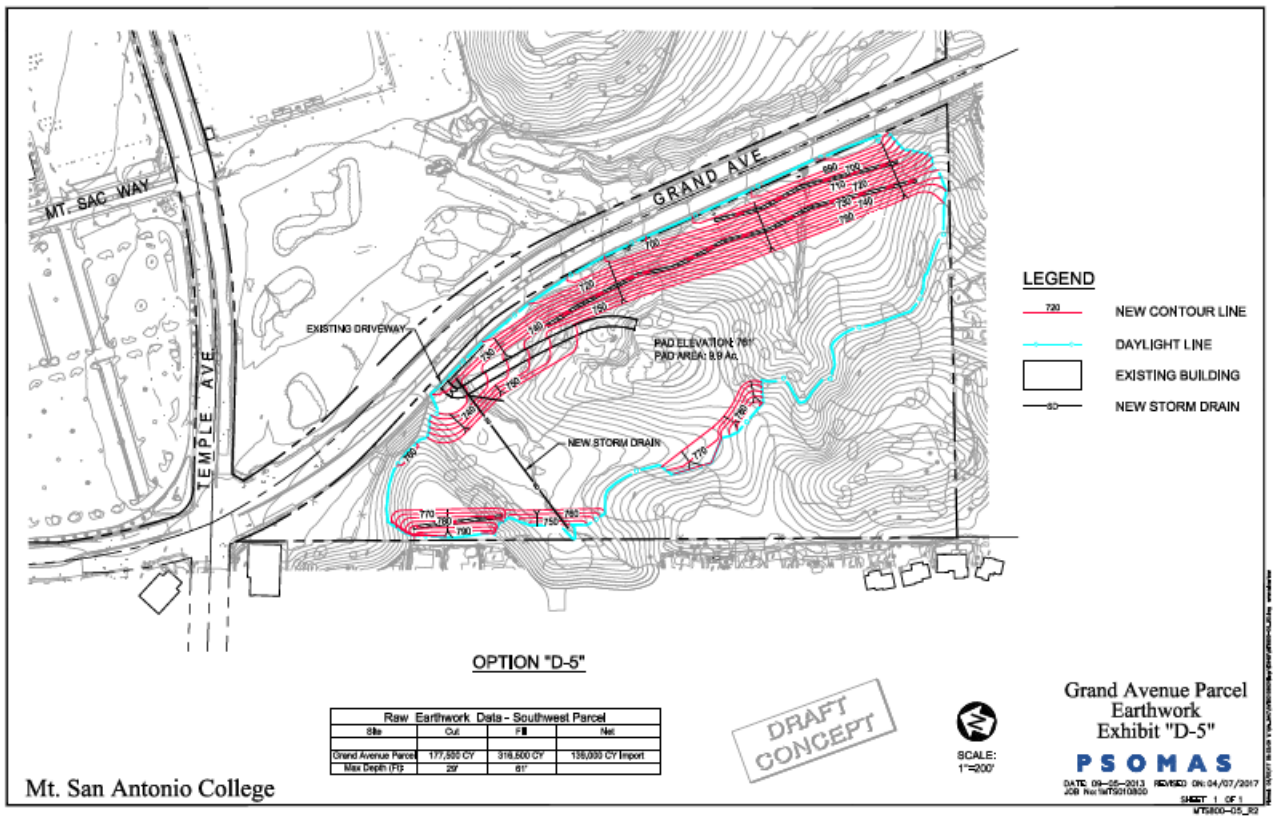


Exhibit 2: Grading Plan

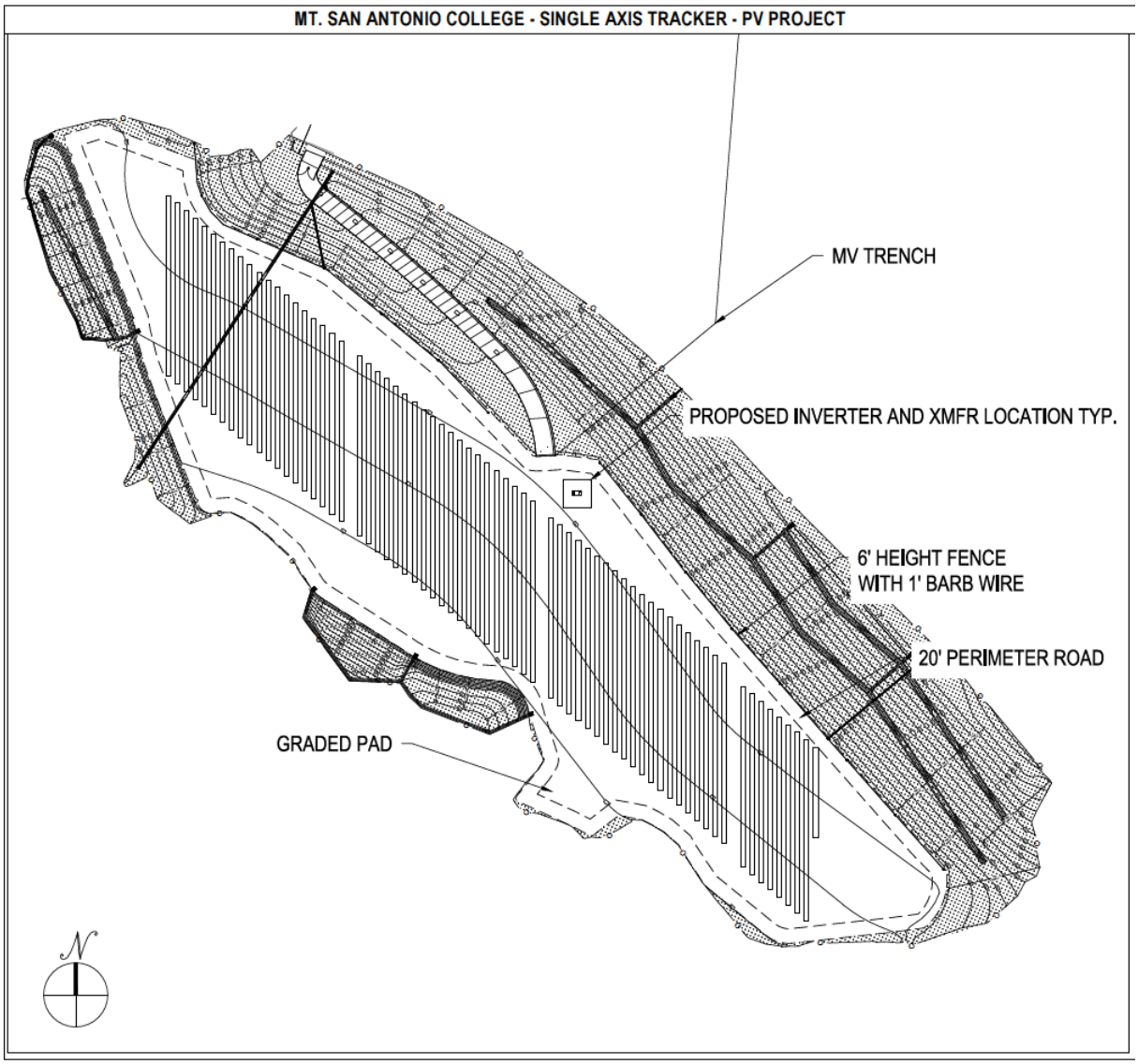
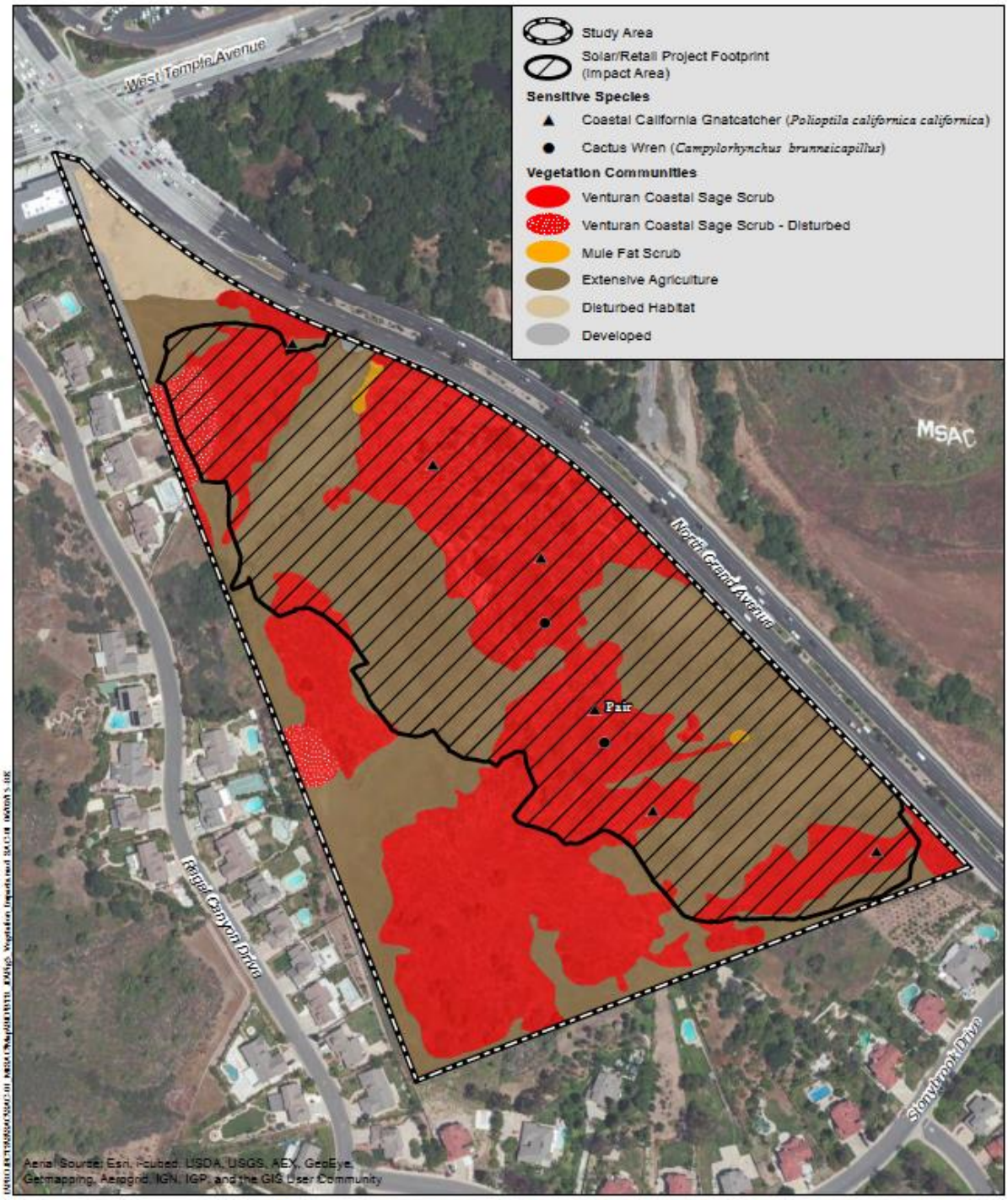


Exhibit 3: West Parcel Solar Project



Habitat and Sensitive Species Map/Project Footprint

WEST PARCEL SOLAR PROJECT

HELIX Environmental Planning

0 250 Feet

Figure 5

Exhibit 4: Existing Biological Resources

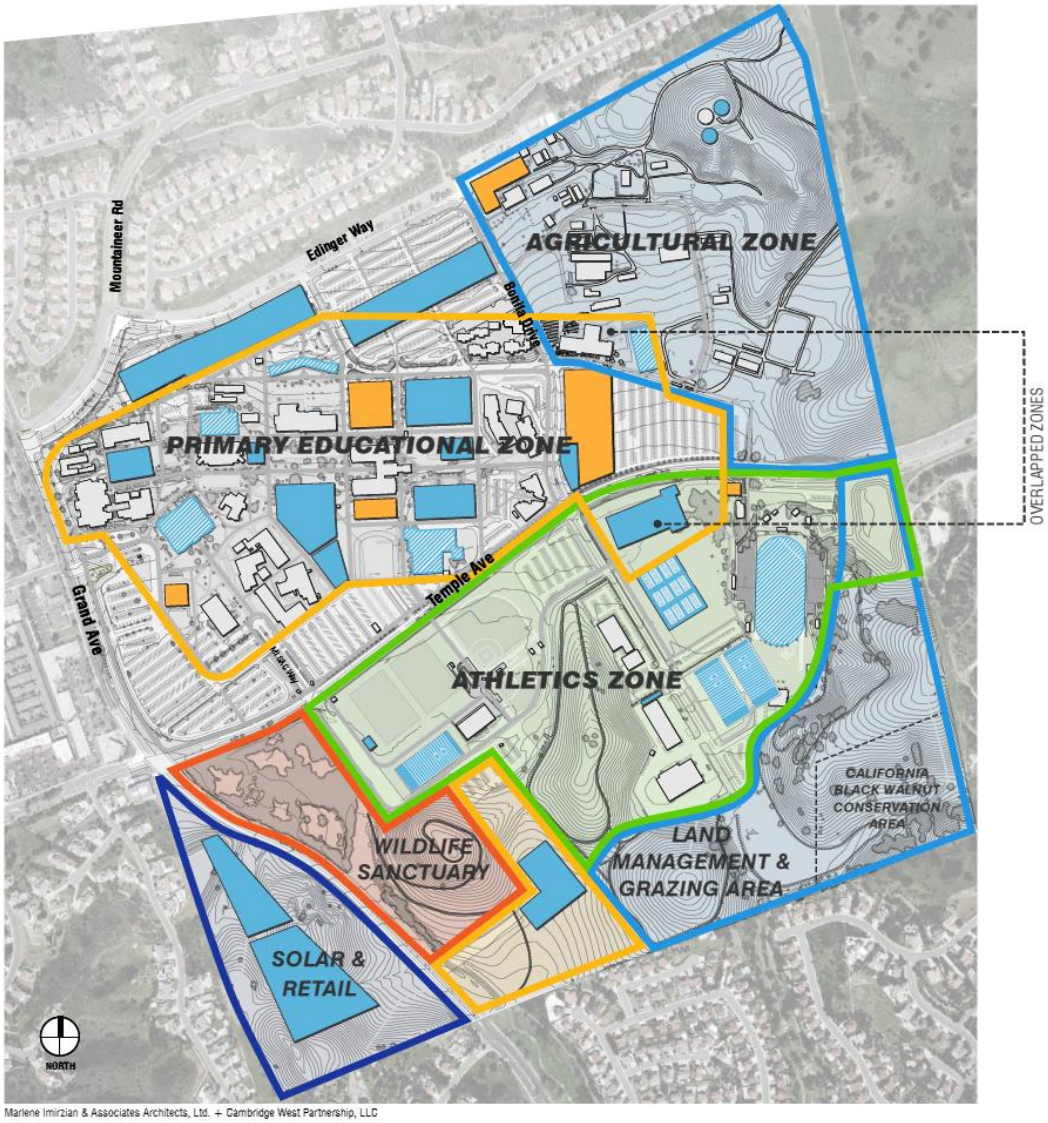


Exhibit 5: Site Zoning

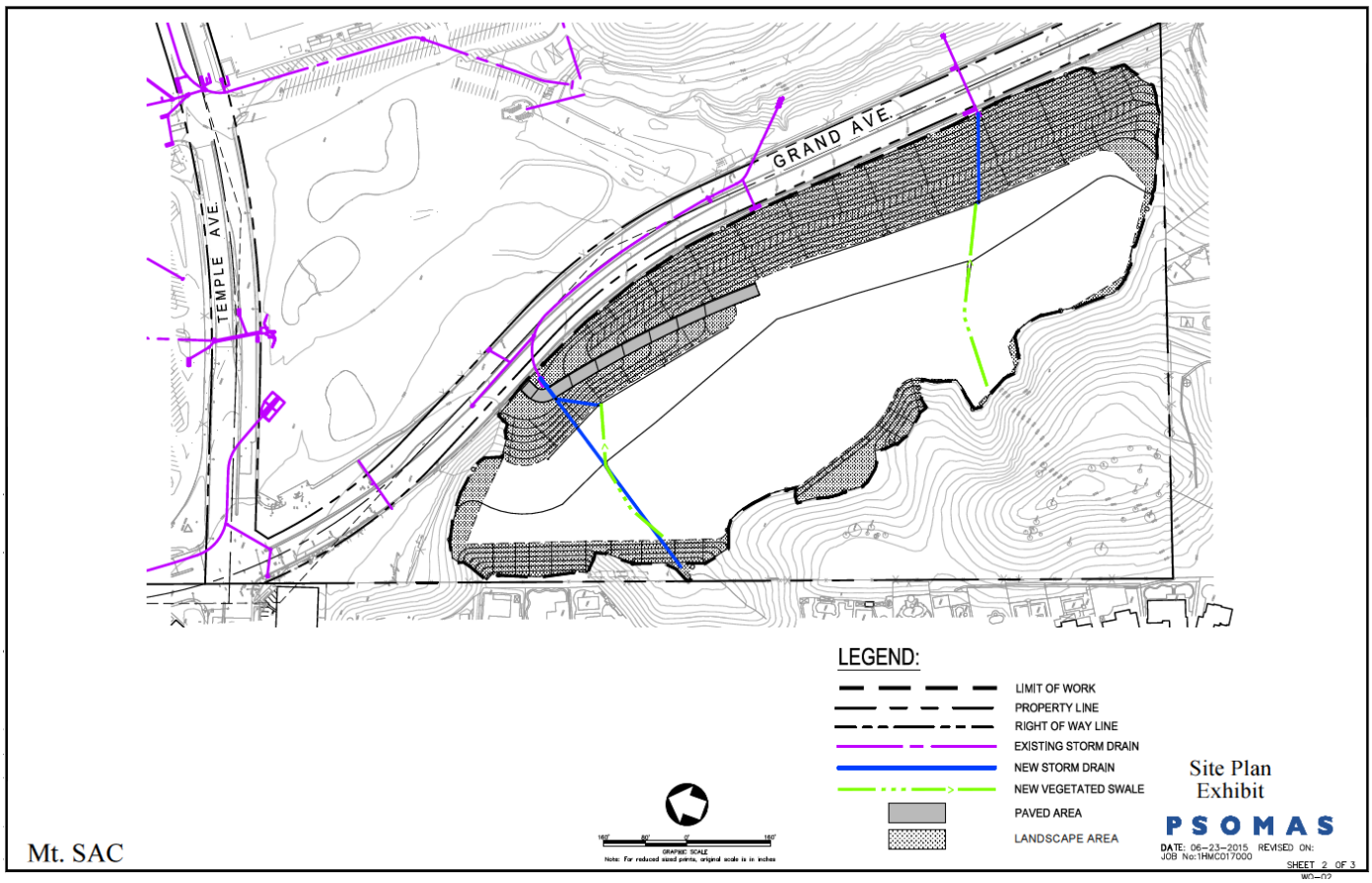


Exhibit 6: Future Solar Pad

MT. SAC
Mt. San Antonio College

Facilities Planning & Management
1100 North Grand Avenue • Walnut, CA 91789
909-274-4850 • www.mtsac.edu

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The District will conduct a second public Scoping Session on July 11 from 6:00 – 7:30 pm. The meeting will be held at 6:00 pm in Room 1050 in Building 46, located south of Temple Avenue along Bonita Avenue. Comments submitted from the June 7, 2017 Scoping Session are already on the record and do not need to be submitted again.

Comments may be submitted in writing before or at the Scoping Session, or citizens and agency representatives may express their comments publicly. Attendees are encouraged to submit their comments in writing or forward their comments directly to facilitiesplanning@mtsac.edu.

At the scoping meeting, the District will present a short presentation of the project, the existing conditions onsite and the design of the proposed project; however, the primary purpose of the Scoping Session is to encourage agencies and the public to provide written and public comments on the project.

Scoping Session::

Project Title:	Mt. San Antonio College West Parcel Solar Project
Project Applicant:	Mt. San Antonio Community College District
Project Location:	West of Grand Avenue on an undeveloped parcel
Place:	Building 46, Room 1050, Mt. San Antonio College
Date:	July 11, 2017
Time:	6:00 – 7:30 pm

Staff Contact:	Rebecca Mitchell, Manager
Telephone:	(909) 274-5175
Facsimile:	(909) 274-2931
E-Mail Address:	facilitiesplanning@mtsac.edu

Date:

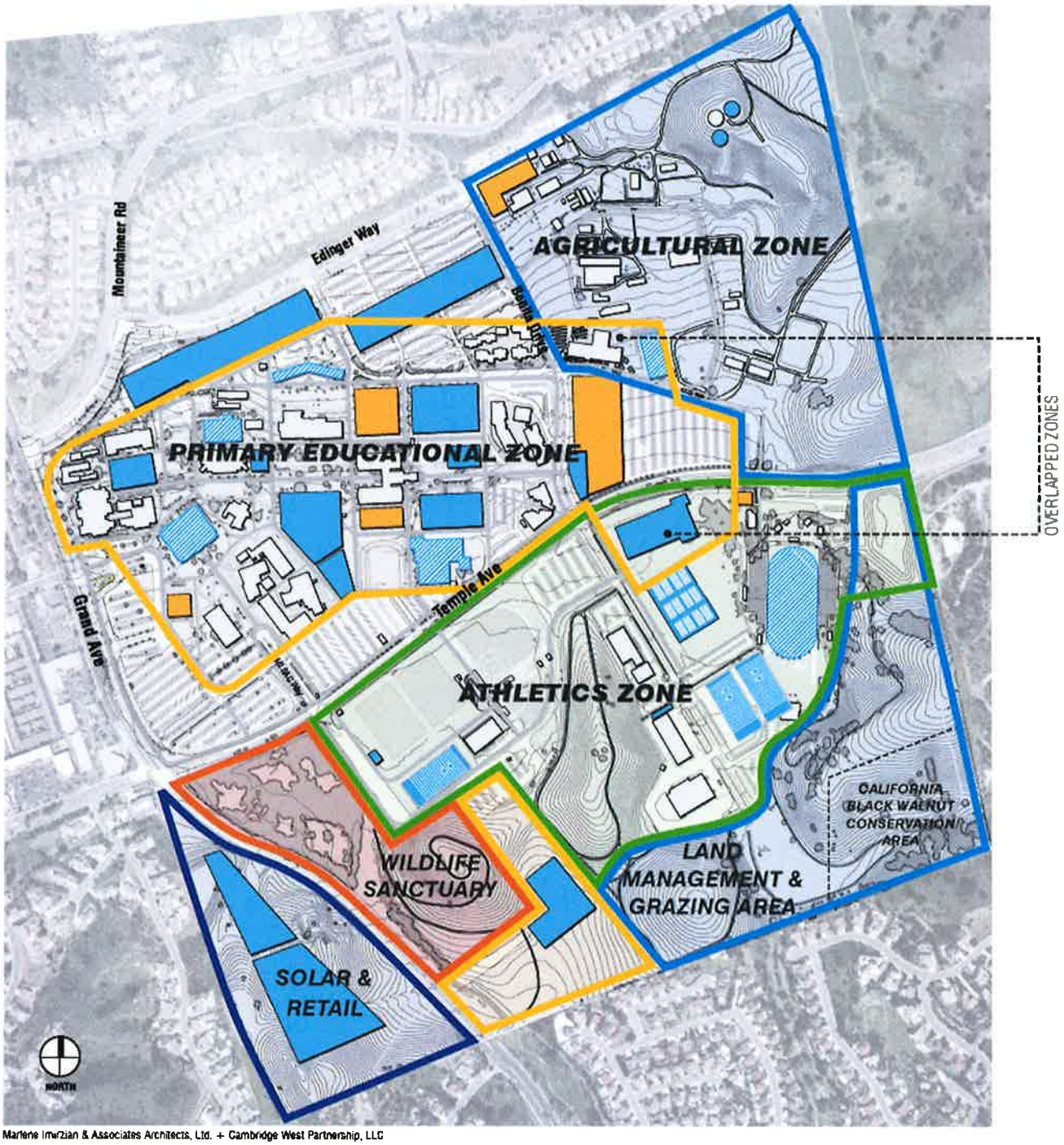
Signature Rebecca Mitchell

Attachments:

Exhibits 1 - 4
West Parcel Solar Initial Study CEQA Environmental Checklist

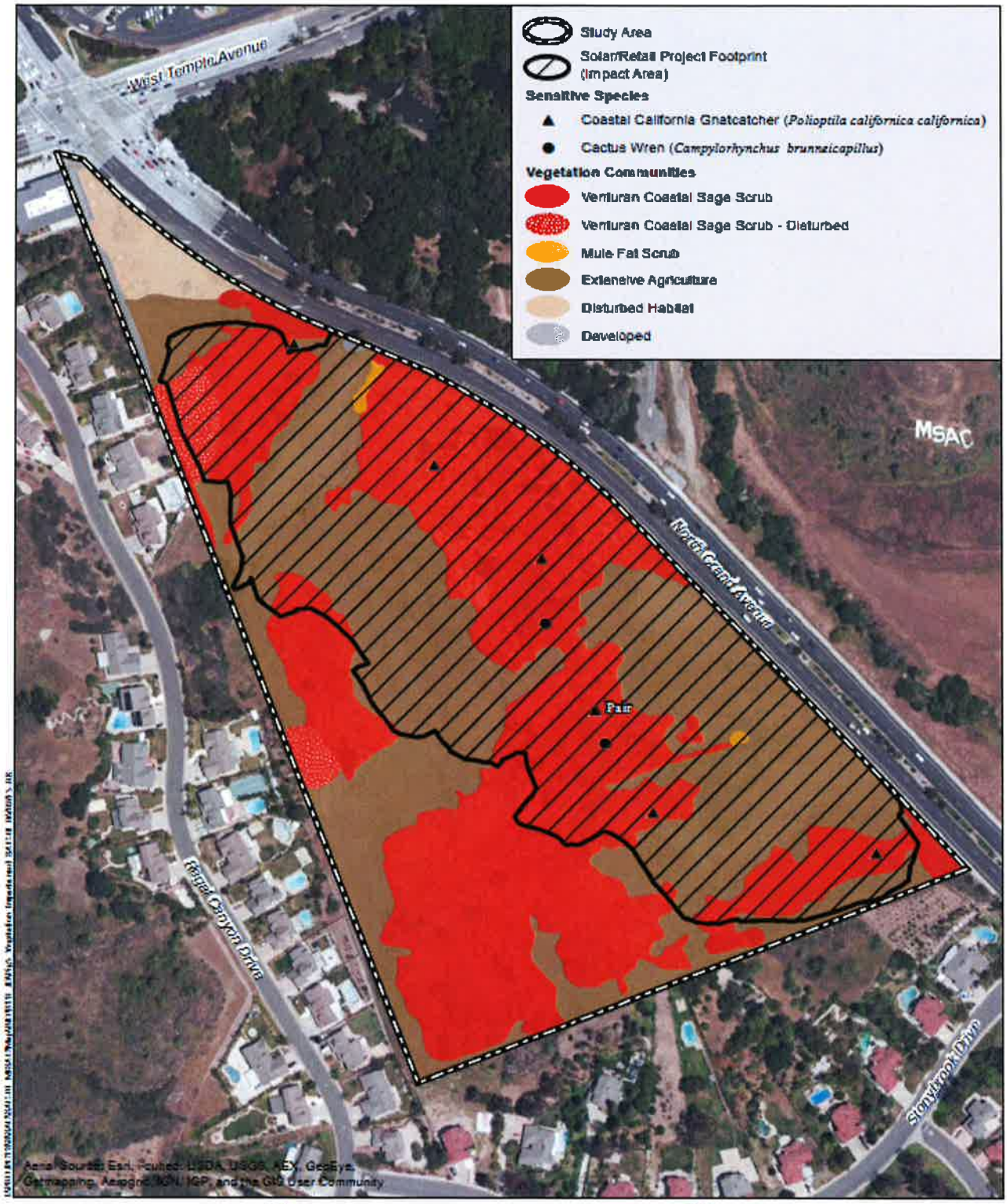
Exhibit 1
REGIONAL LOCATION

Exhibit 2
CAMPUS ZONING



Marlene Imirzian & Associates Architects, Ltd. + Cambridge West Partnership, LLC

Exhibit 3
EXISTING BIOLOGICAL RESOURCES



Habitat and Sensitive Species Map/Project Footprint

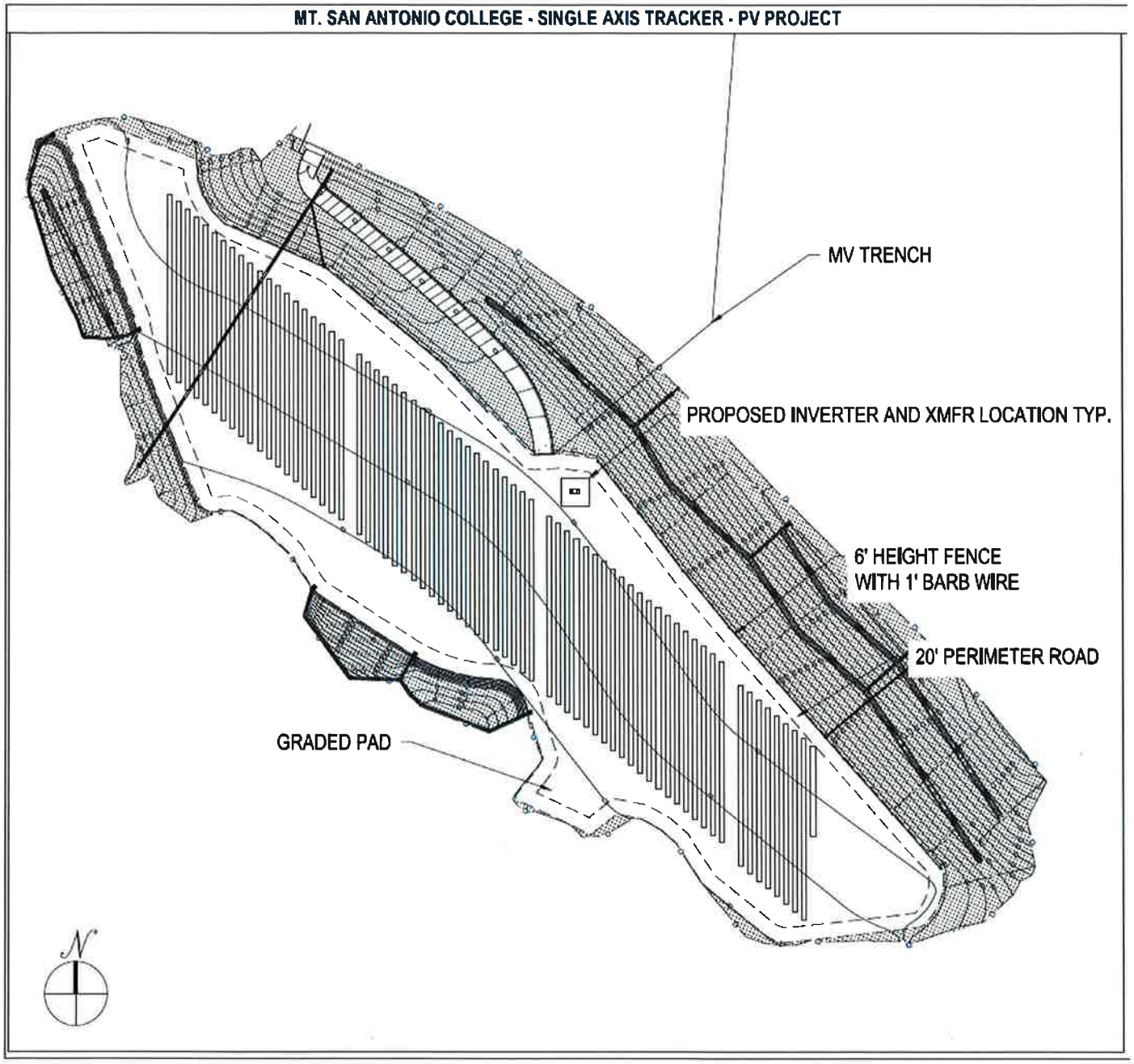
WEST PARCEL SOLAR PROJECT

HELIX Environmental Planning

0 250 Feet

Figure 5

Exhibit 4
PROPOSED SOLAR ARRAY



Appendix G
June 14, 2017
September 9, 2015

ENVIRONMENTAL CHECKLIST FORM
Revised 2009

1. Project Title:	West Parcel Solar (WPS) Project
2. Lead Agency Name and Address:	Mt. San Antonio College, 1100 North Grand Avenue, Walnut, California 91789
3. Contact Person and Phone Number:	Rebecca Mitchell, Facilities Planning and Management (909) 274-5175
4. Project Location:	City of Walnut, County of Los Angeles
5. Project Sponsor's Name and Address:	Mt. San Antonio College, 1100 North Grand Avenue, Walnut, California 91789
6. General Plan Designation:	Hillside Single Family Residential Identity Maximum Density: 1.3 du/acre (City of Walnut) 2012 Facility Master Plan Future New Building or Expansion Zone (Mt. SAC)
7. Zoning:	Solar & Retail (Mt. SAC) Residential Plan Development 28,500: 1.3 du (City of Walnut)

8. Description of the Project: (Describe the whole action involved, including but not limited to later phases of the project, and any secondary, support, or off-site features necessary for its implementation. (Attach additional sheets if necessary)

   The project site is undeveloped and contains primarily coastal sage scrub, habitat for the threatened coastal California gnatcatcher. Replacement and restored habitat will be implemented onsite and east of Grand Avenue. Grading will occur on 17.25 acres to create a 9.9 acre pad at 761 feet mean sea level for a 2.0 MW solar panel system. Earth import for the project is estimated as 139,000 cubic yards. The project will provide up to 4.6 million kwh of electricity for the campus during its first year of operation. The solar system is a design-build agreement for the purchase and installation of a ground-mount solar photovoltaic system, which will provide clean power for the campus. The 2.2-MW system; will have both fixed solar panels and panels that tilt to better capture sunlight while minimizing glare.

9. Surrounding Land Uses and Setting: (Briefly describe the project's surroundings)

   The WPS Project is proposed on campus south of Temple Avenue and west of Grand Avenue in the City of Walnut. The Project site is undeveloped and includes Venturian coastal sage scrub, and agricultural land (initially classified as non-native grassland in 2008. The northern portion of the 23.0-acre triangular site is vacant and was used for Christmas tree sales.

The WPS project is bordered by City of Walnut residential land uses to the south and west, an office building at the southwest corner of Temple/Grand Avenues and the Mt. SAC Wildlife Sanctuary and Snow Creek east of Grand Avenue and south of Temple Avenue. A campus service road extends along the southeast edge of the Wildlife Sanctuary and terminates at Grand Avenue. South of this service road and east of Grand Avenue is a prominent landform known at MSAC Hill. A small rectangular undeveloped area occurs east of Grand Avenue south of MSAC Hill and east of the WPS site. Stonybrook Drive provides access to the residential land uses to the west, as does Regal Canyon Drive south from Temple Avenue.

10. Other public agencies whose approval is required and have been obtained (e.g. permits, financing approval, or participation agreement).

    California Department of Fish and Wildlife (CDFW)
    Los Angeles Regional Water Quality Control Board (SWRCB)
    United States Fish and Wildlife Service (USFWS)
    United States Army Corps of Engineers (USACE)
    City of Walnut (grading plan)

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below(■) would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

	Aesthetics		Hazards & Hazardous Materials		Recreation
	Agricultural and Forest Resources		Hydrology/Water Quality		Transportation/Traffic
	Air Quality		Land Use/Planning		Utilities/Service Systems
	Biological Resources		Mineral Resources		Mandatory Findings of Significance
	Cultural Resources		Noise		
	Geology/Soils		Population/Housing		
	Greenhouse Gas Emissions		Public Services		

DETERMINATION: (To be completed by the Lead Agency)

On the basis of this initial evaluation:

I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.	No
I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.	No
I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.	No
I find that the proposed project MAY have a "potential significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measutr3es based on the earlier analysis as describ4ed on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.	Yes
I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.	No

Rebecca Mitchell — June 16, 2017

Signature — Date

Rebecca Mitchell — Mt. San Antonio College

Printed Name — For

EVALUATION OF ENVIRONMENTAL IMPACTS

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g. the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g. the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4) "Negative Declaration: Less than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analysis," as described in (5) below, may be cross-referenced).

5) Earlier analysis may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063 (c) (3) (D). In this case, a brief discussion should identify the following:

   (a) Earlier Analysis Used. Identify and state where they are available for review.

   (b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

   (c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g. general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9) The analysis of each issue should identify: (a) the significance criteria or threshold used to evaluate each question; and (b) the mitigation measure identified, if any, to reduce the impact to less than significance.

Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
1. **AESTHETICS.** Would the project:				
a) Have a substantial adverse effect on a scenic vista?				X
There are no designated scenic vistas in the Project area.				
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?				X
The Project does not damage scenic resources. The site is not adjacent to a scenic highway.				
c) Substantially degrade the existing visual character or quality of the site and its surroundings?			X	
Grand Avenue declines from Temple Avenue toward Stonybrook Drive and the top-of-slope (i.e. to the building pad eastern edge ranges from 730-770 msl). Therefore, the top-of-slope increases in height as you drive south on Grand Avenue along the project frontage; shielding the solar panels from driver view. The building pad is at 761 feet msl and the natural habitat terrain along the western edge is up to 790 feet msl. The residential pads west of the project are probably at 790 feet msl or above. The site plan includes retention of portions of the natural habitat, has a lower elevation of the building pad, and distance separation for most offsite residential lots (10 of 12 units) from the building pad. The rear yards of the lots offsite provide additional separation from the Project site and the perimeter open grate metal fencing is six or more feet high. Therefore, there is no substantial degradation of the visual character or quality of the surroundings. The visual character of the site is maintained by completion of the Landscape Plan for the areas along Grand Avenue and the higher elevation of the site pad from Grand Avenue (i.e. up to 80 feet at the southeast). Therefore, the Project impact is Less than Significant. Concerns related to the solar panels are addressed later in this report.				
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?			X	
PV solar panels absorb sunlight to convert sunlight into electricity. A mono-crystalline silicon solar cell absorbs two-thirds of the sunlight reaching the panel's surface. An anti-reflective coating on the panel also reduces reflection and increases sunlight absorption. The "backtracking" design of the solar system, which is an operational system, combined with a tracked and tilt solar panel system will eliminate glare for adjacent properties.				
2. **AGRICULTURE AND FOREST RESOURCES**: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and the forest carbon measurement methodology provided in the Forest Protocols adopted by the California Air Resources Board. Would the project?				
a) Convert Prime Farmland, Unique Farmland or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency to non-agricultural use?				X
The Project is not within an Agricultural Zone (Exhibit 7 in Final EIR).				
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				X
The Project is not zoned for agriculture or subject to a Williamson Act contract (Exhibit 7 in Final EIR).				
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220 (g), timberland (as defined in Public Resources Code Section 4526) or timberland zoned Timberland Production (as defined in Government Code Section 511040 (g)?			X	
The Project does not conflict with the Facilities Master Plan designation of Future New Building or Expansion Zone. The Project provides a necessary service (solar electrical power for heating and cooling systems) for campus buildings. The Project is exempt from the City of Walnut General Plan and zoning designations. The adjacent office use north of the Project site is Commercial Profession in the General Plan and zoned Light Commercial (C-1).				
d) Result in loss of forest land or conversion of forest land to non-forest use?				X
The Project is not within forest land.				
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?				X

Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
The Project is located in the Retail & Solar Zone, not an Agricultural Zone.				
3. **AIR QUALITY:** Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?				X
Grading of 17.25 acres for the Project and implementation of the WPS project will have no impact based on SCAQMD emission standards because of the small acreage and no traffic is associated with the Project upon buildout; other than service vehicles.				
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation.		X		X
The Draft EIR will evaluate the construction and operational air quality impacts of the project based on SCAGMD thresholds of significance and Localized Significance Thresholds (LST) requirements. It is anticipated that some mitigation measures will be required.				
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?			X	
The Draft EIR will evaluate the construction and operational air quality impacts of the project based on SCAGMD thresholds of significance and Localized Significance Thresholds (LST) requirements. It is anticipated that the project's contribution to area and regional emissions effects will be less than cumulatively considerable.				
d) Expose sensitive receptors to substantial pollutant concentrations?			X	
The Draft EIR will evaluate the construction and operational air quality impacts of the project based on SCAGMD thresholds of significance and Localized Significance Thresholds (LST) requirements. It is anticipated that sensitive receptors will not be exposed to substantial pollutant concentrations.				
e) Create objectionable odors affecting a substantial number of people?			X	
The Project will not produce odors. There is no degradation of the solar panels that would produce odors. Some diesel odors may occur during construction but are not significant.				
4. **BIOLOGICAL RESOURCES**. Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U. S. Fish and Wildlife Service?		X		
The Project site includes habitat of the California coastal gnatcatcher (CGN) which is a threatened species subject to CDFW and USFWS regulations. The District has processed all the required permits for Project impacts on the CGN. The permit conditions of approval will constitute the requirements and the impact will be Less than Significant with Mitigation Incorporated.				
b) Have a substantially adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or U. S. Wildlife Service?			X	
There is a small stand of riparian trees onsite and riparian shrubs. The District has processed a 1603 Permit: Streambed Alteration Agreement (SAA) with the California Department of Fish and Wildlife (CDFW). SAA are negotiated contractual agreements and should not be considered mitigation measures.				
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?		X		
While the streambeds onsite are not significant under CEQA, a 404 permit has been issued by USACE.				
d) Interfere substantially with the movement of any resident or migratory fish or wildlife species or with established native resident migratory wildlife corridors, or impede the use of native wildlife nursery sites?		X		
No trees are being removed during Project construction. Therefore, no migratory birds will be impacted during the nesting season. Surveys of trees for active nesting sites are required from March-May if trees are being removed. The primary concern is disturbing raptors.				

Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				X
The campus has no tree preservation ordinance, but has a Land Use Management Plan to minimize impacts on California Black Walnuts (CBW) on campus. No CBWs are located within the Project site.				
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, and other approved local, regional, or state habitat conservation plan?				X
The Project site will not impact any habitat conservation plans.				
5. **CULTURAL RESOURCES**. Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?				X
The Project will not impact any historic features. The Draft EIR will include a cultural resource study which will confirm if cultural resources are present onsite. A cultural resource study was completed for the Project and the remnants of a cattle chute and loading corrals were found onsite. However these structures are not significant historical resources. (Phase I Cultural Resources Survey for West Parcel Solar Project, Applied Earthworks, December 2014). The Draft EIR will evaluate whether historical resources are present onsite. If found, appropriate mitigation measures will be required.				
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?		X		
While archaeological resources are not anticipated onsite, the Draft EIR will recommend measures to assure that if discovered during grading, all state requirements will be followed.				
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?		X		
While paleontological resources are not anticipated onsite, the Draft EIR will recommend measures to assure that if discovered during grading, all state requirements will be followed.				
d) Disturb any human remains, including those interred outside of formal cemeteries?				X
There are no known cemeteries on or near campus and the surrounding areas on campus have been graded and/or disked.				
e) Cause a substantial adverse change in the significance of a tribal cultural resource (TCR) such as a site, feature, place, cultural landscape, sacred place or object with cultural value to a California Native American tribe,: that is either on, or eligible for inclusion in, the California Historic Register or a local historic register, or is a resource that the Lead Agency, at its discretion and supported by substantial evidence, determines should be treated as a Tribal Cultural Resource (PRC 21074 (a) (1-2)?				X
6. **GEOLOGY AND SOILS**. Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving:				
(i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.				X
The Project site is not located within a currently designated State of California Earthquake Fault Zone (formerly Alquist-Priolo Special Studies Zones) for surface rupture. No surface faults are known to project through or towards the site. The Draft EIR will include a geotechnical study which will confirm these preliminary conclusions.				
(ii) Strong seismic ground shaking?			X	
All project construction will comply with the 2013 California Building Code (CBC) to assure seismic safety.				
(iii) Seismic-related ground failure, including liquefaction?				X
The soils at the Project site are not anticipated to be susceptible to liquefaction. The Draft EIR will include a geotechnical study which will confirm these preliminary conclusions.				
(iv) Landslides?				X
The WPS site ranges in elevation from 795 - 815 feet msl and is not known to be subject to landslides.				
(b) Result in substantial soil erosion or the loss of topsoil?				X
The Project site is undeveloped. All construction activities, including grading will be subject to the Water Quality Management Plan for the WPS Project. Prior to grading, some topsoil and Duff materials will be collected for use in the habitat restoration areas				

Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?				X
The soils at the Project site are likely not susceptible to liquefaction				
(d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?		X		
The Draft EIR will include a geotechnical study which will confirm whether expansive soil is present onsite. However, some mitigation for expansive soils is likely.				
(e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?				X
No septic tanks or alternative waste water disposals are proposed. The Project site is serviced by public sewers.				
7. **GREENHOUSE GAS EMISSIONS.** Would the project?				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant effect on the environment?				X
The Draft EIR will evaluate greenhouse gas emissions for the project. However, no significant effect is anticipated because of the type of project and its small scale.				
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?				X
The Project will not conflict with any GHG plan or regulation. GHG thresholds for mixed-use projects are 3,500 metric tons CO^2Eq/year and the Project will generate minimal GHE emissions.				
8. **HAZARDS AND HAZARDOUS MATERIALS.** Would the project?				
a) Create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials?				X
No hazardous materials are being transported to or from the Project site.				
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment?				X
No hazardous materials are being transported to or from the Project site. Temporary storage of fuel onsite for construction equipment is not a risk when stored properly.				
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				
No public schools are located within one-quarter mile of the Project site. Collegewood Elementary is located west of Grand Avenue and north of Collegewood Drive.				
d) Be located on a site which is included on a list of hazardous materials site compiled pursuant to Government Code Section 65962.5 and, as a result would it create a significant hazard to the public or the environment?				X
The Project site is not located in Section 65962.5 databases.				
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?				X
The Project site is not within two miles of an airport.				
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				X
The Project site is not within two miles of an airport.				
g) Impair implementation of, or physically interfere with an adopted emergency response plan or emergency evacuation plan?			X	
The Project will not interfere with emergency plans.				
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?				X
There are no wildland areas near the Project site.				

Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
9. **HYDROLOGY AND WATER QUALITY**. Would the project:				
a) Violate any water quality standards or waste discharge requirements?		X		
No water quality standards will likely be violated. All surface parking lots on campus must comply with an approved Water Quality Management Plan. The Draft EIR will include a hydrology study and water quality plan.				
b) Substantially degrade groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?			X	
All reclaimed water will be obtained from Walnut Valley Water District. Upon bailout, the site will use water only for landscaping along Grand Avenue. Drought tolerant plants dominate the plant palette.				
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?		X		
There are two streambeds onsite. The northern streambed is 585 linear feet in length and is an ephemeral stream classified as Waters of the United States (WUS) and subject to USACE jurisdiction. The southern stream is also WUS and is 414 linear feet in length. The Draft EIR will evaluate all project impacts on streambeds and either mitigation measures or a 1603 Agreement will likely be required.				
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate of surface runoff in a manner which would result in flooding on- or off site?			X	
See discussion for Item 9a and 9c.. With implementation of the grading plan and related storm drain and drainage ditches (Exhibit 1) the Project has a Less than Significant Impact on surface runoff rates. The existing storm drains along Grand Avenue along the project frontage have adequate capacity to serve the Project.				
e) Create or contribute runoff which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?			X	
The WPS site is currently undeveloped, but the slopes cause drainage to move quickly toward storm drains for Grand Avenue. A WQMP will assure water quality is maintained and the Project design includes two water drainage ditches and a storm drain.				
f) Otherwise substantially degrade water quality?			X	
The Project will comply with all requirements of the WQMP (see Item 9a) so water quality will not degraded.				
g) Place housing within a 100-year floodplain, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				X
The Project does not propose new housing.				
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?				X
The Project site is not within a flood hazard area.				
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?				X
The Project is not exposed to flooding from a dam.				
j) Inundation by seiche, tsunami, or mudflow?				
The Project site is not near oceans or subject to landslides and mud flows.				
10. **LAND USE AND PLANNING**. Would the project:				
a) Physically divide an established community?				X
The Project does not divide a community.				
b) Conflict with an applicable land use plan, policy or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?				X

Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
The Project does not conflict with the prior Facilities Master Plan designation of Future New Building or Expansion Zone or the current campus zoning of Retail & Solar. The Project provides a necessary service (solar electrical power for heating and cooling systems) for campus buildings. The Project is not subject to the City's Zoning because of California Government Code 53091(e). See Item 12(a) below.				
c) Conflict with any applicable habitat conservation plan or natural communities' conservation plan?				X
The Project does not impact a conservation plan. The Project will obtain all required permits from the Responsible Agencies for impacts on the California coastal gnatcatcher (see Item 4).				
11. **MINERAL RESOURCES.** Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				X
There are no known mineral resources within the Project site.				
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?				X
There are no plans designate the Project area a mineral resource recovery site.				
12. **NOISE.** Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?				X
The District is not subject to the City's Noise Ordinance or noise standards. Per California Government Code 53091 (e): Water and electrical energy facilities: "Zoning ordinances of a county or city shall not apply to the location or construction of facilities for the production, generation, storage, treatment, or transmission of water, or for the production or generation of electrical energy, facilities that are subject to Section 12808.5 of the Public Utilities Code, or electrical substations in an electrical transmission system that receives electricity at less than 100,000 volts. Zoning ordinances of a county or city shall apply to the location or construction of facilities for the storage or transmission of electrical energy by a local agency, if the zoning ordinances make provision for those facilities." The Project(s) will not have a significant noise impact upon buildout. Only sporadic maintenance is needed for the solar project and no heavy equipment that generates noise is required. Therefore, the Project(s) has no noise impact after buildout.				
b) Exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels?			X	
No pile driving is proposed during construction of the Project. Any vibration due to grading near the property line is limited to conventional construction equipment, limited in duration and results in no safety or structural damage offsite. The Draft EIR will evaluate any vibration effects on offsite properties caused by construction equipment during grading of the project site.				
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?				X
Upon buildout, the ambient noise level will not increase substantially. Periodic use of maintenance vehicles onsite will be the only noise source. Construction noise impacts are temporary in nature.				
d) A substantially temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?		X		

Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
Upon buildout, the ambient noise level will not increase substantially. Periodic use of maintenance vehicles onsite will be the only noise source. Construction noise impacts are temporary in nature. The Project will have a substantial increase in ambient noise levels in the project vicinity above ambient noise levels during some phases of construction (i.e. grading) depending on distance from the sensitive receptors, the type of construction equipment being used, and the noise volume generated by that equipment at full power. The increase from ambient noise levels is more pronounced outside of peak periods went background traffic noise is less. Therefore, the most effective means of reducing temporary noise impacts during construction is to minimize the time construction occurs (i.e. complete it quickly to limit the noise duration or limit the hours of construction). The following mitigation measure (included as MM 5a in the 2012 Mitigation Monitoring Program for the certified 2012 Final EIR (SCH 2002041161) is feasible and effective in reducing Project construction noise from significant to Less than Significant with Mitigation Incorporated. All construction and general maintenance activities, except in emergencies or special circumstances, shall be limited to the hours of 7 am to 7 pm Monday-Saturday. Staging areas for construction shall be located away from existing offsite residences. All construction equipment shall use properly operating mufflers. These requirements shall be included in construction contracts and implemented. Facilities Planning & Management shall monitor compliance.				
e) For a project located within an airport land use plan, or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				X
The Project site is not within two miles of an airport.				
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?				X
The Project site is not within two miles of an airport.				
13. **POPULATION AND HOUSING.** Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				X
The Project does not induce population growth. Temporary minor increases in employment due to the Project do not induce growth. The circulation network is established and the campus does not require extension of roads or other major infrastructure.				
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				X
The Project does not include housing or displace housing.				
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				X
The Project does not include displacement of people.				
14. **PUBLIC SERVICES**. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered government facilities, need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
a) Fire protection?				X
Existing fire services can protect the WPS without new facilities.				
b) Police protection?				X
Mt. San Antonio College Department of Police/Public Safety (DPS) is responsible for the Project. The County of Los Angeles Sheriff Department also serves the campus.				
c) Schools?				X
The project has no impact on schools.				
d) Parks?				X
The Project has no impact on parks.				
e) Other public facilities?				X
The Project has no impact on other public facilities (e.g. libraries, community center, etc.				
15. **RECREATION.**				
a) Would the project increase the use of existing neighborhood or regional parks				X

Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				
The Project has no residents and no impacts on parks or recreational facilities.				
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?				X
The project does not include recreational facilities.				
16. **TRANSPORTATION/TRAFFIC.** Would the project:				
a) Conflict with an applicable plan, ordinance or policy establishing a measure of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?		X		
Minimal sporadic and low maintenance vehicle trips will occur for the Project upon buildout. Construction traffic will occur during non-peak hours. The Project includes 139,000 cy of earth import from the Physical Education Project (Phase 1) project, and the haul route will include Temple Avenue and Grand Avenue. The District is required to submit a Truck Haul Plan to the City of Walnut for review and approval. This is a ministerial action and not subject to CEQA. However, it is a Condition of Approval for the project. Depending on the results of the Truck Haul Plan analysis, intermittent sporadic congestion may occur and further Conditions of Approval may not be feasible. In this case, the plan may be subject to environmental review.				
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?			X	
Minimal sporadic and low maintenance vehicle trips will occur for the Project upon buildout. Construction traffic will be in non-peak hours. The Project has no impact on CMP intersections. . The Truck Haul Plan (see Item 16a) will include evaluation of truck haul traffic at area intersections, using the LOS standard. A Less than Significant Impact is anticipated.				
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks?				X
The Project does not impact air traffic patterns.				
d) Substantially increase hazards to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment)?				X
The Project has no impact on the design of Grand Avenue. The service road into the site will have minimal use.				
e) Result in inadequate emergency access?				X
The Project does not result in inadequate emergency access.				
f) Conflict with adopted policies, plans, or programs regarding public transit, bikeways, or pedestrian facilities, or otherwise substantially decrease the performance or safety of such facilities?				X
The Project has no impacts on the facilities cited and does not decrease the performance or safety of such facilities.				
17. **UTILITIES AND SERVICE SYSTEMS.** Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?				X
The Project does not generate wastewater, only drainage flows.				
b) Require or result in construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				X
No new or expanded water or wastewater treatment facilities are likely required for the Project.				
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				X

Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
No new storm drains offsite are required for the Project. A new storm drain will be installed onsite but does not cause significant effects.				
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?				X
The Three Valleys Municipal Water District has ample supplies for the Project. Water supplies for the campus are provided under an agreement with TVMWD and its 2010 Urban Water Management Plan.				
e) Result in a determination by the wastewater treatment provider which services or may serve the project determined that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?				X
The Project produces no wastewater.				
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?				X
The Project has no solid waste steam upon buildout. Minimal constructions debris will be disposed of in area landfills.				
g) Comply with federal, state, and local statues and regulations related to solid waste?				X
The Project will comply with all applicable statues and regulations for solid waste.				
18. **MANDATORY FINDINGS OF SIGNIFICANCE.**				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?				X
The Project has no impact on all issues listed, except for the potential impact on migratory birds, which is reduced to Less than Significant by Mitigation Measure 9e in the 2012 Final EIR. All biological impacts will be resolved through the conditions of the permits from the Responsible Agencies (i.e., SWRCB, USACE, CDFG, USFWS).				
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of the past projects, the effects of other current projects, and the effects of probable future projects)?				X
The Project is not anticipated to have cumulatively considerable impacts. The cumulative impacts for the 2012 FMP were adequately evaluated in the Final EIR. No new projects near the Project site have been identified. While Project construction traffic may use the Grand Avenue/Temple intersection (i.e. where the FMP has an unavoidable adverse impact) the Project's incremental contribution to that adverse impact is minima (i.e. less than cumulatively considerable). Project trip volumes are too small in proportion to the total trips on any intersection leg to cause an impact. (A cumulative unavoidable impact of the FMP at the Grand Avenue/Temple Avenue intersection was first identified in Table 1 of the 2008 Master Plan Update Final EIR).				
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?			X	
The Project is not anticipated to violate any air quality, noise or construction threshold or ordinance. All construction impacts are anticipated to not be adverse and the Project has minimal impacts upon buildout.				
Note: Authority cited: Sections 21083, 21083.05, Public Resources Code. Reference: Section 65088.4, Gov. Code: Sections 21080, 21083.05, 21095,Public Resources Code; Eureka Citizens for Responsible Government v. City of Eureka (2007) 147 Cal.App.4th 357; Protect the Historic Amador Waterways v. Amador Water Agency (2004) 116 Cal.App.4th at 1109; San Franciscans' Upholding the Downtown Plan v. City and County of San Francisco (2002) 102 Cal.App.4th 656.				

MT. SAC
Mt. San Antonio College

Facilities Planning & Management
1100 North Grand Avenue • Walnut, CA 91789
909-274-4850 • www.mtsac.edu

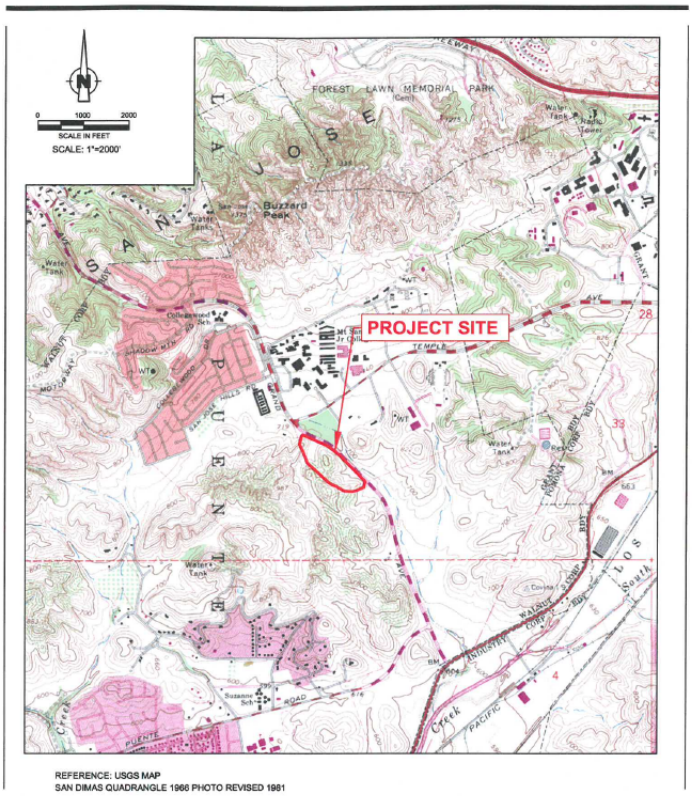
DATE: July 28, 2017

TO: Responsible and Concerned Agencies

SUBJECT: Notice of Completion (NOC) of the Mt. San Antonio College West Parcel Solar Project Tiered Draft Environmental Impact Report (SCH 2002041161)

FROM: Rebecca Mitchell, Manager
Facilities Planning & Management
Mt. San Antonio College
1100 North Grand Avenue
Walnut, California 91789-1399

The Mt. San Antonio Community College District (District) is the lead agency and has prepared a Tiered Draft Environmental Impact Report (Draft SEIR) for the Mt. San Antonio College West Parcel Solar Project (West Parcel Solar Project) under the terms and requirements of the California Environmental Quality Act (CEQA) and the implementing CEQA regulations. The project site is located on campus west of Grand Avenue and south of Amar Road and Temple Avenue.



SITE LOCATION MAP

The Draft SEIR is tiered to the 2012 Master Plan's Subsequent Environmental Impact Report ("2012 Master Plan EIR") (SCH 2002041161) certified as a programmatic EIR by action of the District Board of Trustees in December 2013 and the 2015 Facilities Master Plan Update and Physical Education Projects (PEP) Subsequent Program/Project Environmental Impact Report ("2015 Master Plan EIR") certified as a Program/Project EIR (SCH 2002041161) by action of the District Board of Trustees in October 2016.

The West Parcel Solar Project is located on a 27.65-acre parcel located west of Grand Avenue zoned Solar & Retail. The 27.65-acre parcel contains primarily coastal sage scrub, habitat for the threatened coastal California gnatcatcher. Replacement and restored habitat will be implemented onsite and east of Grand Avenue. Grading will occur on 17.25 acres to create a 9.9 acre pad at 761 feet mean sea level for a 2.2 MW ground-mounted solar panel system. Earth import for the project from the stadium area of the campus is estimated as 139,000 cubic yards.

The potential environmental impacts of the West Parcel Solar Project are evaluated in the Draft SEIR posted on the District's website (see below for website address). A summary of potential project impacts, recommended mitigation measures and the status of the impacts with mitigation (i.e. Less than Significant with Mitigation Incorporated, etc.) is included in Table 1.4.1 in Volume 1. All technical studies, notices and correspondence are included in Volume 2: Appendices.

Documents Available for Review:

The Draft SEIR documents (Volumes 1, 2) are posted on the District's website:

http://www.mtsac.edu/construction/reports-and-publications/environmental-impact-reports.html

The Draft EIR may also be reviewed at the following locations:

Walnut Public Library
Reference Desk
21155 La Puente Avenue
Walnut, California 91789

Mt. San Antonio College Library
Building 6, Library, 2nd floor, Reference Desk
1100 North Grand Avenue
Walnut, California 91789

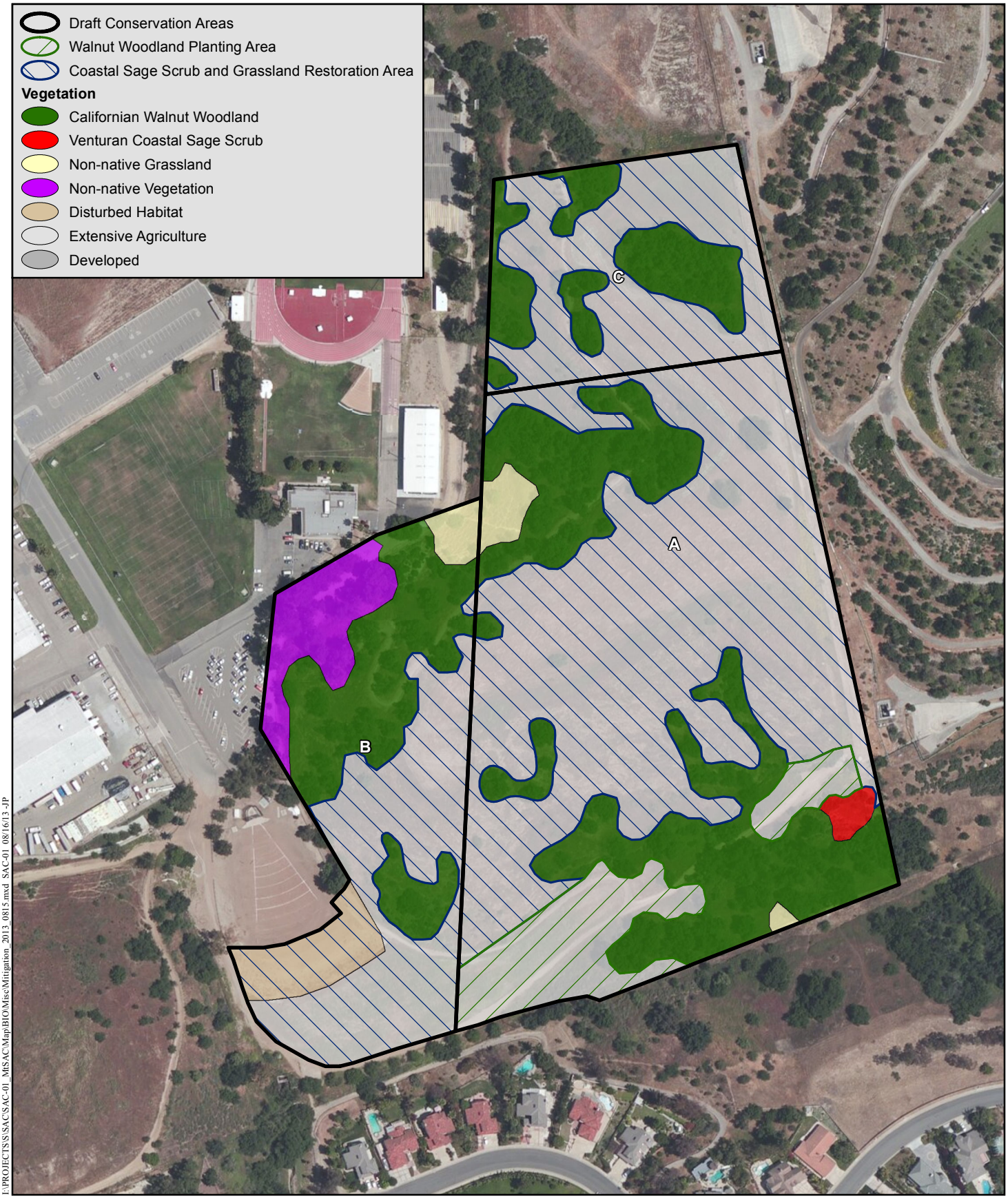
Time for Review:

The Draft EIR is being circulated for a 45-day public review period from July 28, 2017 to September 12, 2017. All comments on the Draft EIR must be received by 5:00 pm on Tuesday, September 12, 2017.

All public comments should be forwarded as written correspondence or pdf attachments to e-mails. **Freestanding e-mail comments are discouraged**. Please include the name and full mailing address of the respondent in all communication, and the date the comments are sent. If an agency is responding, please provide a person, e-mail address and phone number.

Please send your comments to Rebecca Mitchell, Manager, Facilities Support Services at the address below:

Project Title:	Mt. San Antonio College Physical Education Project (Phase 1, 2)
Project Applicant:	Mt. San Antonio Community College District
Date:	July 28, 2016
Contact:	Rebecca Mitchell
Telephone:	(909) 274-5175
Facsimile:	(909) 274-2931
E-Mail Address:	facilitiesplanning@mtsac.edu
Comments Due:	5:00 pm on Tuesday, September 12, 2017



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Habitat Mitigation Area

MT. SAN ANTONIO COLLEGE

HELIX Environmental Planning

N

0 200 Feet

Phase I Cultural Resource Survey for the West Parcel Solar Project, Walnut, Los Angeles County, California

Roberta Thomas, M.A., RPA, and Josh Smallwood, M.A., RPA

Prepared By

Applied EarthWorks, Inc.
133 N. San Gabriel Blvd, Suite 201
Pasadena, California 91107

Prepared For
Larry Sward
HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard, Suite 200
La Mesa, CA 91942

December 2014

National Archaeological Database (NADB)
Type of Study: Literature Search, Intensive Pedestrian Survey and Evaluation
Cultural Resources Recorded: One historic archaeological site, Æ -2840-1H
Sites Revisited and/or Updated: None
Isolated Artifacts Recorded: None
USGS 7.5' Quadrangles: San Dimas, CA
Acreage: 29 acres
Level of Investigation: Section 106 of the NHPA
Key Words: Walnut; Los Angeles Basin; Los Angeles County; Section 106; CEQA; Phase 1 survey; 29 acres surveyed; historic-period cattle chute ruins (Æ-2840-1H)

MANAGEMENT SUMMARY

As part of Mt. San Antonio College's (Mt. SAC) Facility Master Plan 2012 Project, a 2 megawatt photovoltaic system along the western side of Grand Avenue and 0.06 acre of wetland on the east side of Grand Avenue, within the City of Walnut, Los Angeles County, California were approved and the plan's attendant Subsequent Environmental Impact Report (EIR) was approved in 2013. Applied EarthWorks, Inc. (Æ) was retained by HELIX Environmental Planning, Inc. (HELIX) to conduct a cultural resource assessment of the Mt. SAC West Parcel Solar subproject (Project) Area of Potential Effects (APE) to include with Mt. SAC's Section 404 permit application to the U.S. Army Corps of Engineers (USACE).

This report summarizes the methods and results of an intensive cultural resource investigation of the approximately 28-acre survey area (which includes the 27.65-acre Project area in addition to a thin strip of land on the east side of Grand Avenue) and will provide baseline information on cultural resources that will enable more effective development and planning through early consideration of cultural resources. This study includes the definition of the APE, a review of previous studies in the vicinity, and the results of a systematic, intensive cultural resources pedestrian survey of the Project area. The purpose of the survey was to determine the presence of any historic properties pursuant to Section 106 of the National Historic Preservation Act (NHPA) of 1966 (as amended) (36 Code of Federal Regulations (CFR 800)), or historical resources under the California Environmental Quality Act (CEQA), within the Project area.

As part of this study, Æ conducted an archaeological literature and records search of the California Historical Resources Information System (CHRIS) in June 2014. A records search of the Project area plus a 1-mile radius was conducted through the South Central Coast Information Center (SCCIC), housed at California State University, Fullerton.

The CHRIS database indicates that at least 25 cultural resources projects have been conducted within or within a 1-mile radius of the current Project area, including two surveys conducted in 1979 and 1980 that encompassed the current Project area. The CHRIS database also indicated that four cultural resources had been recorded within a 1-mile radius of the Project area, including three prehistoric archaeological sites and one historic built environment resource (Mt. SAC Campus Historic District). None of these resources are located within the current Project area.

Æ also requested a Sacred Lands File (SLF) search from the Native American Heritage Commission (NAHC) in June 2014. This SLF records search encompassed the current Project area. The NAHC responded that no SLF resources were known to exist within the Project area, but cautioned that the absence of specific site information does not indicate the absence of such resources. The NAHC provided a list of regional Native Americans who have interest in the region, detailed the process of consultation as described in relevant legislation, communicated with local groups, and detailed how resources should be approached. A letter was subsequently sent to all of the listed tribes and individuals informing them of the survey work and requesting

information regarding cultural resources in the Project area. It is anticipated that government-to-government consultation with Native American groups will be conducted by the USACE. Tribal communities listed on the NAHC list include: the Gabrieleno Band of Mission Indians, the Gabrieleno/Tongva San Gabriel Band of Mission Indians, the Gabrielino Tongva Indians of California Tribal Council, the Gabrielino/Tongva Nation, the Gabrielino-Tongva Tribe, the Los Angeles City/County Native American Indian Commission, and the Tongva Ancestral Territorial Tribal Nation. The final results of the Section 106 Native American consultation efforts are to be documented by the USACE.

The intensive pedestrian survey of the Project area resulted in the identification and documentation of one cultural resource. This resource is identified as *Æ*-2840-1H, which includes the remains of a historic cattle chute. No evidence of prehistoric archaeological resources were identified in the Project area.

Æ-2840-1H is not recommended eligible for listing on the National Register of Historic Places (NRHP) or California Register of Historical Resources (CRHR) inclusion, and no further management of this resource is required.

Field notes documenting the current investigation are on file at *Æ*'s Pasadena office. A copy of this report will be filed with the USACE Los Angles District office and the SCCIC of the CHRIS at California State University, Fullerton.

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ACRONYMS AND ABBREVIATIONS

ac	acres
ACHP	Advisory Council on Historic Preservation
A.D.	Anno Domini
Æ	Applied EarthWorks, Inc.
APE	Area of Potential Effects
B.P.	Before Present (present = 1950)
CA	California
CA PRA	California Public Records Act
cal	calibrated
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CHL	California Historic Landmark
CHRIS	California Historical Resources Information System
City	City of Walnut
CRHR	California Register of Historical Resources
County	Los Angeles County
ft	foot/feet (12 inches)
GPS	global positioning system
HELIX	HELIX Environmental Planning, Inc.
in.	inches
m	meter(s) (39.37 inches)
MLD	Most Likely Descendant
Mt. SAC	Mt. San Antonio College
NAHC	Native American Heritage Commission
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
PRC	Public Resources Code
Project	West Parcel Solar Project
RPA	Register of Professional Archaeologists
SCCIC	South Central Coastal Information Center
SHPO	State Historic Preservation Officer
SLF	Sacred Lands File
USACE	United States Army Corps of Engineers
USGS	United States Geological Survey

1
INTRODUCTION

Mt. San Antonio College (Mt. SAC) proposes to install a 2 megawatt photovoltaic system along the western side of Grand Avenue and to create 0.06 acre of wetland on the east side of Grand Avenue, within the City of Walnut, Los Angeles County, California. The purpose of the Mt. SAC West Parcel Solar subproject (hereafter "Project") is to provide an additional energy source and restore wetland vegetation along Snow Creek. Applied EarthWorks, Inc. (Æ) was retained by HELIX Environmental Planning, Inc. (HELIX) to conduct a cultural resources assessment of the Project's APE pursuant to Section 106 of the National Historic Preservation Act (NHPA) (36 Code of Federal Regulations [CFR] 800) and in accordance with the California Environmental Quality Act (CEQA). The United States Army Corps of Engineers (USACE) is the Lead Agency for Section 106 compliance and Mt. SAC is taking responsibility as the Lead Agency for CEQA.

1.1 SCOPE AND PURPOSE OF SURVEY

This cultural resource survey includes a review of previous studies in the vicinity and the results of a systematic, intensive cultural resource pedestrian survey. The purpose of the survey was to determine the presence of any historic properties pursuant to Section 106 of the NHPA, or historical resources under CEQA, within the Project's APE. Vanessa Mirro served as Principal Investigator for the cultural resource study with Roberta Thomas acting as Project Archaeologist. Æ archaeologists, Elizabeth Cisneros and Josh Smallwood, conducted the survey efforts.

1.2 WEST PARCEL SOLAR PROJECT DESCRIPTION

The Project is located within the City of Walnut (City) in the southeastern portion of Los Angeles County, California (Figure 1). The archaeological survey area, which comprises two areas on either side of Grand Avenue totaling approximately 28 acres (ac) (which includes the 27.65-ac West Parcel Solar Project area in addition to a thin strip of land on the east side of Grand Avenue), occupies a portion of unsectioned land within Township 1S/Range 9W, San Bernardino Baseline and Meridian (SBBM) on the United States Geological Survey (USGS) 7.5' topographic quadrangles for San Dimas (2012) (Figure 2).

The Project is located approximately 2 miles (mi) west of State Highway 57 and two mi south of Interstate 10. Situated approximately 5 mi west of the city of Pomona, the Project site is located on the eastern edge of the Los Angeles Basin. The Project's northern boundary is Temple Road where it intersects with Grand Avenue.

The Project consists of grading for pad placement of a 2 megawatt photovoltaic system, impacting approximately 18.22 ac. On the east side of Snow Creek, channel widening is anticipated for creation of 0.06 acre of wetland.

1.3 APE

It was necessary to define an APE, or the geographic area within which the Project has the potential to directly or indirectly cause alternations to historic properties per 36 CFR § 800.16(d). In defining the APE, both direct and indirect impacts anticipated by the Project were considered.

For the purposes of the current cultural resources study, the APE is defined as the entire Project area, which includes the photovoltaic system pad area, re-contouring area for pad placement, construction areas, staging areas, and temporary impact areas, in addition to the channel widening/wetland restoration area located on the east side Grand Avenue (see Figure 2). The APE for the Project consists of approximately 28 ac of land, 27.65 ac on the west side of Grand Avenue for the proposed photovoltaic system and less than 1 acre on the east side of Grand Avenue for the proposed wetland restoration. The anticipated maximum depth of the APE is 64 feet (ft).

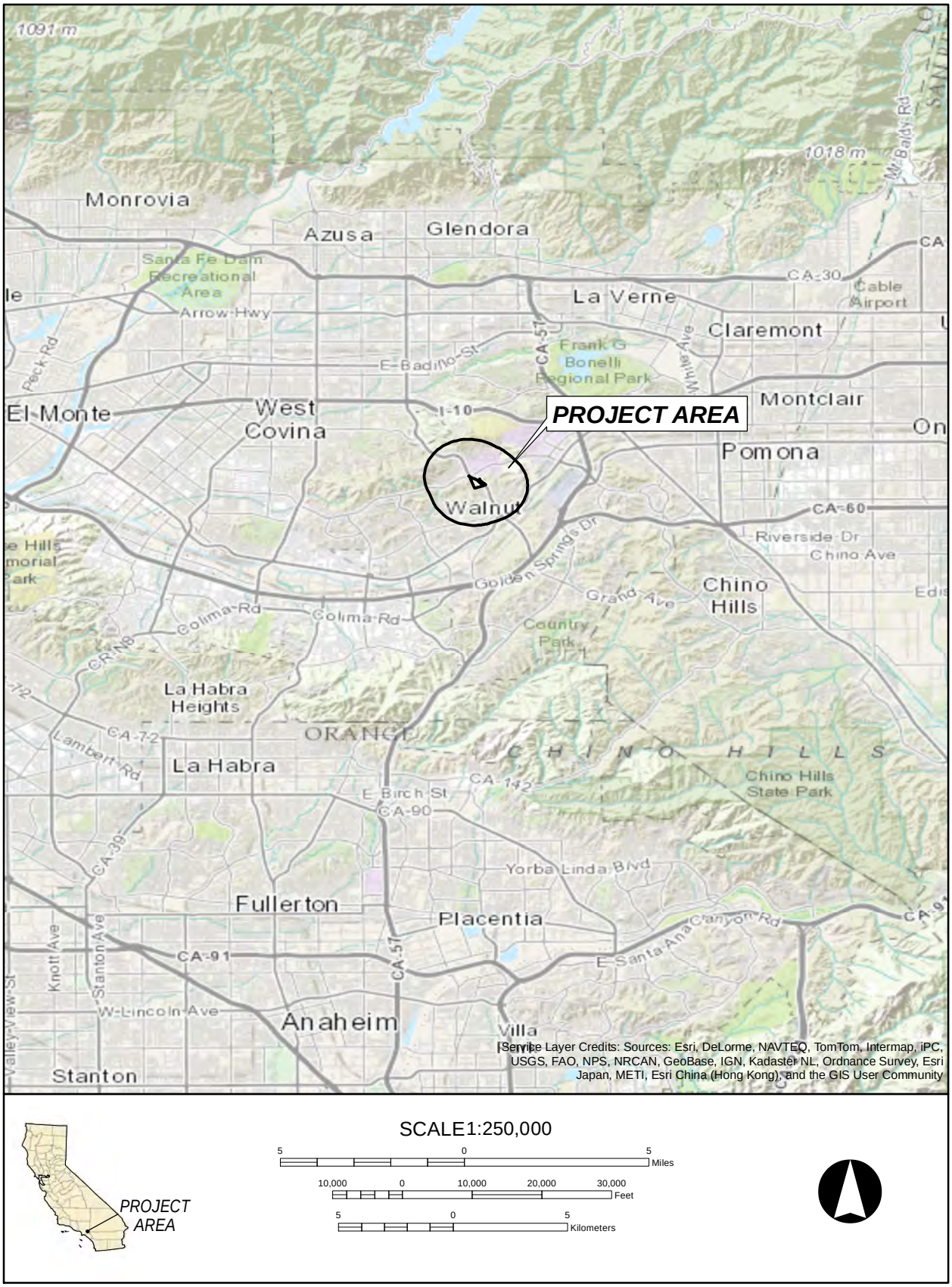

Figure 1 Project vicinity map.

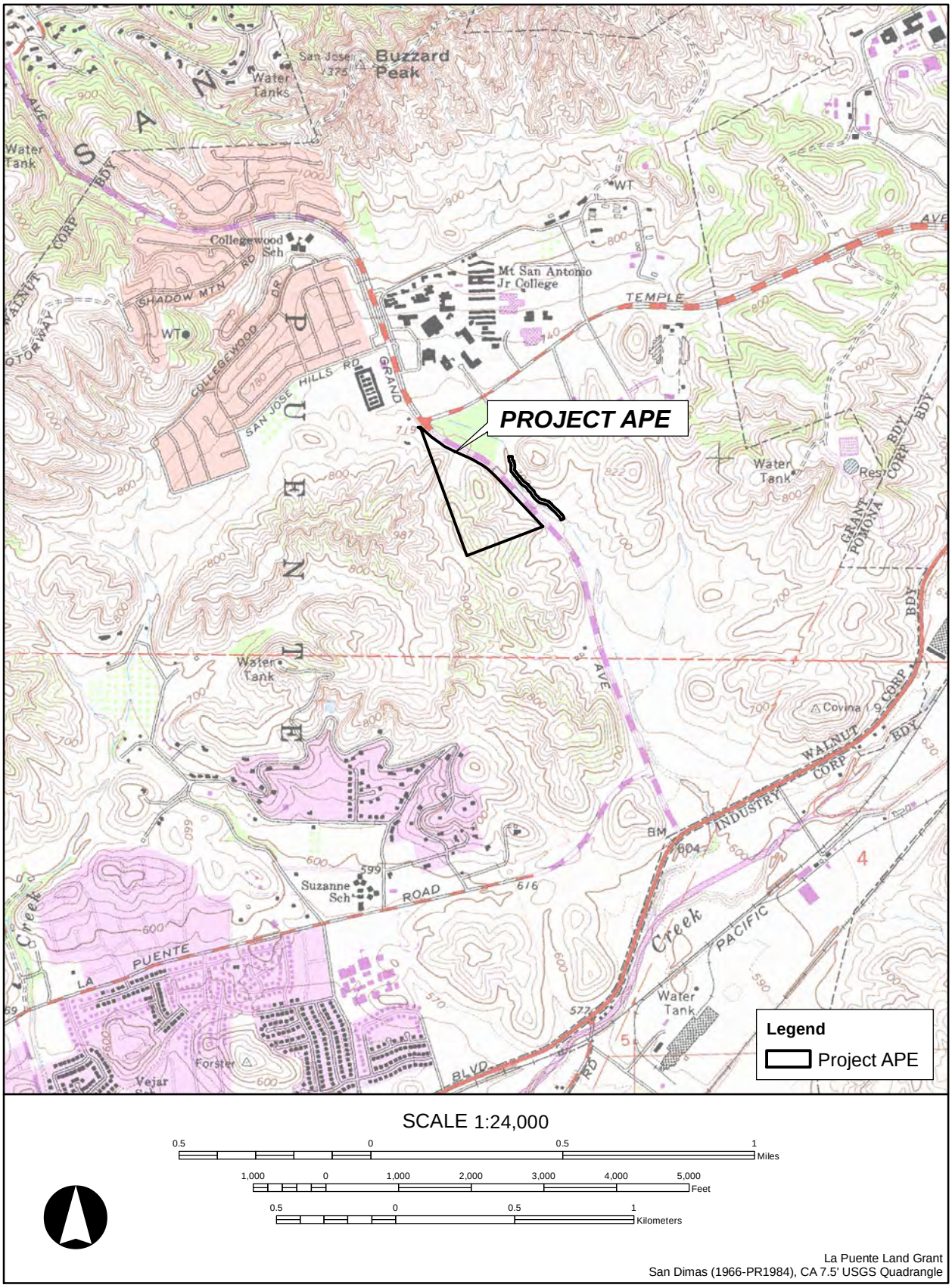

Figure 2 Project location map.

1.4 REGULATORY CONTEXT

1.4.1 Federal

1.4.1.1 National Historic Preservation Act

Because the proposed Project will require a Section 404 permit from the USACE, the Project is considered a federally licensed "undertaking" per 36 CFR § 800.2 (o) and subject to compliance with Section 106 of the NHPA of 1966, as amended. The NHPA established a national policy for historic preservation and instituted a multifaceted program, administered by the Secretary of the Interior, to encourage the achievement of preservation goals at the federal, state, and local levels. The NHPA authorized the expansion and maintenance of the National Register of Historic Places (NRHP), established the position of State Historic Preservation Officer (SHPO), provided for the designation of State Review Boards, set up a mechanism to certify local governments to carry out the purposes of the NHPA, assisted Native American tribes in preserving their cultural heritage, and created the Advisory Council on Historic Preservation (ACHP).

National Register of Historic Places. The NHPA of 1966 established the NRHP as "an authoritative guide to be used by federal, state, and local governments, private groups, and citizens to identify the Nation's cultural resources and to indicate what properties should be considered for protection from destruction or impairment" (CFR, Title 36, Part 60.2). The NRHP recognizes properties that are significant at the national, state, and local levels. To be eligible for listing in the NRHP, a resource must be significant in American history, architecture, archaeology, engineering, or culture. Districts, sites, buildings, structures, and objects of potential significance must also possess integrity of location, design, setting, materials, workmanship, feeling, and association. A property is eligible for the NRHP if it is significant under one or more of the following criteria (CFR, Title 36, Part 60.4):

A) that are associated with events that have made a significant contribution to the broad patterns of our history; or

B) that are associated with the lives of persons significant in our past; or

C) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D) that have yielded, or may be likely to yield, information important in prehistory or history (36 CFR § 60.4).

If a cultural resource is determined to be an eligible historic property under 36 CFR § 60.4, then Section 106 requires that the effects of the proposed undertaking be assessed and considered in planning the undertaking. Ordinarily, cemeteries, birthplaces, or graves of historic figures; properties owned by religious institutions or used for religious purposes; structures that have been moved from their original locations; reconstructed historic buildings; and properties that are primarily commemorative in nature are not considered eligible for the NRHP, unless they satisfy

certain conditions. In general, a resource must be 50 years of age to be considered for the NRHP, unless it satisfies a standard of exceptional importance.

1.4.2 State

1.4.1.2 California Environmental Quality Act

The Project is also subject to compliance with the CEQA, as amended. Therefore, cultural resources management work conducted as part of the proposed Project shall comply with the *CEQA Statutes and Guidelines* (Title 14 California Code of Regulations [CCR], § 15064.5), which directs lead agencies to first determine whether cultural resources are historically significant resources. A project with an effect that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment (Public Resources Code [PRC] § 21084.1). Generally, a cultural resource shall be considered historically significant if the resource is 45 years old or older; possesses integrity of location, design, setting, materials, workmanship, feeling, and association; and meets the requirements for listing on the California Register of Historical Resources (CRHR) under any one of the following criteria:

1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

2) Is associated with the lives of persons important in our past;

3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or,

4) Has yielded, or may be likely to yield, information important in prehistory or history (Title 14 CCR, § 15064.5).

The cited statutes and Guidelines specify how cultural resources are to be managed in the context of proposed projects, such as the West Parcel Solar Project. Briefly, archival and field surveys must be conducted, and identified cultural resources must be inventoried and evaluated in prescribed ways. Prehistoric and historical archaeological resources, as well as historical resources such as standing structures and other built environment features, deemed "historically significant" must be considered in project planning and development.

Other State Statutes and Regulations

California Historical Landmarks. California Historical Landmarks (CHLs) are buildings, structures, sites, or places that have anthropological, cultural, military, political, architectural, economic, scientific, technical, religious, or experimental value and that have been determined to have statewide historical significance by meeting at least one of the criteria listed below. The resource also must be approved for designation by the County Board of Supervisors (or the City or Town Council in whose jurisdiction it is located), recommended by the State Historical Resources Commission, and officially designated by the Director of California State Parks. The specific standards now in use were first applied in the designation of CHL #770. CHLs #770 and above are automatically listed in the CRHR.

To be eligible for designation as a Landmark, a resource must meet at least one of the following criteria:

- It is the first, last, only, or most significant of its type in the state or within a large geographic region (Northern, Central, or Southern California).
- It is associated with an individual or group having a profound influence on the history of California.
- It is a prototype of, or an outstanding example of, a period, style, architectural movement, or construction or is one of the more notable works or the best surviving work in a region of a pioneer architect, designer, or master builder.

California Points of Historical Interest. California Points of Historical Interest are sites, buildings, features, or events that are of local (city or county) significance and have anthropological, cultural, military, political, architectural, economic, scientific or technical, religious, experimental, or other value. Points of Historical Interest designated after December 1997 and recommended by the State Historical Resources Commission are also listed in the CRHR. No historical resource may be designated as both a Landmark and a Point of Historical Interest. If a Point is later granted status as a Landmark, the Point designation will be retired. In practice, the Point designation program most often is used in localities that do not have a locally enacted cultural heritage or preservation ordinance.

To be eligible for designation as a Point of Historical Interest, a resource must meet at least one of the following criteria:

- It is the first, last, only, or most significant of its type within the local geographic region (city or county).
- It is associated with an individual or group having a profound influence on the history of the local area.
- It is a prototype of, or an outstanding example of, a period, style, architectural movement, or construction or is one of the more notable works or the best surviving work in the local region of a pioneer architect, designer, or master builder.

Native American Heritage Commission. PRC § 5097.91 established the NAHC, whose duties include the inventory of places of religious or social significance to Native Americans and the identification of known graves and cemeteries of Native Americans on private lands. PRC § 5097.98 specifies a protocol to be followed when the NAHC receives notification of a discovery of Native American human remains from a county coroner.

California Government Code sections 65092; 65351; 65352; 65352.3; 65352.4; 65352.5 and 65560 (Senate Bill 18.) As of March 1, 2005, California Government Codes sections 65092; 65351; 65352; 65352.3; 65352.4; 65352.5 and 65560), formerly known as Senate Bill 18 (SB

18), require cities and counties to contact and consult with Native American tribes prior to amending or adopting any general plan or specific plan, or designing lands as open space. The purpose of SB 18 is to involve Native Americans at the onset of the planning process to allow for considerations concerning the protection of traditional tribal cultural places in the context of broad local land use policy prior to individual site-specific, project level and land use decisions.

Government Code** Sections **6254(r) and 6254.10. California Public Records Act (CA PRA) § 6254(r) and 6254.10 were enacted to protect archaeological sites from unauthorized excavation, looting, or vandalism. CA PRA § 6254(r) explicitly authorizes public agencies to withhold information from the public relating to "Native American graves, cemeteries, and sacred places maintained by the Native American Heritage Commission." CA PRA § 6254.10 specifically exempts from disclosure requests for:

> …records that relate to archaeological site information and reports, maintained by, or in the possession of the Department of Parks and Recreation, the State Historical Resources Commission, the State Lands Commission, the Native American Heritage Commission, another state agency, or a local agency, including the records that the agency obtains through a consultation process between a Native American tribe and a state or local agency.

Penal Code, Section 622.5. Penal Code §622.5 provides misdemeanor penalties for injuring or destroying objects of historical or archaeological interest that area located on public or private lands, but specifically excludes the landowner.

Public Resources Code, Section 5097.5. PRC § 5097.5 defines as a misdemeanor the unauthorized disturbance or removal of archaeological, historical, or paleontological resources located on public lands.

1.4.2 Local

1.4.2.1 Los Angeles County General Plan

The Conservation, Open Space, and Recreation element of the County General Plan establishes goals and policies for conservation of cultural resources in Los Angeles County. The General Plan recognizes that the County has numerous archaeological and historical sites from the Native American, Hispanic, and American periods of California's history, as well as paleontological sites and important geological formations that predate human occupation, and that such cultural resources are nonrenewable and irreplaceable. Policy 20 states the County's intention to "protect cultural heritage resources, including historical, archaeological, paleontological, and geological sites, and significant architectural structures."

1.4.3 Regulations Pertaining to Human Remains

It should also be noted that sites that may contain human remains important to Native Americans must be identified and treated in a sensitive manner, consistent with California state law (i.e., Health and Safety Code §7050.5 and PRC §5097.98), as reviewed below.

> In the event that human remains are encountered during project development and in accordance with the Health and Safety Code Section 7050.5, the County Coroner must be notified if potentially human bone is discovered. The Coroner will then determine within two working days of being notified if the remains are subject to his or her authority. If the Coroner recognizes the remains to be Native American, he or she shall contact the Native American Heritage Commission (NAHC) by phone within 24 hours, in accordance with Public Resources Code Section 5097.98. The NAHC will then designate a Most Likely Descendant (MLD) with respect to the human remains. The MLD then has the opportunity to recommend to the property owner or the person responsible for the excavation work means for treating or disposing, with appropriate dignity, the human remains and associated grave goods.

1.5 REPORT ORGANIZATION

This report documents the results of *Æ*'s cultural resource survey investigation of the APE associated with the proposed Project. Chapter 1 has introduced the scope of the work, defined an APE, and outlined the regulatory context governing the Project. Chapter 2 synthesizes the natural and cultural setting of the Project area and surrounding region. Chapter 3 presents the results of the background research, which included an archaeological literature and records search conducted at the South Central Coastal Information Center (SCCIC), housed at California State University, Fullerton, and a Sacred Lands File (SLF) search with the NAHC in Sacramento. The study methods employed during this investigation are outlined in Chapter 4, and findings are discussed in Chapter 5. A preliminary significance evaluation and management recommendations for the cultural resource identified within the Project APE are included in Chapter 6, followed by bibliographic references (Chapter 7) and appendices.

2
SETTING

This chapter describes the prehistoric, ethnographic, and historical cultural setting of the Project area to provide a context for understanding the nature and significance of cultural properties identified within the region. Prehistorically, ethnographically, and historically the nature and distribution of human activities in the region have been affected by such factors as topography and the availability of water and biological resources. Therefore, prior to a discussion of the cultural setting, the environmental setting of the area is summarized below.

2.1 ENVIRONMENT

The Project area is located within the foothills of the southern slopes of the San Jose Hills, near the eastern edge of the City and is dominated by hills and shallow valleys. The San Jose Hills are part of the Transverse Ranges which form the border between the San Gabriel Valley and the Pomona Valley in eastern Los Angeles County. The highest peak in the San Jose Hills is Buzzard Peak at 1,319 ft which is located approximately 1 mile north of the Project area. Snow Creek, a small drainage, flows along the east side of Grand Avenue directly adjacent to the Project area. Snow Creek eventually becomes confluent with San Jose Creek approximately 1 mile south of the Project area. The valley of San Jose Creek creates the separation of the San Jose Hills and the Puente Hills. San Jose Creek ultimately merges with the San Gabriel River approximately 10 miles west of the City.

The dominant plant community of the San Jose Hills is coastal sage scrub. Coastal sage scrub is characterized by low-growing, drought-deciduous shrubs that have adapted to the semi-arid Mediterranean climate of coastal lowlands of Southern California. Common flora found within a coastal sage scrub community consist of California sagebrush (*Artemisia californica*), black sage (*Salvia mellifera*), white sage (*Salvia apiana*), California buckwheat (*Eriogonum fasciculatum*), coast brittle-bush (*Encelia californica*), golden yarrow (*Eriophyllum confertifolium*), and lemonade berry (*Rhus integrifolia*).

2.2 PREHISTORIC SETTING

Several prehistoric cultural chronologies have been proposed for Southern California, with two of the most frequently cited sequences developed by William Wallace (1955) and Claude Warren (1968). These chronologies are generalized temporal schemes based on the presence or absence of certain artifact types; both chronologies span the known prehistoric occupation of Southern California. The units used by Wallace are “horizons” or “periods,” which are extensive in space but restricted in time. The units employed by Warren are “traditions,” which may be spatially restricted but display temporal continuity.

The following discussion is divided into three major cultural intervals: Early Holocene, 9600 calibrated (cal.) Before Christ (B.C.) to 5600 cal. B.C; Middle Holocene, 5600 cal. B.C. to 1650 cal. B.C.; and Late Holocene 1650 cal. B.C. to cal. A.D. 1542.

2.2.1 Early Holocene

Archaeological data compiled over the last two decades indicate that initial settlement along the coast of Southern California began at least 12,000 years before present (B.P.). Some of the earliest evidence of human occupation derives from Daisy Cave (CA-SMI-261) on San Miguel Island; radiocarbon samples date the oldest cultural layer at the site between 9600 and 9000 cal. B.C. (Erlandson et al. 1996). Early human occupation has also been documented at the Arlington Springs Site (CA-SRI-1730) on nearby Santa Rosa Island, where Johnson and others (2002) found human remains that dated between 11,000 and 10,000 cal. B.C. Information obtained from these and other early Holocene coastal sites in Southern California indicate a distinctively maritime cultural adaptation, which has been termed the "Paleocoastal Tradition" (Moratto 1984), involving seafaring technology and a subsistence economy focused on the hunting of marine mammals and shellfish gathering (Byrd and Raab 2007:219).

Relatively few sites have been identified in the Los Angeles Basin that date to the early Holocene. Perhaps the earliest evidence of human occupation in the region near Los Angeles is represented at the tar pits of Rancho La Brea. In 1914, the partial skeleton of a young woman was discovered in association with a mano (Merriam 1914). During the early 1970s, complex chemical methods were used to decontaminate the human bone of intrusive carbon, and a treated collagen sample was dated at 9000 ± 80 B.P. (UCLA-1229 BB) (Berger et al. 1971). Apart from the "Brea Maid" as the skeleton was called by Merriam, no other human remains have been found at the tar pits.

Additional evidence of cultural occupation of the Los Angeles Basin has been documented at the sand dune bluff site of Malaga Cove along the northern end of the Palos Verdes Peninsula (Walker 1951). Radiocarbon dates suggest that the archaeological remains associated with the lowermost cultural stratum may date as early as 8000 cal. B.C. (Moratto 1984; Wallace 1986). However, the temporal placement of these deposits has been called into question by a number of researchers (see discussion in Koerper and Peterson 2013).

Both coastal and desert region designations (Wallace 1978; Warren 1980, 1984) for the early Holocene refer to a long period of human adaptation to environmental changes brought about by the transition from the Late Pleistocene to the Early Holocene geologic epochs. As climatic conditions became warmer and more arid, Pleistocene megafauna perished abruptly between 13,000 and 10,000 B.P. Human populations responded to these changing environmental conditions by focusing their subsistence efforts on the procurement of a wider variety of faunal, as well as floral resources. These early occupants of Southern California are believed to have been nomadic large-game hunters whose tool assemblage included percussion-flaked scrapers and knives; large, well-made stemmed, fluted, or leaf-shaped projectile points (e.g., Lake Mojave, Silver Lake); crescentics; heavy core/cobble tools; hammerstones; bifacial cores; and choppers and scraper planes.

2.2.2 Middle Holocene

In coastal and inland Southern California, the early traditions gave way to what Warren refers to as the "Encinitas Tradition" and what Wallace terms "Period II: Food Collecting" by about 8000–7000 B.P. This interval has been frequently described as the "Milling Stone Horizon"

because of the preponderance of milling tools in the archaeological assemblages of sites dated to this era (Basgall and True 1985; Kowta 1969; Wallace 1955). The onset of this period, which began sometime around 5600 cal. B.C., is marked by an expansion of populations throughout the coastal California area.

Overall, the general settlement-subsistence patterns of the Middle Holocene were exemplified by a greater emphasis on seed gathering. Coastal and inland sites exhibit shallow midden accumulations, suggesting seasonal camping. Midden accumulation at desert locales dating to this period is generally rare. Based on the distribution of sites assigned to this period, aboriginal groups likely followed a modified, centrally based wandering pattern with an inferred shift toward enhanced logistical settlement organization (cf. Binford 1980; Warren 1968). In this semisedentary pattern, larger groups occupied a base camp during a portion of the year, while smaller groups of people used satellite camps to exploit seasonally available floral resources such as grass seeds, berries, tubers, and nuts.

King (1967:66–67) suggests that the coastal sites probably represent more permanent occupations than are found in the interior, because coastal inhabitants were sustained by more reliable and abundant food resources. A more mobile subsistence round was likely necessary for inland inhabitants. It is possible, too, that inland and coastal sites of this period represent seasonal movement by the same groups.

Regional variations in technology, settlement patterns, and mortuary practices have lead researchers to define several localized manifestations or “patterns” of the Encinitas Tradition (Sutton and Gardner 2010). In the inland areas of Los Angeles County, the tradition is represented by the “Greven Knoll Pattern.” Coastal populations primarily exploited fish, shellfish, and coastal prairie grasses, with little reliance on terrestrial fauna (Altschul et al. 2007). In contrast, inland groups had a subsistence regime oriented towards the hunting of small mammals and collection of hard seeds (Glassow et al. 2007).

Sutton and Gardner (2010) define two temporal subdivisions for the Greven Knoll Pattern that fall within the Middle Holocene: Greven Knoll I (circa 7500 to 2000 B.C.) and Greven Knoll II (circa 2000 to 1000 B.C.). Site assemblages dating to the Greven Knoll I are characterized by abundant ground stone that includes manos and metates, charmstones, cogged stone and discoidals, Pinto projectile points, and an abundance of shell artifacts. In contrast to the coastal patterns during this time, no shellfish are present in the inland areas (Sutton and Gardner 2010). Flexed inhumations are the most common burial form during Greven Knoll I and Greven Knoll II with cremations being quite rare. Greven Knoll I groups share similarities in material cultural with Pinto groups from the Mojave Desert suggesting potential interaction and influence.

The Greven Knoll II largely represents a continuation of the Greven Knoll pattern with site assemblages dating to this phase containing numerous manos and metates, late discoidals, and an abundance of shell artifacts. The quantity of projectile points, specifically Elko points, increases during the Greven Knoll II indicating a subsistence shift toward greater reliance on large game. Flexed inhumations continue to be the dominant mortuary regime with a very small number of cremations also found to date to the phase.

2.2.3 Late Holocene

Beginning about 3500 B.P., the Encinitas Tradition was replaced throughout much of the Los Angeles Basin by a new cultural manifestation which Sutton (2010) has termed the "Del Rey Tradition." At this time, significant changes are seen in material culture, settlement systems, subsistence regimes, and mortuary practices throughout Southern California. A number of these new cultural traits have been attributable to the arrival of Takic-speaking people from the southern San Joaquin Valley (Sutton 2009). Biological, archaeological, and linguistic data indicate that the Takic groups who settled in the Los Angeles Basin were ethnically distinct from the indigenous Hokan-speaking Topanga populations. These Takic speakers are believed to be ancestral to the ethnographic Gabrielino groups (Sutton 2009). The archaeological evidence suggests that Hokan-speaking groups were largely replaced or subsumed by the Gabrielino and Chumash by 2000 B.P. (Sutton and Gardner 2010).

The Los Angeles Basin is represented by the "Angeles Pattern" of the Del Rey Tradition (Sutton 2010). Six temporal subdivisions have been defined for the Angeles Pattern, which encompass Intermediate and Late Periods as defined by Wallace (1955) (Table 1). A summary of each of these phases is provided below.

Table 1
Angeles Phase Designations and Associated Dates

Phase	Dates
Angeles I	1550 – 650 B.C.
Angeles II	650 B.C. – 450 A.D.
Angeles III	450 – 700 A.D.
Angeles IV	700 – 1150 A.D.
Angeles V	1150 – 1500 A.D.
Angeles VI	1500 – 1800 A.D.

The onset of the Angeles I phase is characterized by an increase and aggregation of regional populations and the appearance of the first village settlements. The prevalence of projectile points, single-piece shell fishhooks, and bone harpoon points at Angeles I sites suggests a subsistence shift toward greater dependence on fishing and terrestrial hunting with less reliance on the gathering of shellfish. Regional trade and interaction networks also appear to have developed at this time with coastal populations in the Los Angeles Basin obtaining obsidian from the Coso Volcanic Field to the north and steatite artifacts and *Olivella* shell beads from the southern Channel Islands (Koerper et al. 2002). A marked change also occurs in mortuary practices with flexed primary inhumations and cremations replacing extended inhumations and cairns.

Angeles II occupation in the Los Angeles Basin largely represents a continuation and elaboration of the preceding phase. The one exception to this pattern is the introduction of a new funerary complex around 600 B.C. consisting of the construction of large rock cairns or platforms containing abundant broken tools, faunal remains, and cremated human bone. These mortuary features are generally thought to represent the predecessor of the Southern California Mourning Ceremony (Sutton 2010).

Several important changes marked the beginning of the Angeles III phase. Larger seasonal villages were established along the coastal and inland areas which contain well-developed middens and cemeteries. Archaeological data from Angeles III sites indicate that residents of these settlements practiced a fairly diverse subsistence strategy that included the exploitation of both marine and terrestrial resources (Sutton 2010). Plank canoes and bow and arrow technology

were introduced at this time (Glassow et al. 2007). The appearance of new types of *Olivella* beads at Angeles III sites indicates a reconfiguration of existing regional exchange networks with increased interaction with populations in the Gulf of California (Koerper et al. 2002). Mortuary practices also changed at this time with inhumations no longer placed in an extended position and cremation features increasing in frequency (Sutton 2010).

Several residential sites dating to the Angeles II and III phases have been excavated in the Los Angeles area. Among the most well-known of these sites are the Encino Village site (CA-LAN-43) located in the southern San Fernando Valley and the Gabrielino village of Yaanga (CA-LAN-1575/H) situated in the general vicinity of the historic Pueblo de Los Angeles (Sutton 2010). Archaeological data obtained from these sites suggests while residential mobility was greatly reduced from previous times, the Angeles II and III phase groups did not adhere to a fully sedentary way of life (Glassow et al. 2007).

The Angeles IV phase roughly corresponds to the beginning of the "Late Prehistoric Horizon" as defined by Wallace (1955) and the "Shoshonean Tradition" by Warren (1968). The Angeles IV phase is characterized by the continued growth of regional populations and the development of large sedentary villages. Archaeological investigations in the Ballona Creek area indicate that sometime around 1000 B.P., bluff top sites were abandoned and populations aggregated into villages along the edge of the lagoon. Several new types of material cultural appeared during the Angeles IV phase including Cottonwood series points, birdstone and "spike" effigies, *Olivella* cupped beads, and *Mytilus* shell disk beads. The presence of Southwestern pottery, Patayan ceramic figurines, and Hohokam shell bracelets at Angeles IV sites suggests interaction between populations in Southern California and the Southwest.

Notable changes are seen in regional trade networks in the Angeles V phase with an increase in the number and size of steatite artifacts, including large vessels, elaborate effigies, and *comals*. Although chiefdoms appear to have developed in the northern Channel Islands and the Santa Barbara region sometime after 850 B.P. (Arnold 1992; Gamble 2005), little direct evidence has been found to suggest this level of social complexity was present in the Los Angeles Basin in the Angeles V phase. The presence of these artifacts suggests a strengthening of trade ties with the southern Channel Islands (Koerper et al. 2002). Mortuary practices in the Angeles V phase remained largely unchanged from the previous phase with flexed primary inhumations continuing to be the preferred burial method.

2.3 ETHNOGRAPHIC SETTING

Within the Los Angeles Basin, the Angeles VI phase is represented by post-contact (post-A.D. 1542) Gabrielino populations. A cursory review of the Gabrielino peoples and their culture is presented here. The reader is referred to W. McCawley's book *The First Angelinos* (1996) for a more detailed discussion of the Gabrielino.

The Gabrielino are characterized as one of the most complex societies in native Southern California, second perhaps only to the Chumash, their coastal neighbors to the northwest, in overall economic, ritual, and social organizational complexity (Bean and Smith 1978:538; Kroeber 1925:621). The Gabrielino occupied a large territory, including the entire Los Angeles Basin, the coast from Malibu to Aliso Creek, parts of the Santa Monica Mountains, the San

Fernando Valley, the San Gabriel Valley, the San Bernardino Valley, the northern part of the Santa Ana Mountains, and much of the middle and lower Santa Ana River reaches. In addition, the Gabrielino inhabited the islands of Santa Catalina, San Clemente, and San Nicolas. The Gabrielino language was a Cupan language, part of the Takic family of the Uto-Aztecan linguistic stock. Although early twentieth century ethnographer John Peabody Harrington (1986) refers to four local dialects and Kroeber's (1925) investigations suggested that there were six, including Fernandeño and Gabrielino and two or more island variants, in all probability many more minor dialectical differences existed. The Fernandeño and Gabrielino terms are derived from the eighteenth century missions established in the San Fernando and San Gabriel valleys, respectively, and refer to the native subgroups living in the immediate vicinity of each. Fernandeños are subsumed under the general Gabrielino culture, as recommended by Kroeber (1925).

The mainland Gabrielino territory has been divided into four geographical regions, each of which offered a distinctive array of resources (Hudson 1971). The first region, which includes the JPL campus, comprises the interior mountains and adjacent foothills of the Santa Ana, San Gabriel, and Santa Monica mountains. Food resources available in this region would have included deer and a variety of small mammals, and acorns and piñon nuts along with sage and a variety of grass seeds. The second region includes the plains flanking the interior mountains such as the San Fernando, San Gabriel, and San Bernardino valleys as well as the Los Angeles Basin. Important resources in this geographical region included deer, numerous small mammals, acorns, sage, yucca, cactus fruit, and a variety of plants and animals associated with the freshwater marshes. The third region includes the exposed coastal strip extending from present-day San Pedro south to Newport Bay. Food resources in this region include a variety of shellfish, rays, sharks, and fish available near the coastal inlets. The fourth geographical region includes the sheltered coastal strip from San Pedro north to Topanga Canyon where inhabitants exploited a variety of shellfish and fish, sharks, rays, sea mammals, and sea birds.

Based on these geographical regions, Hudson (1971) defined three broad subsistence and settlement patterns. For the interior mountain regions, the primary settlements were located in the lower reaches of canyons, which offered protection during the cold winter months. During the summer, family groups traveled to seasonal camps to exploit seasonally available foodstuffs; in the fall, they traveled to oak groves to gather acorns. In the inland plains, families units traveled to shellfish gathering camp sites along the exposed coastal strips south of San Pedro. The third pattern was found among communities of the sheltered coastal strip north of San Pedro where family units dispersed to inland camps during the winter months to hunt and gather plant foods.

It is believed that the total Gabrielino territory covered more than 1,500 mi^2 and included the watersheds of the Los Angeles, San Gabriel, Santa Ana, and Rio Hondo rivers. The Gabrielino also occupied the islands of Santa Catalina, San Clemente, and San Nicolas. Within this large territory were more than 50 residential communities with populations that ranged from 50 to 150 individuals. Each community consisted of one or more lineages which maintained a permanent geographic territory that included a permanent settlement and a variety of hunting and gathering areas as well as ritual sites. A typical Gabrielino settlement contained a variety of structures used for religious, residential, and recreational purposes. In the larger communities, a sacred enclosure surrounded by the houses of the chief and other elite members of the community was generally

located near the center of the settlement. Surrounding these structures were the smaller homes occupied by the rest of the community. Other features common at residential sites were sweathouses, level clearings used as playing fields and dance grounds, and cemeteries (McCawley 1996:32–33).

As seen above, the Gabrielino territory offered a rich and diverse resource base. This wealth of resources, coupled with an effective technology and a well-developed trade and ritual system, resulted in a society that was among one of the most materially wealthy and culturally sophisticated cultural groups in California (McCawley 1996:141). The management of food resources by the chief was at the heart of the Gabrielino economy. A portion of each day's hunting, fishing, or gathering activities was given to the chief who managed the community's food reserves. Each family also kept a food supply for use in lean times. Additionally, the Gabrielino territory lay at the center of an extensive trade network that extended east to the Colorado River and as far west as San Nicolas Island, which allowed the Gabrielino to maintain trade relations with the Cahuilla, Serrano, Luiseño, Chumash, and Mojave cultural groups.

The material culture of the Gabrielino is elaborate and in many ways comparable to that of the Chumash. An excellent descriptive source is Blackburn's (1963) compendium of Gabrielino material culture, which is intended for an archaeological audience and exhaustively summarizes Padre Geronimo Boscana's accounts, Hugo Reid's 1852 letters to the *Los Angeles Star* (Reid 1852), and Harrington's early twentieth century interviews, among a number of other sources. Shell ornaments and beads, baskets, bone tools, flint weapons and drills, fishhooks, mortars and pestles, wooden bowls and paddles, shell spoons, wooden war clubs, and a variety of steatite items (cooking vessels, comals, ornaments) are among the many artifact types common in descriptions of Gabrielino culture (Blackburn 1963).

Highly developed artisanship is particularly evident in the many technomic implements inlaid with shell (using asphaltum) and in the steatite items from production centers on Catalina Island. Clothing was minimal and consisted, in colder seasons, principally of deerskin, rabbit fur, or birdskin capes, skirts, or blankets (Bean and Smith 1978:541). Residences were of a characteristic Southern California style: domed, circular, thatched, and generally communal (two to four families per structure). Small, earth-covered sweathouses, ceremonial enclosures (with willow stake fences), and menstrual huts generally were found in every village.

From what little is known of Gabrielino social organization, it is possible to note a few characteristics that may be in part manifested archaeologically. First, the Gabrielino may have exhibited a level of sociocultural integration commonly referred to as the "chiefdom." Bean and Smith (1978) and others describe three hierarchically ordered social classes among these people: an elite (chiefs, immediate family, and the very rich), a middle class (well-established lineages), and commoners. These "classes" (the term "ranks" is preferred because strictly defined classes are associated with advanced chiefdoms and state level societies, neither of which would describe the Gabrielino; see Arnold [1987]) are presumed to have been hereditary. Also, highly ranked individuals owned bounded property. Social ranking can be difficult to identify in the archaeological record, and confirmation generally requires a corpus of mutually corroborative data, including distinctive distributions of funerary goods across sexes and ages, analysis of health indicators in the skeletal population, signs of supra-community production organization, and individual or community-wide differential access to exotic or wealth-associated goods.

Large segments of this information may never be obtained because of the mainland Gabrielino practice of cremation of the dead and burning of most of the deceased's possessions.

Gabrielino villages are reported to have been politically autonomous, comprising segmentary, nonlocalized patrilineages that characteristically divided into smaller (sublineage) units on a seasonal basis in order to exploit specific subsistence resources. In spite of this apparent autonomy, a dominant lineage's leader was an effective village "chief" whose authority was tied to possession of a ritual bundle, and it was not uncommon for several villages to be linked under the leadership of a particularly powerful chief (Bean and Smith 1978; Johnston 1962). Mainland Gabrielino marriage ties were often far-ranging. Bean (1976:109) reports that villages simultaneously maintained marriage ties with as many as 13 other villages, including up to three non-Gabrielino groups (the village of *Tungva* had ties with Chumash, Yokuts, and Kitanemuk villages).

In general, the Gabrielino cultivated alliances with other groups (a Chumash-Salinan-Gabrielino alliance, for one [Bean 1976:104]) and also maintained cult or ritual centers (such as the village *Povongna*) where trade fairs, mourning ceremonies, and other sorts of social and economic interaction linked villages of many zones into exchange and social partnerships. Strong (1929:98) indicates that there was a "loose ceremonial union" among the Cahuilla, Luiseño, Serrano, and Gabrielino manifested in gifts of shell money sent by all to leaders of clans in which a death had occurred. Blackburn (1976:240) notes that ceremonialism in general provided a context for far-ranging social interaction, especially between the Gabrielino and several neighboring groups, and resulted in strong unity against external enemies. However, Bean and Smith conclude that the Gabrielino peoples quarreled constantly among themselves and that inter-village conflict was frequent and deadly, although rarely extended (1978:546). Marriage ties usually dictated affiliations during conflicts.

Trade was an important element of the Gabrielino economy. While the principal Gabrielino-produced commodity—steatite vessels from centers on Catalina Island—originated well outside the defined study region, trade in steatite items was conducted throughout the local territory and involved external relations with desert, Southwestern, mountain, and coastal groups beyond Gabrielino borders. Kroeber (1925:629) notes that the distribution of steatite and ceramic vessels is nearly mutually exclusive in Southern California. While the Gabrielino and the Chumash used steatite (and baskets) for most container/storage needs, the Serrano, Luiseño, Cahuilla, Juaneño, Mojave, and others made ceramic pots and only rarely used steatite. Conversely, Macko et al. (1983) suggest that steatite from distribution points at Redondo and San Pedro on the mainland shore reached the Serrano and Cahuilla, although exchange intensity to these groups is not specified. *Olivella* shell callus beads, manufactured on the northern Channel Islands by the Chumash and their predecessors, were reportedly used quite frequently as a currency by the Gabrielino and other Southern California groups, particularly in situations when bartering methods were inappropriate or ineffective.

Subsistence items described in ethnohistorical sources include large numbers of native grass seeds, six or more types of acorns, pinyon pine nuts, seeds and berries from various shrubs, fresh greens and shoots, mule deer, pronghorn, mountain sheep, rabbits and rodents, quail and waterfowl, snakes, lizards, insects, and freshwater fish, plus a wide variety of marine fish, shellfish, and sea mammals in coastal zones. Specific exploitation techniques described in

ethnohistorical sources include rabbit drives in conjunction with seasonal controlled burning of chaparral, and the use of throwing sticks or nets in the capture of waterfowl in the low-lying marshlands found in places such as the Prado Basin. Reed rafts may have been employed for marshland hunting (Priestley 1937). This diverse inventory of subsistence resources was supplemented by additional supplies of deer skins, seeds, and acorns from interior groups such as the Serrano (Kroeber 1925:629).

Hudson's (1971:59) study indicates that Gabrielino peoples may have practiced a less seasonal mobility than other reports describe. Citing a 1772 observation by Padre Cambron that both "sierra" (mountain) and "rancheria" (valley) Gabrielino settlements were occupied during the October acorn gathering season, Hudson suggests that Gabrielinos did not migrate seasonally from one area to the other. However, a number of other interpretations of this interesting historical observation are possible, including the possibility that the rancheria was only partly occupied during this period, while the remainder of the population gathered foods in the foothills or mountains (not necessarily at the place observed by Cambron).

2.4 ETHNOHISTORICAL SETTING

The first contact between the Europeans and the Gabrielino is thought to have occurred in 1542 when Cabrillo's small fleet arrived at Santa Catalina Island (see discussion below). In 1602, the Sebastian Vizcaino expedition visited San Clemente and Santa Catalina islands and the mainland near present-day San Pedro (McCawley 1996:207). In 1769, the Gaspar de Portolá expedition crossed the Gabrielino homeland twice and Mission San Gabriel was founded on September 8, 1771, at a location near the Whittier Narrows, approximately 12 mi west of the Project area. Because of conflict, recruitment and conversion remained slow for the first few years of the mission's existence. Sometime around 1774, Mission San Gabriel was moved to its present location to obtain more suitable land for agriculture and it was reportedly built on a Gabrielino village called *Sibag-na* (Robinson 1939:174). This location was allegedly within 6 miles of *Hahamog'na* (a well-known Gabrielino village). A second mission, San Fernando, was established within Gabrielino territory in 1797, located approximately 38 mi northwest of Mt. San Antonio College.

Mission life was highly regimented and contrasted sharply with the traditional Gabrielino lifeway; as a result, colonization had a dramatic and negative effect on Gabrielino society, including fugitivism. The traditional Gabrielino communities were depopulated and epidemics caused by the introduction of European diseases further reduced the indigenous population. Between 1832 and 1834, the Mexican government implemented a series of secularization acts that were theoretically designed to turn over the mission lands to the native populations; however, most of this land was taken over by Mexican civilians. Thus, the primary result of secularization was increased fugitivism among the Gabrielino (McCawley 1996:208). The later American takeover of California brought further hardships to the Gabrielino who eventually settled at small Native American and Mexican settlements in the Eagle Rock and Highland Park districts of Los Angeles as well as in Pauma, Pala, Temecula, Pechanga, and San Jacinto.

2.5 HISTORICAL SETTING

The following historical context is largely adapted from *Historical Resources Technical Report LOSSAN North Historic Architectural Study, Los Angeles County, California* (Chasteen 2010).

2.5.1 Exploration and Early Settlement

Spanish exploration of North America began in the early 1500s; Juan Rodriguez Cabrillo began exploring the Alta California coastline in 1542. While exploring the coast of Alta California, Cabrillo named San Pedro Bay the Bahia de los Fumos. The mission system was established by the Catholic Church in cooperation with the Spanish government as a program of settlement and development (colonization) that spread from Baja California to Alta California. The settlement pattern that resulted from this system allowed the religious order to claim hundreds of acres of land in the name of Spain in order to establish a church to convert the Native American population (called neophytes), and lands on which to grow crops and livestock to sustain themselves and provide commodities, such as hides and tallow, to sell or barter. Native Americans were largely forced to work on the mission grounds, often losing their cultural identity in the process. The San Gabriel Arcangel Mission was established by Father Junipero Serra as the fourth mission established in Alta California on September 8, 1771. A total of 21 missions were constructed in Alta California. The missions were situated one-day's travel apart, and were connected by the El Camino Real, or the "Kings Highway." In 1904, the El Camino Real Association was established to determine the original route of the old highway and to install a distinctive marker along the route. Within Los Angeles County, the El Camino Real primarily follows the route of U.S. 101, and the bells are largely extant.

In addition to establishing missions, the Spanish government established *pueblos* and *presidios* to further colonization efforts in Alta California. The City of Los Angeles was initially established by the Pobladores, a group of 11 families, as a *pueblo* on September 4, 1781 on a site selected by Governor Felipe de Neve. The original Plaza was constructed in the Los Angeles River flood plain, but was moved to its current location in 1815 following a flood. El Pueblo de Los Angeles quickly became the local and regional center for economic, political, social, cultural, and religious activities.

Mexico achieved independence from Spain in 1821. The mission system was continued under Mexican rule until 1833, when the Secularization Act was passed. Under this act, mission ownership was withdrawn from the Catholic Church, and land grants, also known as *ranchos*, were distributed amongst the prominent and wealthy families of Mexico and to reward soldiers for their service during the revolution. The agricultural-based economy established under the Spanish/Catholic Church regime continued to prosper. Between 1835 and 1846, more than 600 land grants in Alta California were recorded with the Mexican government.

Under Spanish rule, marine-based trade was prohibited in every bay except Monterey. As early as 1805, unauthorized trading began. Merchants were exchanging European-manufactured and Asian goods for cattle hide and tallow. As a result of Mexican independence, California ports were opened to foreign trade. The firm of McCulloch, Hartnell and Company formed and contracted with the missions for cattle hides and tallow. The firm constructed a warehouse, the Hide House, to support their economic endeavors in what is now San Pedro in order to access the

harbor located there. The Hide House eventually was sold to the San Gabriel Mission, and Abel Stearns acquired it as a result of the Secularization Act. The hide trade flourished at that time, and by 1830, San Pedro was the leading center of production.

2.5.2 Early American (1848–1870)

Euro-Americans began traveling west in pursuit of personal wealth, religious freedom, and the ability to acquire land. The *rancho* system persisted in Alta California until the culmination of the Mexican-American War in 1848, when Mexico ceded California to the United States through the Treaty of Guadalupe Hidalgo. A large gold deposit was discovered in 1848 in the mountains east of Sacramento, which resulted in a massive Euro-American population boom in California. In order for the United States government to claim ownership of the natural resources located within Alta California, California was established as a state in 1850. Prior to being granted statehood, California was divided into 27 counties, one of which was Los Angeles. In addition, the City of Los Angeles was incorporated in 1850 and was statutorily declared the county seat. In 1851, a Land Commission was established to verify ownership claims of the ranchos. As often as not, ownership of the ranchos was deemed invalid, thus opening large tracts of land for purchase to such notable men as Abel Stearns, James Irvine, and Llewellyn Bixby who were instrumental in the development of Southern California. Though many lands changed hands, the economy remained agriculturally based, with an emphasis on raising livestock and crops.

The Gold Rush facilitated the need for transportation, and stagecoach lines were established to meet this need. The Butterfield Stagecoach, which ran from St. Louis, Missouri to San Francisco, California, is perhaps the most notable of the lines. Another heavily traveled line was run by Seeley and Wright, and allowed for travel from San Diego to Los Angeles. The Santa Susana Stagecoach route was established during the Gold Rush of 1849 to allow travel from Los Angeles to San Francisco as an alternative route to the El Camino Real, and followed the Santa Susana Pass road route.

2.5.3 Era of Modern Transportation (1870–1918)

With the establishment of rail lines in California, the stagecoach companies quickly became obsolete. The railroads allowed for faster travel, which escalated Euro-American settlement in California, and furthered local economies. Collis P. Huntington, Mark Hopkins, Charles Crocker, and Leland Stanford, known as the “Big Four,” joined forces with Theodore Judah in 1861 to finance and establish the Central Pacific Railroad. The Big Four eventually ousted Judah from the Board of Directors of the Central Pacific Railroad, and successfully completed the construction of the Central Pacific Railroad. The Union Pacific Railroad was constructing tracks from the east at that time, with the intent to join the Central Pacific Railroad in the Great Basin. On May 10, 1869, Stanford drove the “golden spike” in the railroad, which successfully completed the first transcontinental railroad. Other companies were formed and other routes were sought in an effort to break up the monopoly established by the Big Four. The Southern Pacific Railroad completed its Los Angeles route in 1880, and the Santa Fe Railway completed its route in 1886. The establishment of the transcontinental rail system furthered Los Angeles’ role in the economic development of both Southern California and throughout the United States.

Early commuter public transportation in what is now downtown Los Angeles was provided by a series of horse- or mule-drawn cable cars. The cable cars enabled early suburban development in neighboring communities such as Boyle Heights and Westlake Park. The Pacific Electric Railway, originally known as the Pico Street Electric Railway, was established in 1888, and quickly supplanted the cable car system as a more efficient and faster method of travel. Henry E. Huntington, nephew of railroad magnate Collis P. Huntington, acquired the Los Angeles Railway Company in 1898, which was redefined and incorporated into his Pacific Electric Railway. Huntington established the Los Angeles Inter-Urban Electric Railway in 1903, which operated on the Southern Pacific Railway line, and allowed patrons to travel to neighboring communities such as Long Beach. The result of Huntington's efforts was various communities within Los Angeles County were connected by light rail, which fostered additional suburban development.

The ranchos continued to change hands throughout Southern California, and large tracts were beginning to be broken up into smaller tracts of land as a means to both raise money and also provide for families of the same clan. Families continued to raise sheep and dry farm crops to sustain themselves. Through urbanization of the area around downtown Los Angeles, much of western Los Angeles County was given over to an agriculturally based economy. Early crops in Los Angeles were grapes, often used for making wine, as evidenced by the San Antonio Winery which is extant just north of downtown Los Angeles, sugar beets, and citrus. Citrus soon became the largest crop raised in Los Angeles County.

In 1893, the first Washington Navel orange was planted in the City of Riverside, Riverside County California (CHL No. 20). In October 1895, the Southern California Fruit Exchange was formed as a cooperative for packaging and shipping citrus. In 1905, the exchange changed its name to California Fruit Growers' Exchange (later known as SunKist). The exchange was originally formed as a marketing and shipping agency, and created a business model effectively used by other agricultural groups, such as the California Associated Raisin Company. The California Fruit Growers' Exchange was instrumental in making citrus the chief crop raised in Los Angeles County, as it remained until frost and disease shifted citrus raising to the State of Florida.

Commercial fishing in Los Angeles began in 1893, when the Golden Gate Packing Company moved its operations from San Francisco to San Pedro, adjacent to the Port of Los Angeles Main Ship Channel, in 1893. After relocating, the company renamed itself the California Fish Company, and began processing and canning albacore tuna due to a decline in anchovies. Through a marketing campaign in 1903, tuna was introduced to consumers with a slogan indicating tuna was the "Chicken of the Sea." In 1917, Martin J. Bogdanovich founded the French Sardine Company, later known as StarKist, which eventually became the largest fish cannery in the world. By World War I, the Port of Los Angeles led the nation in commercial fishing.

Oil was discovered in Los Angeles County in 1850 by Andreas Pico, and the first recorded shipment of oil occurred in 1867. E. L. Doheny established an early oil well in 1892, which made Los Angeles an oil center, creating a financial and residential boom in the City of Los Angeles. Other industries included crushing rock and gravel for use in cement, and the production of bricks. Los Angeles County also possessed the second largest, presumably in the

state of California, Borax mine. Other ores and minerals which were mined at this time were glass sand, gems, mineral water, and natural gas. By 1914, approximately 2,000 plants were located within Los Angeles County, employing over 21,000 persons.

The rail system promoted tourism in Los Angeles County by creating a fast and inexpensive way to enjoy a swim at the beach or allow for day trips to San Bernardino or Riverside counties. Upon completion of the transcontinental railroad, coastal communities such as Long Beach and Santa Monica were promoted throughout the United States by the railroads as communities which supported good health through plentiful sunshine and recreation, and economic opportunity. Piers with amusement parks, such as the Long Beach Pike, "plunges" or swimming pools, and various restaurants were constructed to further attract tourists. Commuter rail was often used as a source of amusement in and of itself. A popular late nineteenth to early twentieth century excursion route, passengers could travel on the Kite Route from the Santa Fe Railway depot in Los Angeles to Redlands via Pasadena and the San Bernardino Valley and return through Orange County via Fullerton and Rivera.

2.5.4 Interwar Period (1919–1939)

With Henry Ford's invention of assembly line production and the end of World War I, automobiles became less expensive and within the reach of the average American family. The era of the railroad began to decline around 1917 with the United States entry into World War I, and the reign of the railroads never returned due to the widespread availability of the automobile. Roads were constructed to support the increasingly popular automobile and the beginnings of the "car culture" were sown. The early car culture included road trips for leisure and also necessity as described in John Steinbeck's *Grapes of Wrath*, where the Joad family lost their family farm in the Midwest and were forced to travel to California in search of work during the Great Depression of the 1930s.

Interstate travel was made possible with the creation of highways, such as Route 66. Route 66, also known as the mother road, traverses the western half of the United States beginning in Chicago, Illinois and terminating at the pier in Santa Monica, California. Beginning in 1926, Route 66 was a conglomeration of newly constructed highways and existing highways merely signed with the new route number. The original 1926 alignment of Route 66 spanned Los Angeles County from the east along Colorado Boulevard through Pasadena, following North Broadway in the City of Los Angeles, and terminated at Broadway and 7th Streets in downtown Los Angeles. The alignment was extended to the coast along Santa Monica Boulevard in 1935.

Early developments in aeronautical travel within Los Angeles County were typically associated with military purposes, and included the U.S. Army balloon school, located at what is now Arcadia County Park, in Arcadia. As German aggression throughout Europe became apparent, preparations for a potential World War II began. In 1936, for the purposes of developing rockets, researchers at the California Institute of Technology began the work that would ultimately lead to the creation of the Jet Propulsion Laboratory facility in Pasadena. Aviation pioneer Glenn L. Martin formed an airplane construction company in 1912. Martin established a production facility in Hollywood, but the Lockheed Company moved to Burbank in 1928. In 1929, the United Aircraft and Transportation Company, a subsidiary of United Airlines, acquired 234 acres of land of the Lockheed Company production plant for the purposes of constructing an airport,

known as United Airport, which opened in 1930. Howard Hughes founded Hughes Aircraft, which was located within the City of Glendale in 1932. Lastly, Douglas Aircraft was originally established as Douglas-Davies Company in 1920, and moved to Santa Monica shortly thereafter. The Douglas Aircraft plant, located at Mines Field, was constructed by the USACE in the 1930s.

The march toward suburban sprawl began during this time period, though at a slower pace in the 1930s due to the Great Depression. Agricultural lands began being developed as residential tracts with various supporting social services. Prior to 1939, R.C.A., Victor, Firestone Tire, Dow Chemical, Ford Motor, and Bethlehem Steel had built branch plants in Los Angeles.

2.5.5 World War II and Post-War Era (1940–1960)

Los Angeles made itself attractive to the aircraft industry by promoting its cheap land, climate, and pro-business atmosphere. The burgeoning industry began establishing itself throughout the county as previously described. The turning point for the aviation industry occurred when Lockheed received a pre-paid order for 200 warplanes from Britain. Aircraft production had expanded by leaps and bounds by in the early stages of World War II.

During World War I, the United States Navy took possession of the Port of Los Angeles, and established a training and submarine base, which is extant. After the Japanese bombed Pearl Harbor in 1941, the United States Navy immediately assumed control of the Port of Los Angeles, for use of defense activities associated with the Pacific Theatre of Operations. Ship and air production facilities operated 24 hours a day at the Port of Los Angeles until the end of World War II, and produced more than 15 tons of war equipment. Similar activities occurred at the Port of Long Beach. Douglas Aircraft established a hiring office on American Avenue, and at its peak in 1943, employed 41,602 employees, of which approximately 54 percent were women.

The freeway system began to take root in Los Angeles County beginning in 1940 with the opening of the Arroyo Seco Parkway. The Cahuenga Pass Freeway was opened in 1947. The Hollywood Freeway was opened in 1954. In 1960, the Ventura Freeway was completed across the San Fernando Valley. The opening of these highways further promoted suburban development and expansion.

One notable impact World War II had on the United States was the recognized need for a comprehensive internal circulation system to allow for movement of war time goods and equipment. On June 29, 1956, General and President Dwight D. Eisenhower signed the Federal-Aid Highway Act of 1956, which officially established the interstate highway system. This act resulted in renumbering highways as interstates as well as construction of new highways.

Two events are largely considered responsible for the explosion of suburban housing following World War II. The first event was Levittown in the State of New York, in which Alfred Levitt and his sons developed a method to quickly and cheaply mass produce housing. The second event was the signing of the Servicemen's Readjustment Act of 1944, commonly known as the GI Bill, which gave returning servicemen the ability to purchase homes with a minimal down payment, and to acquire Federal Housing Authority-secured loans for the balance. These two events resulted in thousands of acres of citrus groves, dairy fields, and other agricultural-use fields converted to residential tract developments.

Agriculture began to decline in the post-war era in Los Angeles, partially due to farmers selling their lands to real estate developers. The Anheuser-Busch Brewery opened in 1954. As previously mentioned, General Motors opened a new production plant towards the end of the 1940s. In addition, the aerospace industry continued to grow in support of planned space exploration. Movie and television production continued and thrived during this period as well. Other industries began to prosper, such as tourism, fashion, jewelry, and furniture production.

2.5.6 City of Walnut and Mt. San Antonio College

In 1841, a group of settlers known as the Workman-Rowland Party arrived in the Los Angeles area from New Mexico (County of Los Angeles Public Library 2014). Early the following year, John Rowland traveled to the capitol of Alta California at Monterey and petitioned the Mexican governor Juan Bautista Alvarado for title to a 17,740-acre area known as Rancho La Puente. Under rule of Spain, the Rancho La Puente had served as a cattle outpost and grazing land serving Mission San Gabriel ("la puente" originally referred to a bridge along the San Gabriel River that provided access to the area). Rowland was granted title to Rancho La Puente on March 22, 1842 for $1,000 in gold and a pledge to hire local Native Americans as laborers on the cattle ranch (Workman and Temple Family Homestead Museum 2014; Macias 2006:20–21). The Rancho was enlarged to 48,790 acres in 1845 through a petition to Governor Pio Pico who then included William Workman, Rowland's partner, in on the title to the new Rancho La Puente. Rowland and Workman built adobe homes and established a thriving agricultural community engaged in ranching and farming activities. Following their deaths in the 1870s their land holdings were split among heirs and later purchased and subdivided by land speculators, investors, and developers. The former Rancho encompassed the present-day communities of Walnut, La Puente, Hacienda Heights, Pomona, Baldwin Park, Charter Oak, Covina, West Covina, and much of the Puente Hills and San Jose Hills (County of Los Angeles Public Library 2014).

Interest in the Rancho La Puente had been divided evenly by John Rowland and William Workman in the 1860s, leaving Rowland the eastern half and Workman the western half (City of Walnut 2014). Rowland's eastern half included the western portion of today's City of Walnut. The land was historically used for raising cattle and growing wheat, grapes, and fruit trees. The southern portion of the City was part of the Rancho Los Nogales (Ranch of the Walnut Trees) land grant awarded to Jose De La Cruz Linares in 1840. The eastern portion of the City of Walnut was part of the Rancho San Jose, acquired by Ricardo Vejar in 1847.

In the 1890s, the town of Walnut had not yet existed, but two little communities by the names of Lemon and Hartford had come to exist as railroad sidings along the Southern Pacific Railroad (SPRR) between Pomona and El Monte (USGS 1894). The nearby San Jose Hills and Puente Hills were barren and isolated locales with the extent of their use likely being for cattle grazing. Meanwhile, the Lemon and Hartford communities exhibited a few scattered farm houses along a web of dirt wagon roads crossing each side of the San Jose Creek. By the 1940s and 1950s, the town of Walnut had developed as a thriving orchard community with hundreds of acres of fruit and walnut trees dotting the landscape within the small valley of San Jose Creek (USGS 1954). The Union Pacific Railroad had built a line to the south of town paralleling the SPRR as a competitor in freight business. A number of institutional developments had established themselves in the region, such as the Pacific State Hospital; the Baptist Theological Seminary;

California State Polytechnic College; the Pomona Naval Ordnance Plant, and Mt. San Antonio Junior College, which was founded in 1946. Urban residential development had occurred primarily among a group of small hills to the west of Lemon Street and along Valley Boulevard in the downtown core area of Walnut.

The City of Walnut was incorporated on January 19, 1959, during the post-WWII era development boom that swept across Southern California. During the 1960s, former orchard lands in the City began to be developed by housing subdivisions, commerce, and industry (USGS 1966). It was after incorporation that Mt. SAC was included into the City's corporate boundaries. Having an initial enrollment of 635 students in the late 1940s, during the 1950s and 1960s the Mt. SAC campus and neighboring areas grew substantially (California Community Colleges Chancellor's Office 2014; USGS 1966). Today, Mt. SAC is among the largest of 112 community colleges spread throughout the State of California (California Community Colleges Chancellor's Office 2014). The District is projected to serve 42,353 students in the fall of 2015 (Lindmark 2013).

The City of Walnut now encompasses approximately 8.9 mi^2 and is home to as many as 30,000 people (City of Walnut 2014). The City has designated 10 historic sites within its city limits, attesting to some of its long and colorful history that spans since the 1840s (Table 2, from City of Walnut 2014).

Table 2
Designated Historic Sites in the City of Walnut

Name	Description
Suzanne Park	First park to be dedicated after incorporation in 1959
Bob Quattlebaum Windmill	Historic windmill moved to Suzanne Park
Brookside Equestrian Center	Equestrian training center and set of film, *National Velvet*
W.R. Rowland Adobe Ranch House	One of the oldest buildings in Walnut, built in the 1840s
Bourdet House	First mayor of Walnut in 1959
Martinez Adobe	One of the oldest buildings in Walnut, built in the 1840s
Carrey Home	Honors the family's contributions to the City
Site of First Walnut City Hall	Established in 1959
Wildlife Sanctuary, Mt. SAC	10-acre nature preserve established in 1964
Grove of Walnut Trees	Walnut trees native to the area

The subject parcel, Assessor's Parcel Number 8709-023-917, is a portion of Lot 6 of the C.M. Wright Tract, being a subdivision of lands acquired by Jane Lynch et al. and C.M. Wright in 1905 (Los Angeles County Assessor 1905). The State of California held title to Lot 6, encompassing approximately 400 acres, by the 1920s (Los Angeles County Assessor 1926). Mt. SAC acquired the 400-acre property from the State in 1948 and has continued ownership to the present day (Los Angeles County Assessor 1948).

3
SOURCES CONSULTED

3.1 ARCHAEOLOGICAL LITERATURE AND RECORDS SEARCH RESULTS

Prior to the cultural resource survey, an archaeological literature and records search was conducted at the SCCIC, housed at California State University, Fullerton, on June 2, 2014. The objective of this records search was to determine whether any prehistoric or historical resources had been recorded previously within a 1-mile radius of the Project boundary. The results of this search indicate that as many as 25 prior cultural resources studies have been conducted previously within a 1-mile radius of the Project; two of these studies specifically involved a portion of the Project area (Table 3).

Table 3
Cultural Resource Studies within 1 Mile of the Project Area

SCCIC File No.	Author(s)	Date	Report Title
LA-00342	Taylor, Thomas T.	1978	Report of the Archaeological Survey of Five Possible Steel Tank Reservoir Sites and Pipe Routes for the Walnut Valley Water District
LA-00481	Van Horn, David M.	1979	Archaeological Survey Report: a Parcel Located in the City of Walnut in the County of Los Angeles, California
LA-00559	Cottrell, Marie G.	1979	Archaeological Resources Survey Conducted for a 725 Acre Parcel Located in the City of Walnut Los Angeles County, California
LA-00836	Cottrell, Marie G.	1977	Letter Report to Ronald Martin & Assoc. Inc.
LA-01268	Mason, Roger D. and Nancy Whitney-Desautels	1983	Archaeological Survey Report and Records Search on Proposed Revised Tract 32158 in the City of Walnut, Los Angeles County, Ca
LA-01346	Brock, James P.	1984	Archaeological Assessment Report for Proposed Sanitary Landfill Expansion Adjacent to the Spadra Landfill Los Angeles County (140 +/- Total Acres)
LA-01392*	Scientific Resource Surveys, Inc.	1980	Archaeological Assessment and Test Report on LAN-1070, LAN-1071,and LAN-1072 Located on Tt 36682 in the City of Walnut, Ca
LA-01783	Love, Bruce	1989	Archaeological Records Search for Tentative Tract 47708, Los Angeles County
LA-01985	Leonard, Nelson N. III	1975	Archaeological Impact Evaluation: Tentative Tract 25790, City of Walnut, Los Angeles County, California
LA-02135	Mason, Roger D.	1990	Cultural Resources Survey Report on a 25 Acre Parcel in the City of Walnut, Los Angeles County, California
LA-02679	Cottrell, Marie G.	1979	Focused Draft Environmental Impact Report for Via Verde Development Company Residential Development Tentative Tract
LA-03575		1997	Cultural Resource Assessment for the Bridlewood Estates Development Walnut West Covina Area, Los Angeles County
LA-03598	Maki, Mary K	1997	Phase I Archaeological Survey of 1.5 Acre at 21201 La Puente Road City of Walnut, Los Angeles County, California
LA-03666	Anonymous	1997	Senior Center Construction/#d96586-97

Table 3 (Continued)
Cultural Resource Studies within 1 Mile of the Project Area

SCCIC File No.	Author(s)	Date	Report Title
LA-03835	Cottrell, Marie G.	1979	Records Search and an Archaeological Survey for the 400 Acre Parcel Designated South Ranch, City of Walnut, Los Angeles County, California
LA-04337*	Scientific Resource Surveys, Inc.	1979	Cultural Resources Report T.t. 36682 Located in the City of Walnut, California
LA-05644	Duke, Curt	2002	Cultural Resource Assessment: Cingular Wireless Facility No. Vy 130-02 Los Angeles County, California
LA-05646	Duke, Curt	2001	Cultural Resource Assessment: Cingular Wireless Facility No. Vy-130-01 Los Angeles County, California
LA-06262	Duke, Curt	2002	Cultural Resource Assessment Cingular Wireless Facility No. Vy 130-04 Los Angeles County, California
LA-08249	Peterson, Patricia A.	2002	Cultural Resources Records Search and Survey Report for the Reclaimed Water Backbone Transmission Project, Los Angeles County, California
LA-05173	McKenna, Jeanette	2003	*A Phase II Archeological Testing Program: CA-LAN-1414, City of Industry, Los Angeles County, CA. McKenna, Jeanette (McKenna et al.) 2003*
LA-10957	Bonner, Wayne	2011	Cultural Resources Records Search and Site Visit Results for T-Mobile USA Candidate IE25942-A (Suzanne Park), 625 Suzanne Road, Walnut, Los Angeles County, California
LA-10993	Wlodarski, Robert J.	2008	Record Search Results for the Proposed Bechtel Wireless Telecommunications Site LA0235 (Walnut Ranch Park), located at 20101 Amar Road, Walnut, California
LA-11236	Storey, Noelle	2003	Cultural Resources Study of the Proposed Meadowpass Road Extension City of Walnut, California
LA-11821	Panich, Lee and Holson, John	2010	Archaeological Survey Report, Tehachapi Renewable transmission Project Segment 8 Telecommunications route, Los Angeles and San Bernardino Counties, California

* Cultural resource study that intersect the Project area.

The investigations cited above resulted in the identification of four previously recorded cultural resources within 1 mile of the Project area, including three prehistoric archaeological sites and one historical resource. The three prehistoric archaeological sites (CA-LAN-001070, CA- LAN-001071, and CA-LAN-001072) are all habitation sites, two of which contain lithic scatters. The historical resource (P-19-186869) is the Mt. SAC Campus Historic District. None of the previously recorded cultural resources are located within the Project area, however, the Mt. SAC Campus Historic District, as revised by ASM Affiliates in 2012, is located directly adjacent to the Project area (Figure 3) (Davis 2012). No isolated artifacts have been previously recorded within 1 mile of the Project area.

3.2 ADDITIONAL SOURCES

Additional sources consulted during the archaeological literature and records search include: the NRHP; the Office of Historic Preservation Archaeological Determinations of Eligibility; the Office of Historic Preservation Historic Property Directory; the listing of CHLs; California Points of Historical Interest; and the CRHR. No NRHP-listed or -eligible properties, CHLs, or Points of Historical Interest were identified within the Project area.

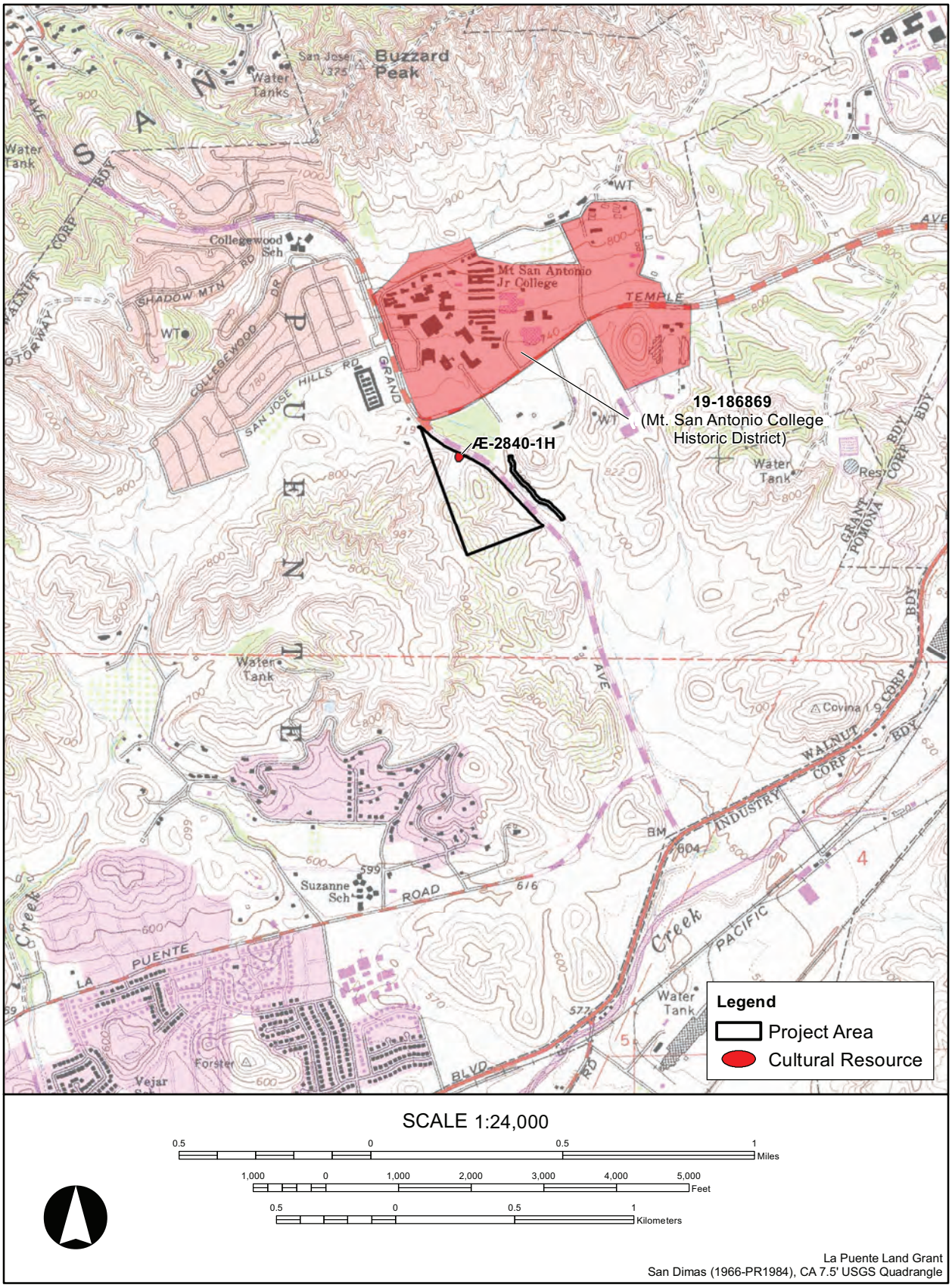

Figure 3 Location of cultural resources within or directly adjacent to the Project area.

Historical maps consulted during the archaeological literature and records search include: USGS Pomona 15' topographical quadrangle (1894, 1904), USGS San Dimas 7.5" topographical quadrangle (1954, 1966), and General Land Office Plat map (1877); the only notable feature of interest was the modern alignment of Grand Avenue which came into being around 1950.

3.2 NATIVE AMERICAN CONSULTATION

3.2.1 Sacred Lands File Search

As part of the cultural resources assessment, Æ also requested a SLF search from the NAHC located in Sacramento, California in May 2014. This SLF search encompassed the entire Project area. The NAHC responded that no SLF resources were known to exist within the Project area, but cautioned that the absence of specific site information does not indicate the absence of such resources. The NAHC provided a list of regional Native Americans who have interest in the region, specified the process of consultation as detailed in relevant legislation, communicated with local groups, and detailed how resources should be approached. Tribal communities listed on the NAHC list include: the Gabrieleno Band of Mission Indians, the Gabrieleno/Tongva San Gabriel Band of Mission Indians, the Gabrielino Tongva Indians of California Tribal Council, the Gabrielino/Tongva Nation, the Gabrielino-Tongva Tribe, the LA City/County Native American Indian Commission, and the Tongva Ancestral Territorial Tribal Nation. Scoping letters were sent on June 26, 2014 to each of the listed tribes and individuals that provided information on the preliminary results of the survey of the Project area. These letters requested information regarding Native American cultural resources within the survey area. An example this letter, the list of contacts, and the responses received are included in Appendix A.

Of the 10 groups and/or individuals contacted, three responded with comments. Mr. John Tommy Rosas commented on behalf of the Tongva Ancestral Territorial Tribal Nation and requested more detailed information regarding the ground-disturbing activities that would take place as part of the Project. Æ also conducted follow-up telephone calls with the Native American groups and individuals on July 14 and 16, 2014. During the follow-up telephone calls, Mr. Anthony Morales of the Gabrieleno/Tongva San Gabriel Band of Mission Indians stated that the vicinity of the Project area is rich with cultural materials and should be considered sensitive for Native American resources. Mr. Morales reasoned that Native American monitoring may not be necessary as long as the grading was minimal; however, should the ground-disturbing activity exceed a few feet, he recommended that a Native American monitor and an archaeological monitor be present. Mr. Andrew Salas of the Gabrieleno Band of Mission Indians returned the follow-up telephone call on July 21, 2014. Mr. Salas stated that the vicinity of the Project area is a sacred area and is located within close proximity to two Native American village sites. Mr. Salas requested that a Native American monitor be present during ground disturbing activity to ensure protection of all resources. Mr. Salas also provided information via email regarding the prehistory and history of the Project area. This correspondence is presented in Appendix A. As of the date of this report, no response was received from the Gabrielino Tongva Indians of California Tribal Council, the Gabrielino/Tongva Nation, the Gabrielino-Tongva Tribe, and the LA City/County Native American Indian Commission. A Table of Responses summarizing the outreach efforts with Native American groups and/or individuals is located in Appendix A.

It is anticipated that government-to-government consultation with Native American groups will be conducted by the USACE. The final results of the Section 106 consultation efforts are to be documented by the USACE.

4
SURVEY METHODS

The intensive cultural resources pedestrian survey of the 27.65-acre Project area on the west side of Grand Avenue was conducted by Æ archaeologist Elizabeth Cisneros on June 5, 2014. The linear segment of the survey area on the east bank of Snow Creek, totaling less than 1 ac, was surveyed on July 16, 2014 by Æ archaeologist Josh Smallwood. All fieldwork occurred under the direct supervision of Vanessa Mirro, Æ's Principal Investigator for the Project. All key Project personnel meet the Professional Qualifications Standards outlined in the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation.

The survey was conducted by walking parallel transects spaced at 10 to 15 m (33 to 50 ft) intervals. All areas likely to contain or exhibit archaeologically or historically sensitive cultural resources were inspected carefully to ensure that visible, potentially significant cultural resources were discovered and documented. Additionally, the surveyor investigated any unusual landforms, contours, soil changes, features (e.g., road cuts, drainages), and other potential cultural site markers. A Daily Work Record was completed by the surveyor that documented survey personnel, hours worked, weather, ground surface visibility, vegetation, soils, exposure/slope, topography, natural depositional environments, and identified cultural resources.

When encountered, any newly identified cultural resources were recorded on State of California Department of Parks and Recreation Primary Records and Archaeological Site Forms (1995). Systematic efforts were made to characterize and define the boundaries of each archaeological site, as well as discrete activity loci and cultural features. Site locations were plotted on the appropriate 1:24,000 scale USGS 7.5' quadrangle using a Trimble GeoXH hand-held global positioning system (GPS) unit using real-time satellite based augmentation system corrections achieving sub-meter accuracy. Site maps of each archaeological resource were drawn to scale, indicating the location of activity loci, features, and temporally or functionally diagnostic artifacts. Digital site overview photographs were also taken; in addition, digital overview photographs were taken of each activity locus, cultural feature, and temporally or functionally diagnostic artifacts. No artifacts were collected during survey.

5
FINDINGS

This chapter summarizes the results of the intensive cultural resources pedestrian survey conducted within the Project area. Following the summary of these investigations, this chapter also provides a description of the newly identified archaeological site identified within the Project area. The site record for the cultural resource identified in the Project area is included in Appendix B.

5.1 SUMMARY OF SURVEY RESULTS

The intensive pedestrian survey resulted in the identification and documentation of one newly discovered cultural resource, the remains of a cattle chute. Figure 3 depicts the location of this resource within the Project area.

Ground visibility for the 27.65-acre Project area, located on the west side of Grand Avenue, varied from 50–70 percent throughout. Portions of the hills and the two small washes within the main Project area were covered by prickly pear cactus, *Opuntia*. As a result of this dense vegetation those areas were unsurvey-able. As shown in Figure 4, the vegetation in the remainder of the main Project area consists of coastal sage scrub including sagebrush, California buckwheat, and other native grasses. The soil was a combination of fine to medium grained sandy silt, gravel, and small cobbles. A historical cattle chute, Æ-2840-1H, was observed in the north eastern portion of the 27.65-acre Project area in association with wooden fence posts, a cattle gate, and a water trough.

Figure 4 Overview of the 27.65-acre Project area, facing west.

The linear segment of the survey area along the east side of Snow Creek was surveyed along the first-level terrace between the creek ravine and the large fill pile to the east that has been built by the adjacent construction project. The ravine has steep slopes and sheer drop-offs in many areas. The ravine is also deep and filled with trees and brush, with a narrow, shallow waterway coursing along the base. The corridor of undeveloped land between the steep ravine and the fill pile measures less than 20 m, or about 50 ft, wide. As shown in Figure 5, the area is sparsely vegetated making ground visibility about 90–100 percent. Scattered rounded cobbles found lying on the surface were inspected for any evidence of prehistoric modification, such as flaking, hammering, pounding, grinding, or cooking, but all appeared to be naturally rounded, smooth and unmodified stones. A single, partial fence line consisting of a wood post and numerous metal stakes strung with barbed wire was noted within this survey area, but it appeared modern in its design, materials, and construction, and there was no evidence or indication that it was historic in age.

Figure 5 Overview of the linear segment of the survey area, facing southeast.

No prehistoric archaeological sites, features, buildings, structures, artifacts, objects, or isolated artifacts were encountered during the survey of this area.

5.2 CULTURAL RESOURCE SITE

Æ-2840-1H comprises remnants of a cattle chute, a loading corral, water trough, barbed-wire fence lines, a cattle gate, and a dirt access road, all located on the southwest side of Grand Avenue south of Temple Avenue (Figure 6). These features all appear to date to the historic period (around 1950) based on a review of historic aerial imagery available at *HistoricAerials.com* (NETR 2014). It was around 1950 that the modern alignment of Grand Avenue came into being at this location, and naturally, a location next to the road was chosen for the cattle chute and loading corral, as its sole purpose was to load cattle into trucks for transport to another location. The cattle chute remnants, being only a portion of the original structure, consists of a 9 by 15 ft (2.7 by 4.5 m) rectangular configuration of seven round erect wood posts measuring 5 ft (1.5 m) tall. Two additional wood posts are lying on the ground next to the structure. The south end of the structure has a hinged gate across the chute entrance, and a pile of wood boards and panels lying to the south of the chute appear to be the remains of a small loading corral.

About 15 ft to the east of the chute is a short, round metal water trough that appears to be fed by an underground pipeline. A ball-cock mechanism controls the water level, and a modern PVC

pipe conveys water into the trough from the underground source. Approximately 50 ft to the east of the cattle chute is a dirt access road that enters the property from Grand Avenue. A metal cattle gate at the entrance to the property has a label on it that reads, “Powder River Livestock Handling Equipment/Call 1-800453-5318/In Utah Call 374-2983.” According to the company’s website (www.powderriver.com), the telephone number is still current, and they have been in business in Provo, Utah since 1938. However, this gate does not appear to date to the historic period, and most likely it replaced an older gate in decades past.

Figure 6 Overview of Æ-2840-1H, facing southeast.

6
SUMMARY AND MANAGEMENT RECOMMENDATIONS

The proposed Project will require a federal permit; therefore, the Project is considered an "undertaking" per 36 CFR § 800.2 (o) and subject to compliance with Section 106 of the NHPA of 1966, as amended. Under these guidelines, federal agencies are required to identify cultural resources that may be affected by project actions, assess the significance of these resources and their eligibility for inclusion on the NRHP as per 16 USC 470w (5), and consult with the SHPO regarding project effects on significant resources. Eligibility for NRHP inclusion is based on criteria (36 CFR 60.4 [a-d]) defined by the Department of the Interior (see Section 1.3.1).

The proposed Project is also subject to compliance with the CEQA, as amended. Therefore, cultural resources management work conducted as part of the proposed Project shall comply with the *CEQA Statutes and Guidelines* (Title 14 CCR, § 15064.5), which directs lead agencies to first determine whether cultural resources are historically significant resources. Generally, a cultural resource shall be considered historically significant if the resource is 45 years old or older, possesses integrity of location, design, setting, materials, workmanship, feeling, and association, and meets the requirements for listing on the CRHR under any one of the criteria defined in Title 14 CCR § 15064.5 (see Section 1.3.2). Generally speaking, an archaeological resource eligible for NRHP inclusion will also be eligible for inclusion in the CRHR.

The intensive pedestrian survey of the Project area resulted in the identification and documentation of one cultural resource site. In the following sections, a recommendation regarding eligibility for listing on the NRHP or CRHR is discussed for the cultural resource documented within the Project area. Management recommendations are then provided that could potentially reduce the level of impacts associated with the Project to a less than significant level.

6.1 CULTURAL RESOURCE ELIGIBILITY RECOMMENDATION

As previously discussed, in order for a property to be listed in the NRHP or CRHR, it must meet eligibility requirements for at least one of four significance criteria. Historical research has indicated that the newly identified cultural resource site, *Æ*-2840-1H, located within the Project area does not appear to meet any of the criteria of the NRHP or CRHR.

The remnant cattle chute, cattle fence and gate, water trough, dirt access road, and ruins of the loading corral all appear to date to around 1950 and are located on property that has been owned by Mt. SAC since 1948 but are not included in the Mt. SAC Campus Historic District. No information has been found to suggest that any of these structures or remains are directly associated with events or persons that are significant in local, state, or national history (NRHP Criterion A and B/CRHR Criterion 1 and 2). In fact, no information could be found regarding any known individuals who might have been associated with the cattle grazing activities, other than that it was a grazing area leased or held by Mt. SAC. It does not appear that the cattle grazing area was ever a significant part of the history of Mt. SAC.

None of these features appear to exhibit any architectural or engineering merits that would qualify them as significant under NRHP Criterion C/CRHR Criterion 3, as they are standard and utilitarian in their appearance, design, materials, and construction. The cattle chute and loading corral are remnant structures, mostly dismantled and only partially remaining, and missing most of their original design, material, and construction elements. As such, the structures are no longer able to properly convey their intended use, function, or original design.

Under NRHP Criterion D/CRHR Criterion 4 for important data potential, none of these structures date to an early period in the history of the region of which little is known. Rather, the structures date to around 1950 under the ownership of Mt. SAC, a period of which much information about cattle ranching and general local and regional history is already known. The structural remains offer no important insights into mid-twentieth century cattle ranching practices. They have no known direct association with the lives or livelihood of known individuals of historical significance. Furthermore, the location does not appear to have any potential to contain subsurface cultural deposits that could yield important historical information. Therefore, under NRHP Criterion D/CRHR Criterion 4 (resources that have yielded, or may be likely to yield, information important in prehistory or history), the site lacks the potential to provide information important to the study of local, regional, state, or national history, that is not already available through other sources of historical information. The extremely limited data potential of the site appears to have been realized fully during site documentation efforts and in-depth historical research.

6.2 MANAGEMENT RECOMMENDATIONS

In this final section, Æ recommends measures that could potentially reduce the level of Project-related impacts to historic properties / historical resources to a less than significant level. As noted in the previous section, Æ-2840-1H is not recommended eligible for listing on the NRHP and/or CRHR, and no further management of this resource is recommended.

With regard to potential indirect effects on the Mt. SAC Campus Historic District, the proposed Project has no potential to indirectly affect the historical integrity of the District under NRHP Criterion A and C or CRHR Criterion 1 for which it is recommended eligible (Gregory 2003, Davis 2012). The Project area is not part of the historical, planned design of the campus (Figure 3). The location of the proposed photovoltaic system is south of the campus, across both Temple and Grand Avenues, a distance of 1,300 ft from the nearest contributing building. In 2003, Gregory indicates that there are 13 contributing buildings with Davis adding another four contributing buildings in 2012, among about 60 total buildings on the campus. The 17 total contributing buildings are spaced apart and situated among tall, mature trees. It is unlikely that the proposed photovoltaic system would be visible from many of these buildings, and if it is, the view would not detract from their historical significance, as modern built-environment features are already observable within and around the campus at locations much closer than the proposed photovoltaic system. The areas to the west, north, and south have been subjected to dense residential and commercial development over the decades since the 1970s, with no indirect effect on the significance of the campus district and contributing buildings that were evaluated in 2003 and 2012. The proposed photovoltaic system is no more visible than the surrounding residential and commercial developments, and therefore, the proposed Project has no potential to result in

an indirect effect on the Mt. SAC Campus Historic District, and no further management of this resource is recommended.

In the unlikely event that potentially significant archaeological materials are encountered during construction activities, all work must be halted in the vicinity of the archaeological discovery until a qualified archaeologist can visit the site of discovery and assess the significance of the archaeological resource. As well, Health and Safety Code § 7050.5, *State CEQA Guidelines* 15064.5(e), and PRC § 5097.98 mandate the process to be followed in the unlikely event of an accidental discovery of any human remains in a location other than a dedicated cemetery. Specifically, in accordance with PRC § 5097.98, the Los Angeles County Coroner must be notified within 24 hours of the discovery of potentially human remains. The Coroner must then determine within two working days of being notified if the remains are subject to his or her authority. If the Coroner recognizes the remains to be Native American, he or she must contact the NAHC by phone within 24 hours, in accordance with PRC § 5097.98. The NAHC then designates a Most Likely Descendant (MLD) with respect to the human remains within 48 hours of notification. The MLD will then have the opportunity to recommend to the Project proponent means for treating or disposing, with appropriate dignity, the human remains and associated grave goods within 24 hours of notification. Finally, if the Project area is expanded to include areas not covered by this survey or other recent cultural resources studies, additional cultural resources studies may be required.

7
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APPENDIX A

Native American Coordination

STATE OF CALIFORNIA Edmund G. Brown, Jr., Governor

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Boulevard, Suite 100
West Sacramento, CA 95691
(916) 373-3715
Fax (916) 373-5471
Web Site www.nahc.ca.gov
ds_nahc@pacbell.net

June 19, 2014

Ms. Roberta Thomas, RPA
Applied EarthWorks, Inc.
3550 East Florida Avenue, Suite H
Hemet, CA 92544

Sent FAX to 951-766-0020
No. of Pages: 4

RE: Sacred Lands File Search and Native American Contacts list for the **"Mount San Antonio College Permitting Project for a U.S. Corps of Engineers CWA Section 404 Permit and NHPA Section 106 Consultation (#2840);"** located in the City of Walnut; Los Angeles County, California

Dear Ms. Thomas:

A record search of the NAHC Sacred Lands Inventory **failed to indicate** the presence of Native American traditional sites/places of the Project site(s) or 'areas of Potential effect' (APEs), submitted to this office. In this project area, also, there are Native American cultural resources in close proximity to several sections provided for the search. Note also hat the absence of archaeological features, Native American cultural resources does not preclude their existence at the subsurface level.

In the 1985 Appellate Court decision (170 Cal App 3rd 604), the Court held that the NAHC has jurisdiction and special expertise, as a state agency, over affected Native American resources impacted by proposed projects, including archaeological places of religious significance to Native Americans, and to Native American burial sites.

When the project becomes public, please inform the Native American contacts as to the nature of the project (e.g. residential, renewable energy, infrastructure or other appropriate type). Attached is a list of Native American tribes, Native American individuals or organizations that may have knowledge of cultural resources in or near the proposed project area (APE). As part of the consultation process, the NAHC recommends that local government and project developers contact the tribal governments and Native American individuals on the list in order to determine if the proposed action might impact any cultural places or sacred sites. If a response from those listed on the attachment is not received in two weeks of notification, the NAHC recommends that a follow-up telephone call be made to ensure the project information has been received.

California Government Code Sections 65040.12(e) defines 'environmental justice' to provide "fair treatment of people...with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations and policies." Also, Executive Order B-10-11 requires that state agencies "consult with Native American tribes, their elected officials and other representatives of tribal governments in order to provide meaningful input into...the development of legislation, regulations, rules and policies on matter that may affect tribal communities."

If you have any questions or need additional information, please contact me at (916) 373-3715.

Sincerely,

Dave Singleton
Program Analyst

Attachments

Native American Contacts
Los Angeles County California
June 19, 2014

LA City/County Native American Indian Comm
Ron Andrade, Director
3175 West 6th St, Rm. 403
Los Angeles , CA 90020
randrade@css.lacounty.gov
(213) 351-5324
(213) 386-3995 Fax

Gabrielino Tongva Indians of California Tribal Council
Robert F. Dorame, Tribal Chair/Cultural Resources
P.O. Box 490 Gabrielino Tongva
Bellflower , CA 90707
gtongva@verizon.net
(562) 761-6417 Voice/Fax

Tongva Ancestral Territorial Tribal Nation
John Tommy Rosas, Tribal Admin.
, Gabrielino Tongva
tattnlaw@gmail.com
(310) 570-6567

Gabrielino-Tongva Tribe
Bernie Acuna, Co-Chairperson
P.O. Box 180 Gabrielino
Bonsall , CA 92003
bacuna1@gabrielinotribe.org
(619) 294-6660 Office
(310) 428-5690 Cell
(760) 636-0854 Fax

Gabrieleno/Tongva San Gabriel Band of Mission
Anthony Morales, Chairperson
PO Box 693 Gabrielino Tongva
San Gabriel , CA 91778
GTTribalcouncil@aol.com
(626) 483-3564 Cell
(626) 286-1262 Fax

Gabrielino-Tongva Tribe
Linda Candelaria, Co-Chairperson
P.O. Box 180 Gabrielino
Bonsall , CA 92003
palmsprings9@yahoo.com
(626) 676-1184 Cell
(760) 636-0854 Fax

Gabrielino /Tongva Nation
Sandonne Goad, Chairperson
P.O. Box 86908 Gabrielino Tongva
Los Angeles , CA 90086
sgoad@gabrielino-tongva.com
(951) 845-0443

Gabrieleno Band of Mission Indians
Andrew Salas, Chairperson
P.O. Box 393 Gabrielino
Covina , CA 91723
gabrielenoindians@yahoo.
(626) 926-4131

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list s only applicable for contacting locative Americans with regard to cultural resources for the proposed Mount San Antonio College Permitting Project: located in the City of Walnut; Los Angeles County, California for which a Sacred Lands File search and Native American Contacts list were requested.

Native American Contacts
Los Angeles County California
June 19, 2014

Gabrielino-Tongva Tribe
Conrad Acuna,
P.O. Box 180 Gabrielino
Bonsall , CA 92003
(760) 636-0854 Fax

Gabrielino /Tongva Nation
Sam Dunlap, Cultural Resorces Director
P.O. Box 86908 Gabrielino Tongva
Los Angeles , CA 90086
samdunlap@earthlink.net
(909) 262-9351

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list s only applicable for contacting locative Americans with regard to cultural resources for the proposed Mount San Antonio College Permitting Project; located in the City of Walnut; Los Angeles County, California for which a Secred Lands File search and Native American Contacts list were requested.

Applied EARTHWORKS Inc.

133 N. San Gabriel Blvd., Suite 201
Pasadena, CA 91107-3414
(626) 578-0119

June 26, 2014

Ron Andrade, Director
LA City/County Native American Indian Commission
3175 West 6th St, Rm.403
Los Angeles, CA 90020
Transmitted via email to randrade@css.lacounty.gov

Re: West Parcel Solar Project at Mount San Antonio College, City of Walnut, Los Angeles County, California

Dear Mr. Andrade,

On behalf of HELIX Environmental Planning, Inc., Applied EarthWorks, Inc. (Æ) is conducting a cultural resources study, in compliance with Section 106 of the National Historic Preservation Act, for the proposed West Parcel Solar Project (Project) at Mount San Antonio College in the city of Walnut, in Los Angeles County, California. The Project consists of grading a pad and placing a 2 megawatt photovoltaic system on it, impacting approximately 18 acres. Commercial development is planned for the north end of the Project area, although no grading is required for that element of the Project. The Project area is located on the San Dimas, Calif. 7.5' USGS quadrangle map, within unsectioned land in T1S/R9W (see attached map).

A cultural resources literature and records search conducted at the South Central Coastal Information Center (SCCIC) housed at the California State University, Fullerton, indicates that as many as 25 cultural resources studies have been conducted within a one-mile radius of the Project area; two of these studies intersect the Project area. The records search also indicated that four cultural resources have been identified within a one-mile radius of the Project area; however, only one cultural resource, Mount San Antonio College itself, has been recorded within or immediately adjacent to the Project boundaries.

As part of the cultural resources assessment of the Project area, Æ requested a search of the Native American Heritage Commission's (NAHC's) *Sacred Lands File* on May 28, 2014. The NAHC responded on June 19, 2014 indicating that no Native American traditional cultural places were identified within the Project location. Æ performed an intensive-level archaeological survey of the Project area on June 11, 2014. During the pedestrian survey, parallel transects spaced 15 meters apart were walked back-and-forth across the property. Close attention was paid to soils, vegetation, and natural and human-modified landforms. Naturally occurring rocks were inspected for any indication of prehistoric or historic human modification. One historic-age cultural resource was identified; however, no prehistoric cultural resources were identified during the survey.

Please let me know of any concerns you may have regarding cultural resources related the proposed Project. Please feel free to contact me at (626) 578-0119 or email me at rthomas@appliedearthworks.com. If I do not hear from you within the next two weeks, I will contact you by telephone on July 10, 2014 to discuss issues or comments you may have. Your comments and concerns are very important to us, and to the successful completion of this Project. I look forward to hearing from you in the near future. Thank you, in advance, for taking the time to review this request.

Respectfully yours,

Roberta Thomas

Roberta Thomas, M.A., RPA
Associate Archaeologist
Applied Earthworks, Inc.

LIST OF NATIVE AMERICAN CONTACTS AND RECORD OF RESPONSES
FOR THE MT.SAC WEST PARCEL SOLAR CULTURAL RESOURCES SURVEY

Name	Initial Letter Contact	Date & Time of Calls	Responses
Bernie Acuna Co-Chairperson Gabrielino-Tongva Tribe	Email sent June 26, 2014	July 14, 2014 4:47pm	Left message with office personnel. Left message on cell phone. No response received.
Conrad Acuna Gabrielino-Tongva Tribe	Letter (USPS) sent June 27, 2014	July 16, 2014 4:52pm	Attempted to call the only number listed which is identified as a fax machine number. It is in fact a telephone number but it does not belong to Mr. Acuna. No message left.
Ron Andrade Director LA City/County Native American Indian Commission	Email sent June 26, 2014	July 14, 2014 4:45pm	Left message on office phone. No response received
Linda Candelaria Co-Chair Gabrielino-Tongva Tribe	Email sent June 26, 2014	July 16, 2014 4:43pm	Left message on cell phone. No response received.
Robert F. Dorame Tribal Chair/Cultural Resources Gabrielino Tongva Indians of California Tribal Council	Email sent June 26, 2014	July 16, 2014 4:49pm	Left message on number listed. No response received.
Sam Dunlap, Cultural Resources Director Gabrielino Tongva Nation	Email sent June 26, 2014	July 16, 2014 4:48pm	Left message on number listed. No response received.
Sandonne Goad Chairperson Gabrielino Tongva Nation	Email sent June 26, 2014	July 16, 2014 4:45pm	Attempted to call but could not leave a message as no answering machine or voicemail box picked up.
Anthony Morales Chairperson Gabrielino/Tongva San Gabriel Band of Mission Indians	Email sent June 26, 2014	July 14, 2014 4:49pm	In follow-up phone conversation, Mr. Morales indicated that the area is rich with cultural materials. He stated that the area still contains some of the natural habitat that was used by his people for housing and food and that there are several known sites in and around that area. He believes that any major ground disturbing activities would warrant a Native American and archaeological monitor; however, if the ground disturbance will be minimal (within a few feet of the surface) no monitored would be necessary.

LIST OF NATIVE AMERICAN CONTACTS AND RECORD OF RESPONSES
FOR THE MT. SAC WEST PARCEL SOLAR CULTURAL RESOURCES SURVEY (Continued)

Name	Initial Letter Contact	Date & Time of Calls	Responses
John Tommy Rosas Tribal Administrator Tongva Ancestral Territorial Tribal Nation	Email sent June 26, 2014		Mr. Rosas responded to our email sent on 6/26/2014 on the same day, by means of e-mail message. He requested specific detailed information regarding the types and depths of ground disturbance planned for the Project. He said at this time, with the provided, information he could not evaluate the potential impacts of the Project on cultural resources.
Andrew Salas Chairperson Gabrieleno Band of Mission Indians	Email sent June 26, 2014	July 16, 2014 4:46pm July 21, 2014 3:20pm	Left message on number listed. Mr. Salas (Andy) returned our call and stated that the area is a sacred area and that there are two village sites within close proximity to the college. He stated that the college is situated on what used to be mission lands, he mentioned Rancho San Antonio, and also stated that there were two springs nearby. He requested an email address to send further information regarding the two village sites nearby. Mr. Salas sent a follow-up email with additional information regarding the Project area.

Roberta Thomas <rthomas@appliedearthworks.com>

West Parcel Solar Project

3 messages

Roberta Thomas <rthomas@appliedearthworks.com> Thu, Jun 26, 2014 at 10:35 AM
To: tattnlaw@gmail.com

Dear Mr. Rosas,

Please find the attached letter and map for the West Parcel Solar Project. Please let me know if you have any questions or concerns.

Best,

Robbie

Roberta Thomas | Applied EarthWorks, Inc.
Associate Archaeologist

133 North San Gabriel Boulevard, Suite 201
Pasadena, CA 91107
626-578-0119 ext.116 office
www.appliedearthworks.com

2 attachments

Rosas Letter.pdf
114K

RS Helix - Mt SAC_West Parcel Solar.pdf
2912K

Johntommy Rosas <tattnlaw@gmail.com> Thu, Jun 26, 2014 at 11:55 AM
To: Roberta Thomas <rthomas@appliedearthworks.com>

thanks

it isnt clear what the actual project is to be so we cant determine the possible affects to our cultural resources there

so we request some draft design plans including excavations and actual elevations showing

changes proposed to the lands there

thanks jt
[Quoted text hidden]
--
JOHN TOMMY ROSAS
TRIBAL ADMINISTRATOR
TRIBAL LITIGATOR
TONGVA ANCESTRAL TERRITORIAL TRIBAL NATION
OFFICIAL TATTN E-MAIL CONFIDENTIAL
ALL RIGHTS RESERVED
TATTN / TRIBAL NOTICE OF CONFIDENTIALITY:

Confidentiality Notice:
This e-mail message, including any attachments, is for the sole use of the intended recipient(s) and may contain confidential and/or privileged information,Traditional Knowledge and Traditional Cultural Resource Data,Intellectual Property LEGALLY PROTECTED UNDER WIPO and UNDRIP - attorney-client privileged Any review, use, disclosure, or distribution by unintended recipients is prohibited. If you are not the intended recipient, please contact the sender by reply e-mail and destroy all copies of the original message.

TRUTH IS OUR VICTORY AND HONOR IS OUR PRIZE >TATTN ©

Roberta Thomas <rthomas@appliedearthworks.com> Mon, Jul 14, 2014 at 4:03 PM
To: Johntommy Rosas <tattnlaw@gmail.com>

Dear Mr. Rosas,

Thank you for your response. At this time we do not have draft design plans for the proposed project. Your request has been noted and will be included in the cultural resources survey report we are drafting for the project.

Best,

Robbie

Roberta Thomas | Applied EarthWorks, Inc.
626-578-0119 ext.116 office

From: Johntommy Rosas [mailto:tattnlaw@gmail.com]
Sent: Thursday, June 26, 2014 11:55 AM
To: Roberta Thomas
Subject: Re: West Parcel Solar Project

[Quoted text hidden]

Roberta Thomas <rthomas@appliedearthworks.com>

Thank you for lending an ear. Here is some information regarding your project area.

2 messages

Andy <gabrielenoindians@yahoo.com> Mon, Jul 21, 2014 at 3:55 PM
To: "rthomas@appliedearthworks.com" <rthomas@appliedearthworks.com>
Cc: Tim Miguel <timmiguel@sbcglobal.net>, Christina Swindall <christinaswindall@yahoo.com>

Pemookangna

The village was located near Walnut, CA and La Puente, CA.

Today San Antonio college

Dear Ms. R Thomas

The project locale lies in an area where the traditional territories of the Gabrielenos adjoined villages overlapped with each other, at least during the Late Prehistoric and Protohistoric Periods. The homeland of the Gabrielenos, probably the most influential Native American group in aboriginal southern California (Bean and Smith 1978a:538),

Their home/ base sites are marked by midden deposits, often with bedrock mortars. During their seasonal rounds to exploit plant resources, small groups would migrate within their traditional territory in search of specific plants and animals. Their gathering strategies often left behind signs of special use sites, usually grinding slicks on bedrock boulders, at the locations of the resources. We are requesting one of our experienced & certified Native American monitors to be on site during all ground disturbances. Thank you Chairman Andrew Salas

The history of Walnut dates back to the indigenous Kizh (Kitc) Spanish missionaries who arrived in the 18th century called the indigenes Gabrieleño, because the area where they lived was controlled by the San Gabriel Mission. The Walnut area was part of the network of outlying ranches used for the grazing of cattle and sheep by the Mission.

Following secularization of the missions in the 1830s, former mission lands were divided into ranchos, and given away as land grants by the Mexican government of Alta California. In the Walnut area, the first grants were Rancho San Jose(granted to Ricardo Vejar and Ygnacio Palomares in 1837); Rancho Los Nogales (granted to Jose De La Cruz Linares in 1840); and Rancho La Puente(granted to John Rowland and William Workman in 1842). In 1868, John Rowland and William Workman divided Rancho La Puente, leaving Rowland the eastern half and Workman the western half. Rowland's land included the western portion of Walnut and the adjacent community now calledRowland Heights. The land was used mainly for raising cattle and growing wheat, grapes, and fruit trees (mostly citrus).

In 1895, the first U.S. post office was established and given the name "Lemon". In 1908, the post office name was changed to Walnut.[8]

The City of Walnut's Bicentennial Commission selected the construction of Lemon Creek Park and the restoration of the William R. Rowland Adobe Redwood Ranch House as Walnut's bicentennial project. In 1872, the Lemon Creek Park area became the property of Sheriff William Rowland, who inherited the 29,000-acre (120 km^2) ranch from his father, John Rowland. The modest structure built in 1883 served as the home of Mr. Meridith,ranch foreman for William Rowland. The adobe redwood ranch house is one of the few remaining original ranch style redwood and adobe structures in the area. On October 1, 1975, the State Landmark Committee placed the W.R. Rowland ranch house in the National Registry of Historical Places.

Walnut, California, is sometimes confused with the city of Walnut Creekin Northern California.

Sent from my iPhone

Roberta Thomas <rthomas@appliedearthworks.com> Mon, Jul 21, 2014 at 4:08 PM
To: Andy <gabrielenoindians@yahoo.com>
Cc: Tim Miguel <timmiguel@sbcglobal.net>, Christina Swindall <christinaswindall@yahoo.com>

Thank you so much, Mr. Salas, for this information. Your response will be included in the cultural resource report we are preparing for the project.

Best,

Robbie

Roberta Thomas | Applied EarthWorks, Inc.
626-578-0119 ext.116 office

From: Andy [mailto:gabrielenoindians@yahoo.com]
Sent: Monday, July 21, 2014 3:56 PM
To: rthomas@appliedearthworks.com
Cc: Tim Miguel; Christina Swindall
Subject: Thank you for lending an ear. Here is some information regarding your project area.

[Quoted text hidden]

APPENDIX B

Confidential Archaeological Site Record

State of California--The Resources Agency	Primary #
DEPARTMENT OF PARKS AND RECREATION	HRI #
PRIMARY RECORD	Trinomial
	NRHP Status Code 6Z
	Other Listings
Review Code	Reviewer Date

 Resource Name or # Æ-2840-1H (cattle chute and loading corral)

P1. Other Identifier:

P2. Location: **a. County** Los Angeles ☐ **Not for Publication** ☒ **Unrestricted**

b. USGS 7.5' Quad San Dimas, Calif. **Date** 1966, photorevised 1984

Within a portion of the un-sectioned Rancho La Puente land grant, lying within projected Section 32, **T**1S, **R**9W, **S.B.B.M.**

Elevation: 729 feet (ft) above mean sea level

c. Address Grand Avenue **City** Walnut **Zip** 91789

d. UTM: Zone 11; **Cattle chute:** 421,902 **mE** / 3,767,113 **mN**

UTM Derivation: ☐ USGS Quad ☒ GPS; Google Earth NAD 1983

e. Other Locational Data: (e.g., parcel #, directions to resource, etc., as appropriate) The dirt access road leading to the cattle chute is located along the southwest side of Grand Avenue approximately 672 ft (0.13 mile) southeast of the intersection of Temple Avenue. It is situated in the western portion of Assessor's Parcel Number (APN) 8709-023-917.

P3a. Description: The resource comprises remnants of a cattle chute, a loading corral, water trough, barbed-wire fence lines, a cattle gate, and a dirt access road, all located on the southwest side of Grand Avenue south of Temple Avenue. These features all appear to date to the historic period (around 1950) based on a review of historic aerial imagery available at *HistoricAerials.com*. It was around 1950 that the modern alignment of Grand Avenue came into being at this location, and naturally, a location next to the road was chosen for the cattle chute and loading corral, as its sole purpose was to load cattle into trucks for transport to another location. The cattle chute remnants, being only a portion of the original structure, consists of a 9 ft by 15 ft rectangular configuration of seven round erect wood posts measuring 5 ft tall. Two additional wood posts are lying on the ground next to the structure. The south end of the structure has a hinged gate across the chute entrance, and a pile of wood boards and panels lying to the south of the chute appear to be the remains of a small loading corral.

About 15 ft to the east of the chute is a short, round metal water trough that appears to be fed by an underground pipeline. A ball-cock mechanism controls the water level, and a modern PVC pipe conveys water into the trough from the underground source. Approximately 50 ft to the east of the cattle chute is a dirt access road that enters the property from Grand Avenue. A metal cattle gate at the entrance to the property has a label on it that reads, "Powder River Livestock Handling Equipment/Call 1-800453-5318/In Utah Call 374-2983." According to the company's website (www.powderriver.com), the telephone number is still current, and they have been in business in Provo, Utah since 1938. However, this gate does not appear to date to the historic period, and most likely it replaced an older gate in decades past.

P3b. Resource Attributes: AH15. Standing structures

P4. Resources Present: ☐ Building ☒ Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☐ Other:

P5a. Photograph or Drawing See attached Continuation sheets for photographs

P5b. Description of Photo: Photographs taken on July 16, 2014.

P6. Date Constructed/Age of Sources: ☐ Prehistoric ☒ Historic ☐ Both

P7. Owner and Address: Mt. San Antonio College, 1100 North Grand Avenue, Walnut, CA 91789.

P8. Recorded by: : Josh Smallwood, Applied EarthWorks, Inc., 3550 E. Florida Avenue, Suite H, Hemet, CA 92544

P9. Date Recorded: July 16, 2014

P10. Survey Type: Intensive level survey for Section 106 and CEQA compliance

P11. Report Citation: Roberta Thomas and Josh Smallwood (2014): *Phase I Cultural Resources Survey for the West Parcel Solar Project, In the City of Walnut, Los Angeles County, California*. Applied EarthWorks, Inc., Pasadena, CA.

Attachments: □ None ☒ Location Map ☒ Site Map ☒ Continuation Sheet ☒ Building, Structure, and Object Record □ Archaeological Record □ District Record □ Linear Feature Record □ Milling Station Record □ Rock Art Record □ Artifact Record □ Photograph Record Other:

BUILDING, STRUCTURE, OBJECT RECORD

 NRHP Status Code 6Z
Resource Name or # Æ-2840-1H (cattle chute and loading corral)

B1. **Historic Name:** None
B2. **Common Name:** None
B3. **Original Use:** cattle chute and loading corral B4. Present Use: abandoned

B5. **Architectural Style:** This cattle chute and loading corral is of standard construction and utilitarian in its design.

B6. **Construction History:** Bureau of Land Management records (BLM n.d.) indicate that the subject parcel was originally part of a 48,329.84-acre land grant acquired by John Rowland and Julian William Workman on April 19, 1867. In actuality, Rowland and Workman had acquired the Rancho La Puente as early as 1842 prior to California statehood. After annexation of California by the United States in 1848, the U.S. Land Commission reviewed all Mexican land grants for legal authority. Rowland and Workman's Rancho La Puente was one of the few Mexican land grants that were confirmed; after many years in court and great financial costs, the title was accepted by the U.S. Land Commission in 1867.

The subject parcel is a portion of Lot 6 of the C.M. Wright Tract, being a subdivision of lands acquired by Jane Lynch et al. and C.M. Wright in 1905 (Los Angeles County Assessor 1905). The State of California held title to Lot 6, encompassing approximately 400 acres, by the 1920s (Los Angeles County Assessor 1926). Mt. San Antonio Junior College acquired the 400-acre property from the State in 1948 and has continued ownership to the present day (Los Angeles County Assessor 1948). Approximately 12 acres of their holdings were allotted to the State of California for construction of Grand Avenue across the parcel in 1950 (Los Angeles County Assessor 1950). Historic maps covering land surveys from 1852 to 1966 fail to depict any buildings, structures, or other man-made features ever having been located anywhere within the Project boundaries (GLO 1877; USGS 1894, 1954, 1966). Historic aerials from the 1940s and 1950s indicate that the cattle chute, cattle loading corral, and other features recorded during this study first appeared at their location around 1950 (NETR 2014). They appeared at this location once the dirt road predecessor of Grand Avenue had been realigned to its present location. This segment of Grand Avenue, formerly known as San Jose Hills Road, was paved by at least 1954 (USGS 1954). Historic aerials suggest that the corral and cattle chute may have fallen out of use by the 1980s, but during the field survey it was evident from abundant scattered piles of cattle dung that bovine cattle still graze the area periodically.

B7. **Moved?** ☒ No □ Yes □ Unknown **Date:** **Original Location:**

B8. **Related Features:** dirt access road, barbed-wire fence line

B9a. **Architect:** Unknown b. Builder: Unknown

B10. **Significance:** **Theme** Mid-twentieth century cattle ranching
Area Walnut, CA **Period of Significance** N/A
Property Type cattle chute and loading corral **Applicable Criteria** N/A
Historical research has indicated that the subject cattle chute, loading corral, and other associated features do not appear to meet any of the criteria of the NRHP or CRHR.

The remnant cattle chute, cattle fence and gate, water trough, dirt access road, and ruins of the loading corral all appear to date to around 1950 and are located on property that has been owned by Mt. San Antonio College since 1948. No information has been found to suggest that any of these structures or remains are directly associated with events or persons that are significant in local, state, or national history (NRHP Criterion A and B/CRHR Criterion 1 and 2). In fact, no information could be found regarding any known individuals who might have been associated with the cattle grazing activities, other than that it was a grazing area leased or held by Mt. San Antonio College. It does not appear that the cattle grazing area was ever a significant part of the history of Mt. San Antonio College.

None of these features exhibits any architectural or engineering merits that would qualify them as significant under NRHP Criterion C/CRHR Criterion 3, as they are standard and utilitarian in their appearance, design, materials, and construction. The cattle chute and loading corral are remnant structures, mostly dismantled and only partially remaining, and missing most of their original design, material, and construction elements. As such, the structures are no longer able to properly convey their intended use, function, or original design.

B10. Significance (continued): Under NRHP Criterion D/CRHR Criterion 4 for important data potential, none of these structures date to an early period in the history of the region of which little is known. Rather, the structures date to around 1950 under the ownership of Mt. San Antonio College, a period of which much information about cattle ranching and general local and regional history is already known. The structural remains offer no important insights into mid-twentieth century cattle ranching practices. They have no known direct association with the lives or livelihood of known individuals of historical significance. Furthermore, the location does not appear to have any potential to contain subsurface cultural deposits that could yield important historical information. Therefore, under NRHP Criterion D/CRHR Criterion 4 (*resources that have yielded, or may be likely to yield, information important in prehistory or history*), the site lacks the potential to provide information important to the study of local, regional, state, or national history, that is not already available through other sources of historical information. The extremely limited data potential of the site appears to have been realized fully during site documentation efforts and in-depth historical research.

B11. Additional Resource Attributes: (List attributes and codes)

B12. References:

BLM (U.S. Bureau of Land Management)
n.d. General Land Office Records, Land Patent Details. Found at http://www.glorecords.blm.gov/PatentSearch/..

GLO (General Land Office, U.S. Surveyor General's Office)
1877 "Township No. 1 South, Range No. 9 West, San Bernardino Meridian." Surveyed 1852–1875.

Los Angeles County Assessor
1905 Map 5, book 75.
1926 Book 784, page 215.
1948 Book 784, page 22.
1950 Book 784, page 22.

NETR (Nationwide Environmental Title Research, LLC)
2014 Historic Aerials.
Found at: http://www.historicaerials.com/.

USGS (United States Geological Survey)
1894 Pomona, California, 15-minute (1:62,500) topographic quadrangle. Surveyed in 1894.
1954 San Dimas, Calif., 7.5-minute (1:24,000) topographic quadrangle. Aerial photographs taken 1952, field-checked 1954.
1966 San Dimas, Calif., 7.5-minute (1:24,000) topographic quadrangle. Aerial photographs taken 1964, field-checked 1966.

B13. Remarks:

B14. Evaluator: Josh Smallwood
Date of Evaluation: July 21, 2014

Remnants of the cattle chute and cattle loading corral are in the foreground of this photograph. The water trough is located underneath the willow tree near the center of the photograph, and the cattle gate and dirt access road are situated in the top-right of the photograph (view to the southeast from atop a nearby hill; photograph taken July 16, 2014).

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

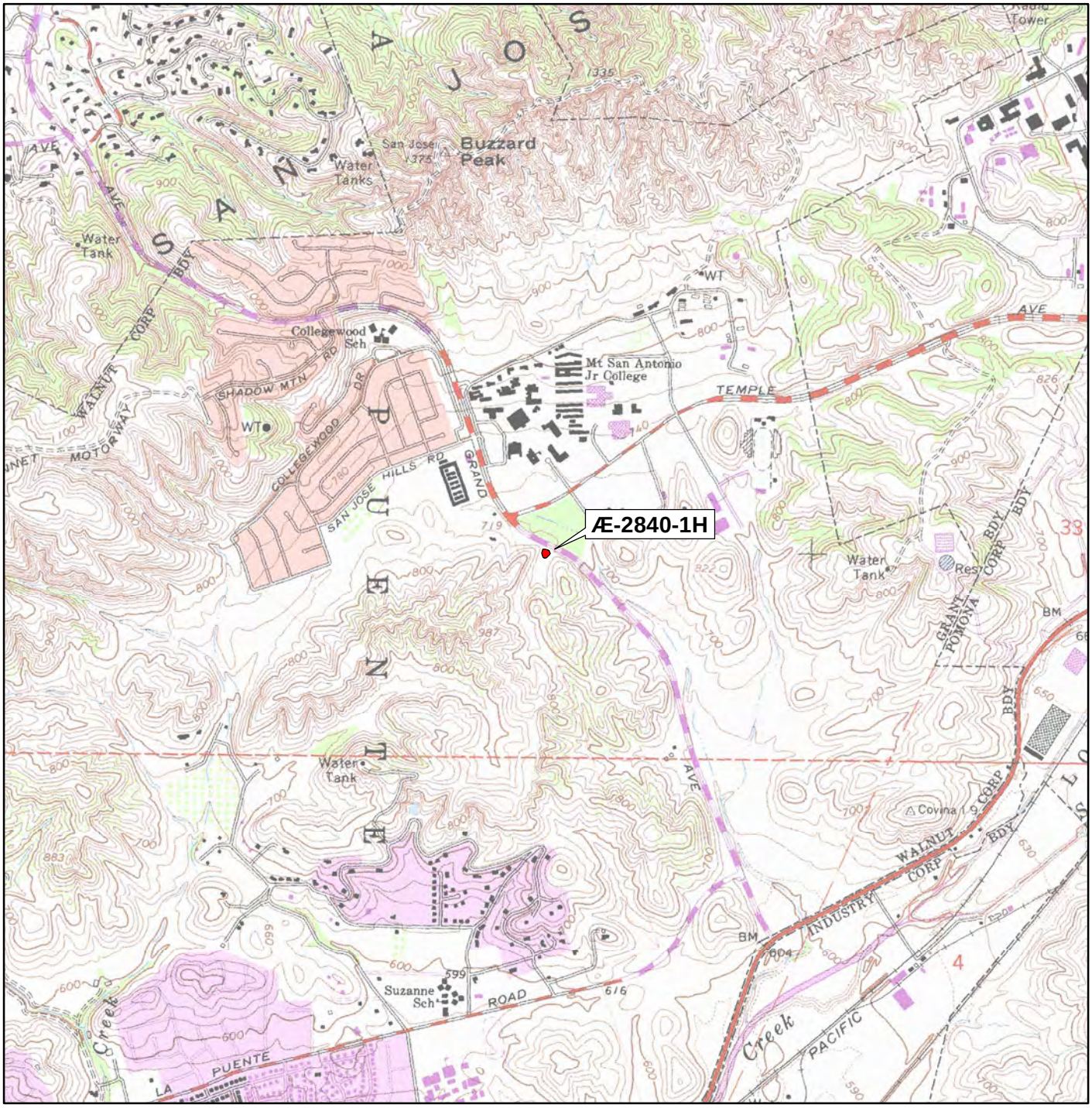
Primary #
HRI#
Trinomial

Resource Name or #: Æ-2840-1H

Scale: 1:24,000

Map Name: San Dimas (1966-photorevise 1984), CA, USGS 7.5' quadrangle

Date: July 2014



SCALE 1:24,000

1 0.5 0 1 Miles

1,000 0 1,000 2,000 3,000 4,000 5,000 6,000 7,000 Feet

1 0.5 0 1 Kilometers

TRUE NORTH

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
SKETCH MAP

Primary #
HRI#
Trinomial

Page 7 **of** 7 ***Resource Name or #:** (Assigned by recorder) Æ-2840-1H

***Drawn by:** E. Cisneros, J. Smallwood ***Scale:** 1 inch equals 40 feet ***Date of map:** July 2014

STORMWATER POLLUTION PREVENTION PLAN

for

South Campus Site Improvements - West

RISK LEVEL ***2***

Legally Responsible Person (LRP):

Mt. San Antonio College
1100 North Grand Avenue
Walnut, CA 91789
Gary Nellesen,
Director of Facilities, Planning and Management
(909) 274-5176

Approved Signatory:

Rebecca Mitchel
(909) 274-5175

Project Address:

1100 North Grand Avenue
Walnut, CA91789

SWPPP Prepared by:

PSOMAS
555 S. Flower Street, Suite 4300, Los Angeles, CA 90071
Michael P. Mulgrew, PE, QSP/D, ENV SP

SWPPP Preparation Date

October 10, 2016

Estimated Project Dates:

Start of Construction	**October 24, 2016**	Completion of Construction	**August 24, 2017**

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Qualified SWPPP Developer

Approval and Certification of the Stormwater Pollution Prevention Plan

Project Name: *South Campus Site Improvements - West*

"This Stormwater Pollution Prevention Plan and Attachments were prepared under my direction to meet the requirements of the California Construction General Permit (SWRCB Orders No. 2009-009-DWQ as amended by Order 2010-0014-DWQ and Order 2012-006-DWQ). I certify that I am a Qualified SWPPP Developer in good standing as of the date signed below."

QSD Signature	10/13/2016 *Date*
Michael P. Mulgrew *QSD Name*	*24526* *QSD Certificate Number*
Project Engineer, PSOMAS *Title and Affiliation*	(213) 223-1575 *Telephone Number*
Michael.mulgrew@psomas.com *Email*	

Legally Responsible Person

Approval and Certification of the Stormwater Pollution Prevention Plan

Project Name: South Campus Site Improvements - West

"I certify under penalty of law that this document and all Attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Gary Nellesen, Director of Facilities, Planning, and Management

Legally Responsible Person

Signature of Legally Responsible Person or Approved Signatory	Date
Gary Nellesen	(909) 274-5176
Name of Legally Responsible Person or Approved Signatory	Telephone Number

Amendment Log

Project Name: _____

Amendment No.	Date	Brief Description of Amendment, include section and page number	Prepared and Approved By
			Name: QSD#
			Name: QSD#
			Name: QSD#
			Name: QSD#
			Name: QSD#
			Name: QSD#
			Name: QSD#
			Name: QSD#
			Name: QSD#

Section 1 SWPPP Requirements

1.1 INTRODUCTION

The South Campus Site Improvements – West project comprises approximately 17.3 acres and is located at 1100 North Grand Avenue in Walnut, California. The property is owned Mt. San Antonio College and is being developed by College. The project's location is shown on the Site Map in Appendix B.

This Stormwater Pollution Prevention Plan (SWPPP) is designed to comply with California's General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (General Permit) Order No. 2009-0009-DWQ as amended in 2010 and 2012 (NPDES No. CAS000002) issued by the State Water Resources Control Board (State Water Board). This SWPPP has been prepared following the SWPPP Template provided on the California Stormwater Quality Association Stormwater *Best Management Practice Handbook Portal: Construction* (CASQA, 2012). In accordance with the General Permit, Section XIV, this SWPPP is designed to address the following:

- Pollutants and their sources, including sources of sediment associated with construction, construction site erosion and other activities associated with construction activity are controlled;
- Where not otherwise required to be under a Regional Water Quality Control Board (Regional Water Board) permit, all non-stormwater discharges are identified and either eliminated, controlled, or treated;
- Site BMPs are effective and result in the reduction or elimination of pollutants in stormwater discharges and authorized non-stormwater discharges from construction activity to the Best Available Technology/Best Control Technology (BAT/BCT) standard;

Calculations and design details for specific BMP controls for are included in Appendix A as appropriate. The project QSP will develop and be in responsible charge of implementing the REAP.

1.2 PERMIT REGISTRATION DOCUMENTS

Required Permit Registration Documents (PRDs) shall be submitted to the State Water Board via the Stormwater Multi Application and Report Tracking System (SMARTS) by the Legally Responsible Person (LRP), or authorized personnel (i.e., Approved Signatory) under the direction of the LRP. The project-specific PRDs include:

1. Notice of Intent (NOI);
2. Risk Assessment (Construction Site Sediment and Receiving Water Risk Determination);
3. Site Map;
4. Annual Fee;
5. Signed Certification Statement (LRP Certification is provided electronically with SMARTS PRD submittal); and

6. SWPPP.

Site Maps can be found in Appendix B. A copy of the submitted PRDs shall also be kept in Appendix C along with the Waste Discharge Identification (WDID) confirmation.

1.3 SWPPP AVAILABILITY AND IMPLEMENTATION

The discharger shall make the SWPPP available at the construction site during working hours (see Section 7.5 of CSMP for working hours) while construction is occurring and shall be made available upon request by a State or Municipal inspector. When the original SWPPP is retained by a crewmember in a construction vehicle and is not currently at the construction site, current copies of the BMPs and map/drawing will be left with the field crew and the original SWPPP shall be made available via a request by radio/telephone. (CGP Section XIV.C)

The SWPPP shall be implemented concurrently with the start of ground disturbing activities.

1.4 SWPPP AMENDMENTS

The SWPPP should be revised when:

- If there is a General Permit violation.
- When there is a reduction or increase in total disturbed acreage (General Permit Section II Part C).
- BMPs do not meet the objectives of reducing or eliminating pollutants in stormwater discharges.

Additionally, the SWPPP shall be amended when:

- There is a change in construction or operations which may affect the discharge of pollutants to surface waters, groundwater(s), or a municipal separate storm sewer system (MS4);
- When there is a change in the project duration that changes the project's risk level; or
- When deemed necessary by the QSD. The QSD has determined that the changes listed in Table 1.1 can be field determined by the QSP. All other changes shall be made by the QSD as formal amendments to the SWPPP.

The following items shall be included in each amendment:

- Who requested the amendment;
- The location of proposed change;
- The reason for change;
- The original BMP proposed, if any; and
- The new BMP proposed.

Amendment shall be logged at the front of the SWPPP and certification kept in Appendix D. The SWPPP text shall be revised replaced, and/or hand annotated as necessary to properly convey the amendment. SWPPP amendments must be made by a QSD. The following changes

have been designated by the QSD as "to be field determined" and constitute minor changes that the QSP may implement based on field conditions.

Table 1.1 List of Changes to be Field Determined

Candidate changes for field location or determination by QSP[(1)]	Check changes that can be field located or field determined by QSP
Increase quantity of an Erosion or Sediment Control Measure	✓
Relocate/Add stockpiles or stored materials	✓
Relocate or add toilets	✓
Relocate vehicle storage and/or fueling locations	✓
Relocate areas for waste storage	✓
Relocate water storage and/or water transfer location	✓
Changes to access points (entrance/exits)	✓
Change type of Erosion or Sediment Control Measure	✓
Changes to location of erosion or sediment control	✓
Minor changes to schedule or phases	✓
Changes in construction materials	✓
(1) Any field changes not identified for field location or field determination by QSP must be approved by QSD	

1.5 RETENTION OF RECORDS

Paper or electronic records of documents required by this SWPPP shall be retained for a minimum of three years from the date generated or date submitted, whichever is later.

These records shall be available at the Site until construction is complete. Records assisting in the determination of compliance with the General Permit shall be made available within a reasonable time, to the Regional Water Board, State Water Board or U.S. Environmental Protection Agency (EPA) upon request. Requests by the Regional Water Board for retention of records for a period longer than three years shall be adhered to.

1.6 REQUIRED NON-COMPLIANCE REPORTING

If a General Permit discharge violation occurs the QSP shall immediately notify the LRP. The LRP shall include information on the violation with the Annual Report. Corrective measures will be implemented immediately following identification of the discharge or written notice of non-compliance from the Regional Water Board. Discharges and corrective actions must be documented and include the following items:

- The date, time, location, nature of operation and type of unauthorized discharge.

- The cause or nature of the notice or order.
- The control measures (BMPs) deployed before the discharge event, or prior to receiving notice or order.
- The date of deployment and type of control measures (BMPs) deployed after the discharge event, or after receiving the notice or order, including additional measures installed or planned to reduce or prevent re-occurrence.

Reporting requirements for Numeric Action Levels (NALs) exceedances are discussed in Section 7.7.2.7.

1.7 ANNUAL REPORT

The General Permit requires that permittees prepare, certify, and electronically submit an Annual Report no later than September 1st of each year. Reporting requirements are identified in Section XVI of the General Permit. Annual reports will be filed in SMARTS and in accordance with information required by the on-line forms.

1.8 CHANGES TO PERMIT COVERAGE

The General Permit allows for the reduction or increase of the total acreage covered under the General Permit when: a portion of the project is complete and/or conditions for termination of coverage have been met; when ownership of a portion of the project is purchased by a different entity; or when new acreage is added to the project.

Modified PRDs shall be filed electronically within 30 days of a reduction or increase in total disturbed area if a change in permit covered acreage is to be sought. The SWPPP shall be modified appropriately, shall be logged at the front of the SWPPP and cetrification of SWPPP amendments are to be kept in Appendix D. Updated PRDs submitted electronically via SMARTS can be found in Appendix E.

1.9 NOTICE OF TERMINATION

A Notice of Termination (NOT) must be submitted electronically by the LRP via SMARTS to terminate coverage under the General Permit. The NOT must include a final Site Map and representative photographs of the project site that demonstrate final stabilization has been achieved. The NOT shall be submitted within 90 days of completion of construction. The Regional Water Board will consider a construction site complete when the conditions of the General Permit, Section II.D have been met.

Section 2 Project Information

2.1 PROJECT AND SITE DESCRIPTION

2.1.1 Site Description

The South Campus Site Improvements – West project site comprises approximately 17.3 and is located at 1100 N. Grand Ave. in Walnut, California. The project site is located west of N. Grand Ave. and south of W. Temple Ave. The project is located at 34.04011°, -117.84453° and is identified on the Site Map in Appendix B.

2.1.2 Existing Conditions

As of the initial date of this SWPPP, the project site is undeveloped and comprised of native vegetation. There are no historic sources of contamination at the site.

2.1.3 Existing Drainage

The project site slopes to the north. The elevation of the project site ranges from 685 to 815 feet above mean sea level (msl). Surface drainage at the site currently flows to the east, towards Grand Avenue. Stormwater is conveyed through surface runoff. Stormwater discharges from the site are not considered direct discharges as defined by the State Water Board. Existing site topography, drainage patterns, and stormwater conveyance systems are shown on the Site Map found in Appendix B.

The project discharges to San Jose Creek Reach 2 that is listed for water quality impairment on the most recent 303(d)-list for:

- Coliforms

2.1.4 Geology and Groundwater

Project site Geology was investigated by Converse Consultants as follows:

The site soil consisted of undocumented fills, alluvial soils deposits to the maximum explored depth of 51.5 feet below existing ground surface. Undocumented fills up to a maximum observed depth of 11 feet were encountered in the borings. The fill encountered consists primarily of silty sand and clayey sand. The alluvial soils below the fill primarily consist of silty sand and clayey sand with gravels.

Groundwater was not encountered within the borings during field exploration. Based on the absence of the local groundwater table at the project site, and observations based on recent local groundwater measurements, no significant quantity of sustained inflowing groundwater is expected.

2.1.5 Project Description

Project grading will occur on approximately 17.3 acres of the project, which comprises approximately 100 percent of the total area. The limits of grading are shown on the Erosion Control Plan in Appendix B. Grading will include both cut and fill activities, with the total graded material estimated to be 336,000 cubic yards. Approximately 163,000 cubic yards of fill

material will be imported during grading activities. Graded materials are expected to be balanced onsite. Soil will be stockpiled on campus. Construction activities will not be phased.

2.1.6 Developed Condition

Post construction surface drainage will be directed to the north as surface flow through stormwater conveyance systems and towards and will discharge to a public storm drain system owned by the City of Walnut.

Post construction drainage patterns and conveyance systems are presented on the Proposed Drainage Map in Appendix B.

Table 2.1 Construction Site Estimates

Construction site area	17	acres
Percent impervious before construction	0	%
Runoff coefficient before construction	0.5	
Percent impervious after construction	1.7	%
Runoff coefficient after construction	0.5	

2.2 PERMITS AND GOVERNING DOCUMENTS

In addition to the General Permit, the following documents have been taken into account while preparing this SWPPP

- Regional Water Board requirements
- Contract Documents
- Air Quality Regulations and Permits
- National Historic Preservation Act/Requirements of the State Historic Preservation Office
- Requirements of the Division of the State Architect.

2.3 STORMWATER RUN-ON FROM OFFSITE AREAS

There is no anticipated offsite run-on to this construction site because the project site is the highest ground with respect to the neighboring properties.

2.4 FINDINGS OF THE CONSTRUCTION SITE SEDIMENT AND RECEIVING WATER RISK DETERMINATION

A construction site risk assessment has been performed for the project and the resultant risk level is Risk Level 2.

The risk level was determined through the use of the K and LS factors provided in SMARTS. The risk level is based on project duration, location, proximity to impaired receiving waters and soil conditions. A copy of the Risk Level determination submitted on SMARTS with the PRDs is included in Appendix C.Table 2.2 and Table 2.3 summarize the sediment and receiving water risk factors and document the sources of information used to derive the factors.

Table 2.2 Summary of Sediment Risk

RUSLE Factor	**Value**	**Method for establishing value**
R	54.52	Calculated per EPA Fact Sheet 3.1
K	0.32	SMARTS populated based on project location
LS	4.19	SMARTS populated based on project location
Total Predicted Sediment Loss (tons/acre)		
Overall Sediment Risk Low Sediment Risk < 15 tons/ acre Medium Sediment Risk >= 15 and < 75 tons/acre High Sediment Risk >= 75 tons/acre		☐ **Low** ☒ **Medium** ☐ **High**

Runoff from the project site discharges into a municipal storm drain owned by the City of Walnut, which in turn discharges to San Jose Creek Reach 2 and ultimately the Pacific Ocean.

Table 2.3 Summary of Receiving Water Risk

Receiving Water Name	**303(d) Listed for Sediment Related Pollutant(1)**	**TMDL for Sediment Related Pollutant(1)**	**Beneficial Uses of COLD, SPAWN, and MIGRATORY(1)**
San Jose Creek Reach 2	☐ Yes ☒ No	☐ Yes ☒ No	☐ Yes ☒ No
Overall Receiving Water Risk			☒ **Low** ☐ **High**
(1) If yes is selected for any option the Receiving Water Risk is High			

Risk Level 2 sites are subject to both the narrative effluent limitations and numeric effluent standards. The narrative effluent limitations require stormwater discharges associated with construction activity to minimize or prevent pollutants in stormwater and authorized non-stormwater through the use of controls, structures and best management practices. Discharges from Risk Level 2 site are subject to NALs for pH and turbidity shown in Table 2-4. This SWPPP has been prepared to address Risk Level 2 requirements (General Permit Attachment D).

Table 2.4 Numeric Action Levels

Parameter	Unit	Numeric Action Level Daily Average
pH	pH units	Lower NAL = 6.5 Upper NAL = 8.5
Turbidity	NTU	250 NTU

2.5 CONSTRUCTION SCHEDULE

The site sediment risk was determined based on construction taking place between October 24, 2016 and August 24, 2017. Modification or extension of the schedule (start and end dates) may affect risk determination and permit requirements. The LRP shall contact the QSD if the schedule changes during construction to address potential impact to the SWPPP. The estimated schedule for planned work can be found in Appendix F.

2.6 POTENTIAL CONSTRUCTION ACTIVITY AND POLLUTANT SOURCES

Appendix G includes a list of construction activities and associated materials that are anticipated to be used onsite. These activities and associated materials will or could potentially contribute pollutants, other than sediment, to stormwater runoff.

The anticipated activities and associated pollutants were used in Section 3 to select the Best Management Practices for the project. Location of anticipated pollutants and associated BMPs are show on the Site Map in Appendix B.

For sampling requirements for non-visible pollutants associated with construction activity please refer to Section 7.7.1. For a full and complete list of onsite pollutants, refer to the Material Safety Data Sheets (MSDS), which are retained onsite at the construction trailer.

2.7 IDENTIFICATION OF NON-STORMWATER DISCHARGES

Non-stormwater discharges consist of discharges which do not originate from precipitation events. The General Permit provides allowances for specified non-stormwater discharges that do not cause erosion or carry other pollutants.

Non-stormwater discharges into storm drainage systems or waterways, which are not authorized under the General Permit and listed in the SWPPP, or authorized under a separate NPDES permit, are prohibited.

Non-stormwater discharges that are authorized from this project site include the following:

- Fire Hydrant flushing
- Irrigation of vegetative erosion control measures
- Pipe flushing and testing

- Water used for dust control

These authorized non-stormwater discharges will be managed with the stormwater and non-stormwater BMPs described in Section 3 of this SWPPP and will be minimized by the QSP.

Activities at this site that may result in unauthorized non-stormwater discharges include:

- Vehicles and equipment wash water
- Sanitary wastes
- Chemical leaks and/or spills of any kind, including but not limited to pertroleum, vehicles, and equipment

Steps will be taken, including the implementation of appropriate BMPs, to ensure that unauthorized discharges are eliminated, controlled, disposed, or treated on-site.

Discharges of construction materials and wastes, such as fuel or paint, resulting from dumping, spills, or direct contact with rainwater or stormwater runoff, are also prohibited.The following discharge(s) have been authorized by (a) regional NPDES permit(s):

The following non-stormwater discharges have been authorized by Order No. R4-2012-0175, NPDES number CAS004001

- Authorized non-storm water discharges separately regulated by an individual or general NPDES permit
- Temporary non-storm water discharges authorized by USEPA3 pursuant to sections 104(a) or 104(b) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) that either: (i) will comply with water quality standards as applicable or relevant and appropriate requirements ("ARARs") under section 121(d)(2) of CERCLA; or (ii) are subject to either (a) a written waiver of ARARs by USEPA pursuant to section 121(d)(4) of CERCLA or (b) a written determination by USEPA that compliance with ARARs is not practicable considering the exigencies of the situation pursuant to 40 CFR. section 300.415(j)
- Authorized non-storm water discharges from emergency firefighting activities
- Natural flows, including natural springs, flows from riparian habitats and wetlands, diverted stream flows, authorized by the State or Regional Water Board, uncontaminated ground water infiltration, and rising ground waters where ground water seepage is not otherwise covered by a NPDES permit
- Conditionally Exempt Essential Non-Storm Water Discharges consisting of: Discharges from essential non-emergency firefighting activities provided appropriate BMPs are implemented based on the CAL FIRE, Office of the State Fire Marshal's Water-Based Fire Protection Systems Discharge Best Management Practices Manual (September 2011) for water-based fire protection system discharges, and based on Riverside County's Best Management Practices Plan for Urban Runoff Management (May 1, 2004) or equivalent BMP manual for fire training activities and post-emergency firefighting activities; and discharges from drinking water supplier distribution systems, where not otherwise regulated by an individual or general NPDES permit, provided appropriate BMPs are

implemented based on the American Water Works Association (California-Nevada Section) Guidelines for the Development of Your Best Management Practices (BMP) Manual for Drinking Water System Releases (2005) or equivalent industry standard BMP manual. Additionally, each Permittee shall work with drinking water suppliers that may discharge to the Permittee's MS4 to ensure for all discharges greater than 100,000 gallons: (1) notification at least 72 hours prior to a planned discharge and as soon as possible after an unplanned discharge; (2) monitoring of any pollutants of concern in the drinking water supplier distribution system release; and (3) record keeping by the drinking water supplier. Permittees shall require that the following information is maintained by the drinking water supplier(s) for all discharges to the MS4 (planned and unplanned) greater than 100,000 gallons: name of discharger, date and time of notification (for planned discharges), method of notification, location of discharge, discharge pathway, receiving water, date of discharge, time of the beginning and end of the discharge, duration of the discharge, flow rate or velocity, total number of gallons discharged, type of dechlorination equipment used, type of dechlorination chemicals used, concentration of residual chlorine, type(s) of sediment controls used, pH of discharge, type(s) of volumetric and velocity controls used, and field and laboratory monitoring data. Records shall be retained for five years and made available upon request by the Permittee or Regional Water Board

- Those discharges that fall within one of the following categories, provided that the discharge itself is not a source of pollutants and meets all required conditions specified in Table 8 of Order No. R4-2012-0175 or as otherwise specified or approved by the Regional Water Board Executive Officer: Dewatering of lakes, landscape irrigation, dechlorinated/debrominated swimming pool/spa discharges, where no otherwise regulated by a separate NPDES permit, dewater of decorative fountains, non-commercial car washing by residents or by non-profit organizations, and street/sidewalk wash water.
- Pursuant to the California Ocean Plans, discharges that are essential for emergency response purposes, structural stability, slope stability, or occur naturally, including the following: Foundation and footing drains, water from crawl space or basement pumps, hillside dewatering, naturally occurring ground water seepage via a MS4, and non-anthropogenic flows from a naturally occurring stream via a culvert or MS4, as long as there are no contributions of anthropogenic runoff.

2.8 REQUIRED SITE MAP INFORMATION

The construction project's Site Map(s) showing the project location, surface water boundaries, geographic features, construction site perimeter and general topography and other requirements identified in Attachment B of the General Permit is located in Appendix B. Table 2.5 identifies Map or Sheet Nos. where required elements are illustrated.

Table 2.5 Required Map Information

Included on Map/Plan Sheet No. (1)	Required Element
Errosion Control Plan	The project's surrounding area (vicinity)
Errosion Control Plan	Site layout
Errosion Control Plan	Construction site boundaries
Errosion Control Plan	Drainage areas
Errosion Control Plan	Discharge locations
Errosion Control Plan	Sampling locations
Errosion Control Plan	Areas of soil disturbance (temporary or permanent)
Errosion Control Plan	Active areas of soil disturbance (cut or fill)
Errosion Control Plan	Locations of runoff BMPs
Errosion Control Plan	Locations of erosion control BMPs
Errosion Control Plan	Locations of sediment control BMPs
N/A	ATS location (if applicable)
Errosion Control Plan	Locations of sensitive habitats, watercourses, or other features which are not to be disturbed
Errosion Control Plan	Locations of all post construction BMPs
Errosion Control Plan	Waste storage areas
Errosion Control Plan	Vehicle storage areas
Errosion Control Plan	Material storage areas
Errosion Control Plan	Entrance and Exits
Errosion Control Plan	Fueling Locations

Notes: (1) Indicate maps or drawings that information is included on (e.g., Vicinity Map, Site Map, Drainage Plans, Grading Plans, Progress Maps, etc.)

Section 3 Best Management Practices

3.1 SCHEDULE FOR BMP IMPLEMENTATION

Table 3.1 BMP Implementation Schedule

	BMP	Implementation	Duration
Erosion Control	EC-1, Scheduling	Prior to Construction	Entirety of Project
	EC-2, Preservation of Existing Vegetation	Start of Construction	Entirety of Project
Sediment Control	SE-1, Silt Fence	Start of Construction	Entirety of Project
	SE-6, Gravel Bag Berm	Start of Construction	Entirety of Project
	SE-7, Street Sweeping and Vacuuming	Daily	Entirety of Project
	SE-10, Storm Drain Inlet Protection	Start of Construction	Entirety of Project
Tracking Control	TC-1, Stabilized Construction Entrance/Exit	Prior to Construction	Entirety of Project
Wind Erosion	WE-1, Wind Erosion Control	Apply to active areas	As needed

3.2 EROSION AND SEDIMENT CONTROL

Erosion and sediment controls are required by the General Permit to provide effective reduction or elimination of sediment related pollutants in stormwater discharges and authorized non-stormwater discharges from the Site. Applicable BMPs are identified in this section for erosion control, sediment control, tracking control, and wind erosion control.

3.2.1 Erosion Control

Erosion control, also referred to as soil stabilization, consists of source control measures that are designed to prevent soil particles from detaching and becoming transported in stormwater runoff. Erosion control BMPs protect the soil surface by covering and/or binding soil particles.

This construction project will implement the following practices to provide effective temporary and final erosion control during construction:

1. Preserve existing vegetation where required and when feasible.
2. The area of soil disturbing operations shall be controlled such that the Contractor is able to implement erosion control BMPs quickly and effectively.

3. Stabilize non-active areas within 14 days of cessation of construction activities or sooner if stipulated by local requirements.
4. Control erosion in concentrated flow paths by applying erosion control blankets, check dams, erosion control seeding or alternate methods.
5. Prior to the completion of construction, apply permanent erosion control to remaining disturbed soil areas.

Sufficient erosion control materials shall be maintained onsite to allow implementation in conformance with this SWPPP.

The following temporary erosion control BMP selection table indicates the BMPs that shall be implemented to control erosion on the construction site. Fact Sheets for temporary erosion control BMPs are provided in Appendix H.

Table 3.2 Temporary Erosion Control BMPs

CASQA Fact Sheet	BMP Name	Meets a Minimum Requirement[1]	BMP Used		If not used, state reason
			YES	NO	
EC-1	Scheduling	✓	✓		
EC-2	Preservation of Existing Vegetation	✓	✓		
EC-3	Hydraulic Mulch	✓[2]		✓	Not applicable to the project
EC-4	Hydroseed	✓[2]		✓	Not applicable to the project
EC-5	Soil Binders	✓[2]		✓	Not applicable to the project
EC-6	Straw Mulch	✓[2]		✓	Not applicable to the project
EC-7	Geotextiles and Mats	✓[2]		✓	Not applicable to the project
EC-8	Wood Mulching	✓[2]		✓	Not applicable to the project
EC-9	Earth Dike and Drainage Swales	✓[3]		✓	Not applicable to the project
EC-10	Velocity Dissipation Devices			✓	Not applicable to the project
EC-11	Slope Drains			✓	Not applicable to the project
EC-12	Stream Bank Stabilization			✓	Not applicable to the project
EC-14	Compost Blankets	✓[2]		✓	Not applicable to the project
EC-15	Soil Preparation-Roughening			✓	Not applicable to the project
EC-16	Non-Vegetated Stabilization	✓[2]		✓	Not applicable to the project
WE-1	Wind Erosion Control	✓	✓		
Alternate BMPs Used:					**If used, state reason:**

[1] Applicability to a specific project shall be determined by the QSD.
[2] The QSD shall ensure implementation of one of the minimum measures listed or a combination thereof to achieve and maintain the Risk Level requirements.
[3] Run-on from offsite shall be directed away from all disturbed areas, diversion of offsite flows may require design/analysis by a licensed civil engineer and/or additional environmental permitting

These temporary erosion control BMPs shall be implemented in conformance with the following guidelines and as outlined in the BMP Factsheets provided in Appendix H. If there is a conflict between documents, the Site Map will prevail over narrative in the body of the SWPPP or guidance in the BMP Fact Sheets. Site specific details in the Site Map prevail over standard details included in the Site Map. The narrative in the body of the SWPPP prevails over guidance in the BMP Fact Sheets.

3.2.2 Sediment Controls

Sediment controls are temporary or permanent structural measures that are intended to complement the selected erosion control measures and reduce sediment discharges from active construction areas. Sediment controls are designed to intercept and settle out soil particles that have been detached and transported by the force of water.

The following sediment control BMP selection table indicates the BMPs that shall be implemented to control sediment on the construction site. Fact Sheets for temporary sediment control BMPs are provided in Appendix H.

Table 3.3 Temporary Sediment Control BMPs

CASQA Fact Sheet	BMP Name	Meets a Minimum Requirement[1]	BMP used		If not used, state reason
			YES	NO	
SE-1	Silt Fence	✓(2) (3)	✓		
SE-2	Sediment Basin			✓	
SE-3	Sediment Trap			✓	
SE-4	Check Dams			✓	
SE-5	Fiber Rolls	✓(2)(3)	✓		
SE-6	Gravel Bag Berm	✓(3)	✓		
SE-7	Street Sweeping	✓	✓		
SE-8	Sandbag Barrier			✓	
SE-9	Straw Bale Barrier			✓	
SE-10	Storm Drain Inlet Protection	✓ RL2&3		✓	
SE-11	ATS			✓	
SE-12	Manufactured Linear Sediment Controls			✓	
SE-13	Compost Sock and Berm	✓(3)		✓	
SE-14	Biofilter Bags	✓(3)		✓	
TC-1	Stabilized Construction Entrance and Exit	✓	✓		
TC-2	Stabilized Construction Roadway			✓	
TC-3	Entrance Outlet Tire Wash			✓	
Alternate BMPs Used:					**If used, state reason:**

[1] Applicability to a specific project shall be determined by the QSD
[2] The QSD shall ensure implementation of one of the minimum measures listed or a combination thereof to achieve and maintain the Risk Level requirements
[3]Risk Level 2 &3 shall provide linear sediment control along toe of slope, face of slope, and at the grade breaks of exposed slope

These temporary sediment control BMPs shall be implemented in conformance with the following guidelines and in accordance with the BMP Fact Sheets provided in Appendix H. If there is a conflict between documents, the Site Map will prevail over narrative in the body of the SWPPP or guidance in the BMP Fact Sheets. Site specific details in the Site Map prevail over standard details included in the Site Map. The narrative in the body of the SWPPP prevails over guidance in the BMP Fact Sheets.

3.3 NON-STORMWATER CONTROLS AND WASTE AND MATERIALS MANAGEMENT

3.3.1 Non-Stormwater Controls

Non-stormwater discharges into storm drainage systems or waterways, which are not authorized under the General Permit, are prohibited. Non-stormwater discharges for which a separate NPDES permit is required by the local Regional Water Board are prohibited unless coverage under the separate NPDES permit has been obtained for the discharge. The selection of non-stormwater BMPs is based on the list of construction activities with a potential for non-stormwater discharges identified in Section 2.7 of this SWPPP.

The following non-stormwater control BMP selection table indicates the BMPs that shall be implemented to control sediment on the construction site. Fact Sheets for temporary non-stormwater control BMPs are provided in Appendix H.

Table 3.4 Temporary Non-Stormwater BMPs

CASQA Fact Sheet	BMP Name	Meets a Minimum Requirement[1]	BMP used		If not used, state reason
			YES	NO	
NS-1	Water Conservation Practices	✓	✓		
NS-2	Dewatering Operation			✓	Not applicable to the project
NS-3	Paving and Grinding Operation		✓		
NS-4	Temporary Stream Crossing			✓	Not applicable to the project
NS-5	Clear Water Diversion			✓	Not applicable to the project
NS-6	Illicit Connection/Discharge	✓	✓		
NS-7	Potable Water/Irrigation		✓		
NS-8	Vehicle and Equipment Cleaning	✓	✓		
NS-9	Vehicle and Equipment Fueling	✓	✓		
NS-10	Vehicle and Equipment Maintenance	✓	✓		
NS-11	Pile Driving Operation			✓	Not applicable to the project
NS-12	Concrete Curing			✓	Not applicable to the project
NS-13	Concrete Finishing			✓	Not applicable to the project
NS-14	Material and Equipment Use Over Water			✓	Not applicable to the project
NS-15	Demolition Removal Adjacent to Water			✓	Not applicable to the project
NS-16	Temporary Batch Plants			✓	Not applicable to the project
Alternate BMPs Used:			**If used, state reason:**		

[1] Applicability to a specific project shall be determined by the QSD

Non-stormwater BMPs shall be implemented in conformance with the following guidelines and in accordance with the BMP Fact Sheets provided in Appendix H. If there is a conflict between documents, the Site Map will prevail over narrative in the body of the SWPPP or guidance in the BMP Fact Sheets. Site specific details in the Site Map prevail over standard details included in the Site Map. The narrative in the body of the SWPPP prevails over guidance in the BMP Fact Sheets.

3.3.2 Materials Management and Waste Management

Materials management control practices consist of implementing procedural and structural BMPs for handling, storing and using construction materials to prevent the release of those materials into stormwater discharges. The amount and type of construction materials to be utilized at the Site will depend upon the type of construction and the length of the construction period. The materials may be used continuously, such as fuel for vehicles and equipment, or the materials may be used for a discrete period, such as soil binders for temporary stabilization.

Waste management consist of implementing procedural and structural BMPs for handling, storing and ensuring proper disposal of wastes to prevent the release of those wastes into stormwater discharges.

Materials and waste management pollution control BMPs shall be implemented to minimize stormwater contact with construction materials, wastes and service areas; and to prevent materials and wastes from being discharged off-site. The primary mechanisms for stormwater contact that shall be addressed include:

- Direct contact with precipitation
- Contact with stormwater run-on and runoff
- Wind dispersion of loose materials
- Direct discharge to the storm drain system through spills or dumping
- Extended contact with some materials and wastes, such as asphalt cold mix and treated wood products, which can leach pollutants into stormwater.

A list of construction activities is provided in Section 2.6. The following Materials and Waste Management BMP selection table indicates the BMPs that shall be implemented to handle materials and control construction site wastes associated with these construction activities. Fact Sheets for Materials and Waste Management BMPs are provided in Appendix H.

Table 3.5 Temporary Materials Management BMPs

CASQA Fact Sheet	BMP Name	Meets a Minimum Requirement[1]	BMP used		If not used, state reason
			YES	NO	
WM-01	Material Delivery and Storage	✓	✓		
WM-02	Material Use	✓	✓		
WM-03	Stockpile Management	✓	✓		
WM-04	Spill Prevention and Control	✓	✓		
WM-05	Solid Waste Management	✓	✓		
WM-06	Hazardous Waste Management	✓		✓	Not applicable to the project
WM-07	Contaminated Soil Management			✓	Not applicable to the project
WM-08	Concrete Waste Management	✓		✓	Not applicable to the project
WM-09	Sanitary-Septic Waste Management	✓	✓		
WM-10	Liquid Waste Management			✓	Not applicable to the project
Alternate BMPs Used:				**If used, state reason:**	

[1] Applicability to a specific project shall be determined by the QSD.

Material management BMPs shall be implemented in conformance with the following guidelines and in accordance with the BMP Fact Sheets provided in Appendix H. If there is a conflict between documents, the Site Map will prevail over narrative in the body of the SWPPP or guidance in the BMP Fact Sheets. Site specific details in the Site Map prevail over standard details included in the Site Map. The narrative in the body of the SWPPP prevails over guidance in the BMP Fact Sheets.

3.4 POST CONSTRUCTION STORMWATER MANAGEMENT MEASURES

Post construction BMPs are permanent measures installed during construction, designed to reduce or eliminate pollutant discharges from the site after construction is completed.

This site is located in an area subject to a Phase I or Phase II Municipal Separate Storm Sewer System (MS4) permit approved Stormwater Management Plan. ☒ Yes ☐ No

Post construction runoff reduction requirements have been satisfied through the MS4 program, this project is exempt from provision XIII A of the General Permit.

Section 4 BMP Inspection, Maintenance, and Rain Event Action Plans

4.1 BMP INSPECTION AND MAINTENANCE

The General Permit requires routine weekly inspections of BMPs, along with inspections before, during, and after qualifying rain events. A BMP inspection checklist must be filled out for inspections and maintained on-site with the SWPPP. The inspection checklist includes the necessary information covered in Section 7.6. A blank inspection checklist can be found in Appendix I. Completed checklists shall be kept in CSMP Attachment 2 "Monitoring Records.

BMPs shall be maintained regularly to ensure proper and effective functionality. If necessary, corrective actions shall be implemented within 72 hours of identified deficiencies and associated amendments to the SWPPP shall be prepared by the QSD.

Specific details for maintenance, inspection, and repair of Construction Site BMPs can be found in the BMP Factsheets in Appendix H.

4.2 RAIN EVENT ACTION PLANS

The Rain Event Action Plans (REAP) is written document designed to be used as a planning tool by the QSP to protect exposed portions of project sites and to ensure that the discharger has adequate materials, staff, and time to implement erosion and sediment control measures. These measures are intended to reduce the amount of sediment and other pollutants that could be generated during the rain event. It is the responsibility of the QSP to be aware of precipitation forecast and to obtain and print copies of forecasted precipitation from NOAA's National Weather Service Forecast Office.

The SWPPP includes REAP templates but the QSP will need to customize them for each rain event. Site-specific REAP templates for each applicable project phase can be found in Appendix J. The QSP shall maintain a paper copy of completed REAPs in compliance with the record retention requirements Section 1.5 of this SWPPP. Completed REAPs shall be maintained in Appendix J.

The QSP will develop an event specific REAP 48 hours in advance of a precipitation event forecast to have a 50% or greater chance of producing precipitation in the project area. The REAP will be onsite and be implemented 24 hours in advance of any the predicted precipitation event.

At minimum the REAP will include the following site and phase-specific information:

1. Site Address;
2. Calculated Risk Level (2 or 3);
3. Site Stormwater Manager Information including the name, company and 24-hour emergency telephone number;
4. Erosion and Sediment Control Provider information including the name, company and 24-hour emergency telephone number;
5. Stormwater Sampling Agent information including the name, company, and 24-hour emergency telephone number;

6. Activities associated with each construction phase;
7. Trades active on the construction site during each construction phase;
8. Trade contractor information; and
9. Recommended actions for each project phase.

Section 5 Training

Appendix L identifies the QSPs for the project. To promote stormwater management awareness specific for this project, periodic training of job-site personnel shall be included as part of routine project meetings (e.g. daily/weekly tailgate safety meetings), or task specific trainings as needed.

The QSP shall be responsible for providing this information at the meetings, and subsequently completing the training logs shown in Appendix K, which identifies the site-specific stormwater topics covered as well as the names of site personnel who attended the meeting. Tasks may be delegated to trained employees by the QSP provided adequate supervision and oversight is provided. Training shall correspond to the specific task delegated including: SWPPP implementation; BMP inspection and maintenance; and record keeping.

Documentation of training activities (formal and informal) is retained in SWPPP Appendix K.

Section 6 Responsible Parties and Operators

6.1 RESPONSIBLE PARTIES

Approved Signatories who are responsible for SWPPP implementation and have authority to sign permit-related documents are listed below. Written authorizations from the LRP for these individuals are provided in Appendix L. The Approved Signatories assigned to this project are:

Name	Title	Phone Number
Rebecca Mitchel	Manager, Facility Support Services	(909) 274-5175

QSPs identified for the project are identified in Appendix L. The QSP shall have primary responsibility and significant authority for the implementation, maintenance and inspection/monitoring of SWPPP requirements. The QSP will be available at all times throughout the duration of the project. Duties of the QSP include but are not limited to:

- Implementing all elements of the General Permit and SWPPP, including but not limited to:
  - Ensuring all BMPs are implemented, inspected, and properly maintained;
  - Performing non-stormwater and stormwater visual observations and inspections;
  - Performing non-stormwater and storm sampling and analysis, as required;
  - Performing routine inspections and observations;
  - Implementing non-stormwater management, and materials and waste management activities such as: monitoring discharges; general Site clean-up; vehicle and equipment cleaning, fueling and maintenance; spill control; ensuring that no materials other than stormwater are discharged in quantities which will have an adverse effect on receiving waters or storm drain systems; etc.;
- The QSP may delegate these inspections and activities to an appropriately trained employee, but shall ensure adequacy and adequate deployment.
- Ensuring elimination of unauthorized discharges.
- The QSPs shall be assigned authority by the LRP to mobilize crews in order to make immediate repairs to the control measures.
- Coordinate with the Contractor(s) to assure all of the necessary corrections/repairs are made immediately and that the project complies with the SWPPP, the General Permit and approved plans at all times.
- Notifying the LRP or Authorized Signatory immediately of off-site discharges or other non-compliance events.

6.2 CONTRACTOR LIST

Contractor

Name: Matt Breyer

Title: Senior Project Manager

Company: Tilden-Coil Contractors

Address: 3612 Mission Inn Ave, Riverside, CA 92501

Phone Number: (909) 274-5070

Number (24/7): (951) 377-5531

Section 7 Construction Site Monitoring Program

7.1 Purpose

This Construction Site Monitoring Program was developed to address the following objectives:

1. To demonstrate that the site is in compliance with the Discharge Prohibitions and Numeric Action Levels (NALs) of the Construction General Permit;
2. To determine whether non-visible pollutants are present at the construction site and are causing or contributing to exceedances of water quality objectives;
3. To determine whether immediate corrective actions, additional Best Management Practices (BMP) implementation, or SWPPP revisions are necessary to reduce pollutants in stormwater discharges and authorized non-stormwater discharges;
4. To determine whether BMPs included in the SWPPP and REAP are effective in preventing or reducing pollutants in stormwater discharges and authorized non-stormwater discharges.

7.2 Applicability of Permit Requirements

This project has been determined to be a Risk Level 2 project. The General Permit identifies the following types of monitoring as being applicable for a Risk Level 2 project.

- Visual inspections of Best Management Practices (BMPs);
- Visual monitoring of the site related to qualifying storm events;
- Visual monitoring of the site for non-stormwater discharges;
- Sampling and analysis of construction site runoff for pH and turbidity;
- Sampling and analysis of construction site runoff for non-visible pollutants when applicable; and
- Sampling and analysis of non-stormwater discharges when applicable.

7.3. Weather and Rain Event Tracking

Visual monitoring, inspections, and sampling requirements of the General Permit are triggered by a qualifying rain event. The General Permit defines a qualifying rain event as any event that produces ½ inch of precipitation. A minimum of 48 hours of dry weather will be used to distinguish between separate qualifying storm events.

7.3.1 Weather Tracking

The QSP should daily consult the National Oceanographic and Atmospheric Administration (NOAA) for the weather forecasts. These forecasts can be obtained at http://www.srh.noaa.gov/. Weather reports should be printed and maintained with the SWPPP in CSMP Attachment 1 "Weather Reports".

7.3.2 Rain Gauges

The QSP shall install one rain gauge on the project site. Locate the gauge in an open area away from obstructions such as trees or overhangs. Mount the gauge on a post at a height of 3 to 5 feet with the gauge extending several inches beyond the post. Make sure that the top of the gauge is

level. Make sure the post is not in an area where rainwater can indirectly splash from sheds, equipment, trailers, etc.

The rain gauge(s) shall be read daily during normal site scheduled hours. The rain gauge should be read at approximately the same time every day and the date and time of each reading recorded. Log rain gauge readings in CSMP Attachment 1 "Weather Records". Follow the rain gauge instructions to obtain accurate measurements.

Once the rain gauge reading has been recorded, accumulated rain shall be emptied and the gauge reset.

For comparison with the site rain gauge, the nearest appropriate governmental rain gauge(s) is located at http://cdec.water.ca.gov/cgi-progs/staMeta?station_id=pdd.

7.4 Monitoring Locations

Monitoring locations are shown on the Site Maps in Appendix B. Monitoring locations are described in the Sections 7.6 and 7.7.

Whenever changes in the construction site might affect the appropriateness of sampling locations, the sampling locations shall be revised accordingly. All such revisions shall be implemented as soon as feasible and the SWPPP amended. Temporary changes that result in a one-time additional sampling location do not require a SWPPP amendment.

7.5 Safety and Monitoring Exemptions

This project is not required to collect samples or conduct visual observations (inspections) under the following conditions:

- During dangerous weather conditions such as flooding and electrical storms.
- Outside of scheduled site business hours.

Scheduled site business hours are: Mon-Fri 7am-4pm.

If monitoring (visual monitoring or sample collection) of the site is unsafe because of the dangerous conditions noted above then the QSP shall document the conditions for why an exception to performing the monitoring was necessary. The exemption documentation shall be filed in CSMP Attachment 2 "Monitoring Records".

7.6 Visual Monitoring

Visual monitoring includes observations and inspections. Inspections of BMPs are required to identify and record BMPs that need maintenance to operate effectively, that have failed, or that could fail to operate as intended. Visual observations of the site are required to observe storm water drainage areas to identify any spills, leaks, or uncontrolled pollutant sources.

Table 7.1 identifies the required frequency of visual observations and inspections. Inspections and observations will be conducted at the locations identified in Section 7.6.3.

Table 7.1 Summary of Visual Monitoring and Inspections

Type of Inspection	Frequency
Routine Inspections	
BMP Inspections	Weekly[1]
BMP Inspections – Tracking Control	Daily
Non-Stormwater Discharge Observations	Quarterly during daylight hours
Rain Event Triggered Inspections	
Site Inspections Prior to a Qualifying Event	Within 48 hours of a qualifying event [2]
BMP Inspections During an Extended Storm Event	Every 24-hour period of a rain event[3]
Site Inspections Following a Qualifying Event	Within 48 hours of a qualifying event[2]

[1] Most BMPs must be inspected weekly; those identified below must be inspected more frequently.

[2] Inspections are required during scheduled site operating hours.

[3] Inspections are required during scheduled site operating hours regardless of the amount of precipitation on any given day.

7.6.1 Routine Observations and Inspections

Routine site inspections and visual monitoring are necessary to ensure that the project is in compliance with the requirements of the Construction General Permit.

7.6.1.1 Routine BMP Inspections

Inspections of BMPs are conducted to identify and record:

- BMPs that are properly installed;
- BMPs that need maintenance to operate effectively;
- BMPs that have failed; or
- BMPs that could fail to operate as intended.

7.6.1.2 Non-Stormwater Discharge Observations

Each drainage area will be inspected for the presence of or indications of prior unauthorized and authorized non-stormwater discharges. Inspections will record:

- Presence or evidence of any non-stormwater discharge (authorized or unauthorized);
- Pollutant characteristics (floating and suspended material, sheen, discoloration, turbidity, odor, etc.); and
- Source of discharge.

7.6.2 Rain-Event Triggered Observations and Inspections

Visual observations of the site and inspections of BMPs are required prior to a qualifying rain event; following a qualifying rain event, and every 24-hour period during a qualifying rain event.

Pre-rain inspections will be conducted after consulting NOAA and determining that a precipitation event with a 50% or greater probability of precipitation has been predicted.

7.6.2.1 Visual Observations Prior to a Forecasted Qualifying Rain Event

Within 48-hours prior to a qualifying event a stormwater visual monitoring site inspection will include observations of the following locations:

- Stormwater drainage areas to identify any spills, leaks, or uncontrolled pollutant sources;
- BMPs to identify if they have been properly implemented;
- Any stormwater storage and containment areas to detect leaks and ensure maintenance of adequate freeboard.

Consistent with guidance from the State Water Resources Control Board, pre-rain BMP inspections and visual monitoring will be triggered by a NOAA forecast that indicates a probability of precipitation of 50% or more in the project area.

7.6.2.2 BMP Inspections During an Extended Storm Event

During an extended rain event BMP inspections will be conducted to identify and record:

- BMPs that are properly installed;
- BMPs that need maintenance to operate effectively;
- BMPs that have failed; or
- BMPs that could fail to operate as intended.

If the construction site is not accessible during the rain event, the visual inspections shall be performed at all relevant outfalls, discharge points, downstream locations. The inspections should record any projected maintenance activities.

7.6.2.3 Visual Observations Following a Qualifying Rain Event

Within 48 hours following a qualifying rain event (0.5 inches of rain) a stormwater visual monitoring site inspection is required to observe:

- Stormwater drainage areas to identify any spills, leaks, or uncontrolled pollutant sources;
- BMPs to identify if they have been properly designed, implemented, and effective;
- Need for additional BMPs;
- Any stormwater storage and containment areas to detect leaks and ensure maintenance of adequate freeboard; and
- Discharge of stored or contained rain water.

7.6.3 Visual Monitoring Procedures

Visual monitoring shall be conducted by the QSP or staff trained by and under the supervision of the QSP.

The name(s) and contact number(s) of the site visual monitoring personnel are listed below and their training qualifications are provided in Appendix K.

Assigned inspector: Michael Mulgrew Contact phone: 213-223-1575

Stormwater observations shall be documented on the *Visual Inspection Field Log Sheet* (see CSMP Attachment 3 "Example Forms"). BMP inspections shall be documented on the site specific BMP inspection checklist. Any photographs used to document observations will be referenced on stormwater site inspection report and maintained with the Monitoring Records in Attachment 2.

The QSP shall submit copies of the completed inspection report to the contractor and owner.

The completed reports will be kept in CSMP Attachment 2 "Monitoring Records".

7.6.4 Visual Monitoring Follow-Up and Reporting

Correction of deficiencies identified by the observations or inspections, including required repairs or maintenance of BMPs, shall be initiated and completed as soon as possible.

If identified deficiencies require design changes, including additional BMPs, the implementation of changes will be initiated within 72 hours of identification and be completed as soon as possible. When design changes to BMPs are required, the SWPPP shall be amended to reflect the changes.

Deficiencies identified in site inspection reports and correction of deficiencies will be tracked on the *Inspection Field Log Sheet* or *BMP Inspection Report* and shall be submitted to the QSP and shall be kept in CSMP Attachment 2 "Monitoring Records".

The QSP shall submit copies of the completed *Inspection Field Log Sheet* or *BMP Inspection Report* with the corrective actions to the contractor and owner.

Results of visual monitoring must be summarized and reported in the Annual Report.

7.6.5 Visual Monitoring Locations

The inspections and observations identified in Sections 7.6.1 and 7.6.2 will be conducted at the locations identified in this section.

BMP locations are shown on the Site Maps in SWPPP Appendix A.

There are two drainage areas on the project site and the contractor's yard, staging areas, and storage areas. Drainage areas are shown on the Site Maps in Appendix B and Table 7.2 identifies each drainage area by location.

Table 7.2 Site Drainage Areas

Location No.	Location
1	West half of project site
2	East half of project site

There are no stormwater storage or containment areas are on the project site.

Table 7.3 Stormwater Storage and Containment Areas

Location No.	Location
	N/A

There are three discharge locations on the project site. Site stormwater discharge locations are shown on the Site Maps in Appendix B and Table 7.4 identifies each stormwater discharge location.

Table 7.4 Site Stormwater Discharge Locations

Location No.	Location
1	West storm drain outfall
2	East storm drain outfall
3	Driveway sheet flow

7.7 Water Quality Sampling and Analysis

7.7.1 Sampling and Analysis Plan for Non-Visible Pollutants in Stormwater Runoff Discharges

This Sampling and Analysis Plan for Non-Visible Pollutants describes the sampling and analysis strategy and schedule for monitoring non-visible pollutants in stormwater runoff discharges from the project site.

Sampling for non-visible pollutants will be conducted when (1) a breach, leakage, malfunction, or spill is observed; and (2) the leak or spill has not been cleaned up prior to the rain event; and (3) there is the potential for discharge of non-visible pollutants to surface waters or drainage system.

The following construction materials, wastes, or activities, as identified in Section 2.6, are potential sources of non-visible pollutants to stormwater discharges from the project. Storage, use, and operational locations are shown on the Site Maps in Appendix B.

- Construction Vehicles and Equipment

7.7.1.1 Sampling Schedule

Samples for the potential non-visible pollutant(s) and a sufficiently large unaffected background sample shall be collected during the first two hours of discharge from rain events that result in a sufficient discharge for sample collection. Samples shall be collected during the site's scheduled hours and shall be collected regardless of the time of year and phase of the construction.

Collection of discharge samples for non-visible pollutant monitoring will be triggered when any of the following conditions are observed during site inspections conducted prior to or during a rain event.

- Materials or wastes containing potential non-visible pollutants are not stored under watertight conditions. Watertight conditions are defined as (1) storage in a watertight container, (2) storage under a watertight roof or within a building, or (3) protected by temporary cover and containment that prevents stormwater contact and runoff from the storage area.
- Materials or wastes containing potential non-visible pollutants are stored under watertight conditions, but (1) a breach, malfunction, leakage, or spill is observed, (2) the leak or spill is not cleaned up prior to the rain event, and (3) there is the potential for discharge of non-visible pollutants to surface waters or a storm drain system.
- A construction activity, including but not limited to those in Section 2.6, with the potential to contribute non-visible pollutants (1) was occurring during or within 24 hours prior to the rain event, (2) BMPs were observed to be breached, malfunctioning, or improperly implemented, and (3) there is the potential for discharge of non-visible pollutants to surface waters or a storm drain system.
- Soil amendments that have the potential to change the chemical properties, engineering properties, or erosion resistance of the soil have been applied, and there is the potential for discharge of non-visible pollutants to surface waters or a storm drain system.
- Stormwater runoff from an area contaminated by historical usage of the site has been observed to combine with stormwater runoff from the site, and there is the potential for discharge of non-visible pollutants to surface waters or a storm drain system.

7.7.1.2 Sampling Locations

Sampling locations are based on proximity to planned non-visible pollutant storage, occurrence or use; accessibility for sampling, and personnel safety. Planned non-visible pollutant sampling locations are shown on the Site Maps in Appendix B and include the locations identified in Tables 7.5 through 7.9.

Two sampling location(s) on the project site and the contractor's yard have been identified for the collection of samples of runoff from planned material and waste storage areas and areas where non-visible pollutant producing construction activities are planned.

Table 7.5 Non-Visible Pollutant Sample Locations – Contractors' Yard

Sample Location Number	**Sample Location Description**	**Sample Location Latitude and Longitude** (Decimal Degrees)
1	Solar array pad	Determine in field
2	Street right-of-way adjacent	Determine in field

One sampling location has been identified for the collection of an uncontaminated sample of runoff as a background sample for comparison with the samples being analyzed for non-visible pollutants. This location(s) was selected such that the sample will not have come in contact with the operations, activities, or areas identified in Section 7.7.1 or with disturbed soils areas.

Table 7.8 Non-Visible Pollutant Sample Locations – Background (Unaffected Sample)

Sample Location Number	**Sample Location**	**Sample Location Latitude and Longitude** (Decimal Degrees)
1	Immediately upstream of site at Grand Avenue	Determine in field

If a stormwater visual monitoring site inspection conducted prior to or during a storm event identifies the presence of a material storage, waste storage, or operations area with spills or the potential for the discharge of non-visible pollutants to surface waters or a storm drain system that is at a location not listed above and has not been identified on the Site Maps, sampling locations will be selected by the QSP using the same rationale as that used to identify planned locations. Non-visible pollutant sampling locations shall be identified by the QSP on the pre-rain event inspection form and/or Rain Event Action Plan prior to a forecasted qualifying rain event.

7.7.1.3 Monitoring Preparation

Non-visible pollutant samples will be collected by:

Contractor	☐ Yes	☒ No
Consultant	☒ Yes	☐ No
Laboratory	☒ Yes	☐ No

An adequate stock of monitoring supplies and equipment for monitoring non-visible pollutants will be available on the project site prior to a sampling event. Monitoring supplies and equipment will be stored in a cool temperature environment that will not come into contact with rain or direct sunlight. Sampling personnel will be available to collect samples in accordance with the sampling schedule. Supplies maintained at the project site will include, but are not limited to, clean powder-free nitrile gloves, sample collection equipment, coolers, appropriate number and volume of sample bottles, identification labels, re-sealable storage bags, paper towels, personal rain gear, ice, and *Effluent Sampling Field Log Sheets* and Chain of Custody (CoC) forms, which are provided in CSMP Attachment 3 “Example Forms”.

Samples on the project site will be collected by the following laboratory:

Company Name:	Weck Laboratories, INC
Street Address:	14859 E. Clark Avenue
City, State Zip:	City of Industry, CA 91745
Telephone Number:	(626) 336-2139

The QSP or his/her designee will contact Weck Laboratories, Inc. 24 hours prior to a predicted rain event or for an unpredicted event, as soon as a rain event begins if one of the triggering conditions is identified during an inspection to ensure that adequate sample collection personnel and supplies for monitoring non-visible pollutants are available and will be mobilized to collect samples on the project site in accordance with the sampling schedule.

7.7.1.4 Analytical Constituents

Table 7.10 lists the specific sources and types of potential non-visible pollutants on the project site and the water quality indicator constituent(s) for that pollutant.

Table 7.10 Potential Non-Visible Pollutants and Water Quality Indicator Constituents

Pollutant Source	Pollutant	Water Quality Indicator Constituent
Asphalt Work		VOCs
Concrete/Masonry Work	Sealant	SVOC
Concrete/Masonry Work	Curing compounds	VOCs, SVOCs, pH
Concrete/Masonry Work	Ash, slag, sand	pH, Al, Ca, Va, Zn
Insulation		Al, Zn
Landscaping	Pesticides/Herbicides	Product dependent
Landscaping	Fertilizers	TKN, NO_3, BOD, COD, DOC, Sulfate, NH_3, Phosphate, Potassium
Landscaping	Aluminum sulfate	Al, TDS, Sulfate
Painting	Resins	COD, SVOCs
Painting	Thinners	COD, VOCs
Painting	Strippers	VOCs, SVOCs, metals
Painting	Sealants	COD
Painting	Adhesives	Phenols, SVOCs
Plumbing	Solder, flux, pipe fitting	Cu, Pb, Sn, Zn
Roofing		Cu, Pb, VOCs
Sanitary Waste	Portable toilets	BOD, Total/Fecal coliform
Utility Line Testing and Flushing		Residual chlorine, chloramines
Vehicle and Equipment Use	Batteries	Sulfuric acid, Pb, pH

7.7.1.5 Sample Collection

Samples of discharge shall be collected at the designated non-visible pollutant sampling locations shown on the Site Maps in Appendix B or in the locations determined by observed

breaches, malfunctions, leakages, spills, operational areas, soil amendment application areas, and historical site usage areas that triggered the sampling event.

Grab samples shall be collected and preserved in accordance with the methods identified in the Table, "Sample Collection, Preservation and Analysis for Monitoring Non-Visible Pollutants" provided in Section 7.7.1.6. Only the QSP, or personnel trained in water quality sampling under the direction of the QSP shall collect samples.

Sample collection and handling requirements are described in Section 7.7.7.

7.7.1.6 Sample Analysis

Samples shall be analyzed using the analytical methods identified in the Table 7.11.

Samples will be analyzed by:

Laboratory Name:	Weck Laboratories, Inc
Street Address:	14859 E. Clark Ave.
City, State Zip:	Industry, CA 91745
Telephone Number:	(626) 336-2139

Samples will be delivered to the laboratory by:

Driven by Contractor	☐	Yes	☒	No
Picked up by Laboratory Courier	☒	Yes	☐	No
Shipped	☒	Yes	☐	No

Table 7.11 Sample Collection, Preservation and Analysis for Monitoring Non-Visible Pollutants

Constituent	Analytical Method	Minimum Sample Volume	Sample Bottle	Sample Preservation	Reporting Limit	Maximum Holding Time	Maximum Allowable RPD	Recovery Lower Limit	Recovery Upper Limit
VOCs - Solvents	EPA 8260B	3 x 40 mL	VOA-glass	Store at 4°C, HCl to pH<2	1 ug/L	14 days	- -	Constituent specific	
SVOCs	EPA 8270C	1 x 1000 mL	Glass-Amber	Store at 4°C	10 ug/L	7 days	- -	Constituent specific	
Pesticides/PCBs	EPA 8081A/8082	1 x 1000 mL	Glass-Amber	Store at 4°C	0.1 ug/L	7 days	25%	Constituent specific	
Herbicides	EPA 8151A	1 x 1000 mL	Glass-Amber	Store at 4°C	0.080-10 ug/L	7 days	30%	20%	150%
BOD	EPA 405.1	1 x 500 mL	Polypropylene	Store at 4°C	1 mg/L	48 hours	20%	80%	120%
COD	EPA 410.1	1 x 100 mL	Glass-Amber	Store at 4°C, H_2SO_4 to pH<2	10 mg/L	28 days	20%	80%	120%
pH	EPA 150.1	1 x 100 mL	Polypropylene	None	0.01 pH units	Immediate	20%	NA	NA
Alkalinity	SM 2320B	1 x 250 mL	Polypropylene	Store at 4°C	1 mg/L	14 days	20%	80%	120%
Metals (Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, Se, Na, Th, Va, Zn)	EPA 200.8	1 x 250 mL	Polypropylene	Store at 4°C, HNO_3 to pH<2	0.2-5 ug/L	6 months	20%	75%	125%
Anions (Sulfate, Nitrate, Bromide, Chloride, Flouride, Nitrite, O-Phosphorus)	EPA 300.0	1 x 125 mL	Polypropylene	None	0.05-0.5 mg/L	28 days	20%	90%	110%
Potassium	EPA 7610	1 x 250 mL	Polypropylene	Store at 4°C, HNO_3 to pH<2	0.5 mg/L	6 months	20%	80%	120%
Calcium	EPA 6010B	1 x 250 mL	Polypropylene	Store at 4°C, HNO_3 to pH<2	0.5 mg/L	6 months	20%	80%	120%
Acidity	EPA 305.1	1 x 125 mL	Polypropylene	Store at 4°C	2 mg/L	14 days	20%	80%	120%
TDS	EPA 160.1	1 x 100 mL	Polypropylene	Store at 4°C	1 mg/L	7 days	20%	80%	120%
Sulfate	EPA 375.4	1 x 125 mL	Polypropylene	Store at 4°C	1 mg/L	28 days	20%	90%	110%
Nitrate	EPA 300.0	1 x 100 mL	Polypropylene	Store at 4°C, H_2SO_4 to pH<2	0.1 mg/L	48 hours	20%	80%	120%
Total Phosphorus	EPA 300.0	1 x 100 mL	Polypropylene	Store at 4°C	0.1 mg/L	28 days	20%	80%	120%

Table 7.11 Sample Collection, Preservation and Analysis for Monitoring Non-Visible Pollutants

Constituent	Analytical Method	Minimum Sample Volume	Sample Bottle	Sample Preservation	Reporting Limit	Maximum Holding Time	Maximum Allowable RPD	Recovery Lower Limit	Recovery Upper Limit
TKN	EPA 351.3	1 x 100 mL	Polypropylene	Store at 4°C, H_2SO_4 to pH<2	0.10 mg/L	28 days	<1	80%	120%
TOC	EPA 415.1	1 x 100 mL	Polypropylene	Store at 4°C, H_2SO_4 to pH<2	1 mg/L	28 days	- -	80%	120%
Total Residual Chlorine	SM 4500	1 x 500 mL	Glass-Amber	Do not expose to light	0.1 mg/L	Immediate	- -	- -	- -
Total Phenolics	EPA 420.1/9065	1 x 1000 mL	Glass-Amber	Store at 4°C, H_2SO_4 to pH<2	0.03 mg/L	28 days	0	80%	120%

Notes:

°C	-	Degree Celsius	ug/L	-	micrograms per liter
BOD	-	Biological Oxygen Demand	mL	-	milliliter
COD	-	Chemical Oxygen Demand	PCB	-	Polychlorinated Biphenyl
VOC	-	Volatile Organic Compound	SVOC	-	Semi-Volatile Organic Compound
EPA	-	Environmental Protection Agency	HCl	-	Hydrogen Chloride
H_2SO_4	-	Hydrogen Sulfide	VOA	-	Volatile Organic Analysis
HNO_3	-	Nitric Acid	mg/L	-	milligrams per liter
TDS	-	Total Dissolved Solids	TOC	-	Total Organic Carbon (water)
L	-	Liter	TKN	-	Total Kjeldahl Nitrogen
NA	-	Not Applicable			
RPD	-	Relative percent difference between duplicate analyses.			

Recovery, lower and upper limits refer to analysis of spiked samples.

7.7.1.7 Data Evaluation and Reporting

The QSP shall complete an evaluation of the water quality sample analytical results.

Runoff/downgradient results shall be compared with the associated upgradient/unaffected results and any associated run-on results. Should the runoff/downgradient sample show an increased level of the tested analyte relative to the unaffected background sample, which cannot be explained by run-on results, the BMPs, site conditions, and surrounding influences shall be assessed to determine the probable cause for the increase.

As determined by the site and data evaluation, appropriate BMPs shall be repaired or modified to mitigate discharges of non-visible pollutant concentrations. Any revisions to the BMPs shall be recorded as an amendment to the SWPPP.

The General Permit prohibits the storm water discharges that contain hazardous substances equal to or in excess of reportable quantities established in 40 C.F.R. §§ 117.3 and 302.4. The results of any non-stormwater discharge results that indicate the presence of a hazardous substance in excess of established reportable quantities shall be immediately reported to the Regional Water Board and other agencies as required by 40 C.F.R. §§ 117.3 and 302.4.

Results of non-visible pollutant monitoring shall be reported in the Annual Report.

7.7.2 Sampling and Analysis Plan for pH and Turbidity in Stormwater Runoff Discharges

Sampling and analysis of runoff for pH and turbidity is required for this project. This Sampling and Analysis Plan describes the strategy for monitoring turbidity and pH levels of stormwater runoff discharges from the project site and run-on that may contribute to an exceedance of a Numeric Action Level (NAL).

Samples for turbidity will be collected from all drainage areas with disturbed soil areas and samples for pH will be collected from all drainage areas with a high risk of pH altering discharge.

7.7.2.1 Sampling Schedule

Stormwater runoff samples shall be collected for turbidity from each day of a qualifying rain event that results in a discharge from the project site. At minimum, turbidity samples will be collected from each site discharge location draining a disturbed area. A minimum of three samples will be collected per day of discharge during a qualifying event. Samples should be representative of the total discharge from the project each day of discharge during the qualifying event. Typically representative samples will be spaced in time throughout the daily discharge event.

Stormwater runoff samples shall be collected for pH from each day of qualifying rain events that result in a discharge from the project site. Note that pH samples are only required to be collected during project phases and from drainage areas with a high risk of pH altering discharge. A minimum of three samples will be collected per day of discharge during a qualifying event. Samples should be representative of the total discharge from the location each day of discharge during the qualifying event. Typically representative samples will be spaced in time throughout the daily discharge event.

Stored or collected water from a qualifying storm event when discharged shall be tested for turbidity and pH (when applicable). Stored or collected water from a qualifying event may be sampled at the point it is released from the storage or containment area or at the site discharge location.

Run-on samples shall be collected whenever the QSP identifies that run-on has the potential to contribute to an exceedance of a NAL.

7.7.2.2 Sampling Locations

Sampling locations are based on the site runoff discharge locations and locations where run-on enters the site; accessibility for sampling; and personnel safety. Planned pH and turbidity sampling locations are shown on the Site Maps in Appendix B and include the locations identified in Table 7.13 and Table 7.14.

Two sampling location(s) on the project site and the contractor's yard have been identified for the collection of runoff samples. Table 7.12 also provides an estimate of the site's area that drains to each location.

Table 7.12 Turbidity and pH Runoff Sample Locations

Sample Location Number	Sample Location	Estimate of Site (%)
1	West discharge	50
2	East discharge	50

The project does not receive run-on with the potential to exceed NALs or Receiving Water Monitoring Triggers.

7.7.2.3 Monitoring Preparation

Turbidity and pH samples will be collected and analyzed by:

Contractor	☐ Yes	☒ No
Consultant	☒ Yes	☐ No
Laboratory	☒ Yes	☐ No

An adequate stock of monitoring supplies and equipment for monitoring turbidity and will be available on the project site prior to a sampling event. Monitoring supplies and equipment will be stored in a cool temperature environment that will not come into contact with rain or direct sunlight. Sampling personnel will be available to collect samples in accordance with the sampling schedule. Supplies maintained at the project site will include, but are not limited to, field meters, extra batteries; clean powder-free nitrile gloves, sample collection equipment, appropriate sample containers, paper towels, personal rain gear, and *Effluent Sampling Field Log Sheets* and CoC forms provided in CSMP Attachment 3 "Example Forms".

The contractor will obtain and maintain the field testing instruments, as identified in Section 7.7.2.6, for analyzing samples in the field by contractor sampling personnel.

Samples on the project site will be collected by the following Laboratory:

Company Name:	Weck Laboratories, Inc.
Street Address:	14859 E. Clark Avenue
City, State, Zip:	City of Industry, CA 91745
Telephone Number:	(626) 336-2139

The QSP or his/her designee will contact Weck Laboratories, Inc. 24 hours prior to a predicted rain event or for an unpredicted event, as soon as a rain event begins to ensure that adequate sample collection personnel, supplies for monitoring pH and turbidity are available and will be mobilized to collect samples on the project site in accordance with the sampling schedule.

7.7.2.4 Field Parameters

Samples shall be analyzed for the constituents indicated in the Table 7.14.

Table 7.14 Sample Collection and Analysis for Monitoring Turbidity and pH

Parameter	Test Method	Minimum Sample Volume(1)	Sample Collection Container Type	Detection Limit (minimum)
Turbidity	Field meter/probe with calibrated portable instrument	500 mL	Polypropylene or Glass (Do not collect in meter sample cells)	1 NTU
pH	Field meter/probe with calibrated portable instrument or calibrated pH test kit	100 mL	Polypropylene	0.2 pH units

Notes: [1] Minimum sample volume recommended. Specific volume requirements will vary by instrument; check instrument manufacturer instructions.
L – Liter
mL – Milliliter
NTU – Nephelometric Turbidity Unit

7.7.2.5 Sample Collection

Samples of discharge shall be collected at the designated runoff and run-on sampling locations shown on the Site Maps in Appendix B. Run-on samples shall be collected within close proximity of the point of run-on to the project.

Only personnel trained in water quality sampling and field measurements working under the direction of the QSP shall collect samples.

Sample collection and handling requirements are described in Section 7.7.7.

7.7.2.6 Field Measurements

Samples collected for field analysis, collection, analysis and equipment calibration shall be in accordance with the field instrument manufacturer's specifications.

Immediately following collection, samples for field analysis shall be tested in accordance with the field instrument manufacturer's instructions and results recorded on the *Effluent Sampling Field Log Sheet*.

The manufacturers' instructions are included in CSMP Attachment 4 "Field Meter Instructions". Field sampling staff shall review the instructions prior to each sampling event and follow the instructions in completing measurement of the samples.

- The instrument(s) shall be maintained in accordance with manufacturer's instructions.
- The instrument(s) shall be calibrated before each sampling and analysis event.
- Maintenance and calibration records shall be maintained with the SWPPP.

The QSP may authorize alternate equipment provided that the equipment meets the Construction General Permit's requirements and the manufacturers' instructions for calibration and use are added to CSMP Attachment 4 "Field Meter Instructions".

7.7.2.7 Data Evaluation and Reporting

Immediately upon completing the measurements for the sampling event, provide the *Effluent Sampling Field Log Sheets* to the QSP for evaluation.

Numeric Action Levels

This project is subject to NALs for pH and turbidity (Table 7.16). Compliance with the NAL for pH and turbidity is based on a daily average. Upon receiving the field log sheets, the QSP shall immediately calculate the arithmetic average of the turbidity samples, and the logarithmic average of the pH samples[1] to determine if the NALs, shown in the table below, have been exceeded.

Table 7.16 Numeric Action Levels

Parameter	Unit	Daily Average
pH	pH units	Lower NAL = 6.5 Upper NAL = 8.5
Turbidity	NTU	250 NTU

The QSP shall submit copies of the completed *Effluent Sampling Field Log Sheets* to the contractor and owner.

[1] Daily average pH values must be calculated through the logarithmic method. In order to calculate an average, you must: (1) Convert the pH measurements from logarithms to real numbers; (2) Take the average of the real numbers; and (3) Convert the average of the real numbers back to a logarithm.

In the event that the pH or turbidity NAL is exceeded, the QSP shall immediately notify the Owner's Representative (LRP) and investigate the cause of the exceedance and identify corrective actions.

Exceedances of NALs shall be electronically reported to the State Water Board by QSP through the SMARTs system within 10 days of the conclusion of the storm event. If requested by the Regional Board, a NAL Exceedance report will be submitted. The NAL Exceedance Report must contain the following information:

- Analytical method(s), method reporting unit(s), and MDL(s) of each parameter;
- Date, place, time of sampling, visual observation, and/or measurements, including precipitation; and
- Description of the current BMPs associated with the sample that exceeded the NAL and the proposed corrective actions taken.

Receiving Water Monitoring Triggers

This project is not subject to Receiving Water Monitoring Triggers because it does not have a direct discharge to the receiving water.

7.7.3 Sampling and Analysis Plan for pH, Turbidity, and SSC in Receiving Water

This project is not subject to Receiving Water Monitoring.

7.7.4 Sampling and Analysis Plan for Non-Stormwater Discharges

This Sampling and Analysis Plan for non-stormwater discharges describes the sampling and analysis strategy and schedule for monitoring pollutants in authorized and unauthorized non-stormwater discharges from the project site in accordance with the requirements of the Construction General Permit.

Sampling of non-stormwater discharges will be conducted when an authorized or unauthorized non-stormwater discharge is observed discharging from the project site. In the event that non-stormwater discharges run-on to the project site from offsite locations, and this run-on has the potential to contribute to a violation of a NAL, the run-on will also be sampled.

The following authorized non-stormwater discharges identified in Section 2.7, have the potential to be discharged from the project site.

- Irrigation of vegetative erosion control measures
- Pipe flushing and testing
- Water used for dust control

In addition to the above authorized stormwater discharges, some construction activities have the potential to result in an unplanned (unauthorized) non-stormwater discharge if BMPs fail. These activities include:

- Vehicle and equipment wash water
- Sanitary wastes

- Chemical leaks and/or spills of any kind, including but not limited to petroleum, vehicles, and equipment.

7.7.4.1 Sampling Schedule

Samples of authorized or unauthorized non-stormwater discharges shall be collected when they are observed.

7.7.4.2 Sampling Locations

Samples shall be collected from the discharge point of the construction site where the non-stormwater discharge is running off the project site. Site discharge locations are shown on the Site Maps in SWPPP Appendix A and include the locations identified below.

Two sampling location(s) on the project site and the contractor's yard have been identified where non-stormwater discharges may runoff from the project site. (Table 7.20)

Table 7.20 Non-stormwater Discharge Sample Locations

Sample Location Number	Sample Location	Sample Location Latitude and Longitude (Decimal Degrees)
1	Contractor yard	Determine in field
2	Material storage	Determine in field

7.7.4.3 Monitoring Preparation

Non-stormwater discharge samples will be collected by:

Contractor	☐ Yes	☒ No
Consultant	☒ Yes	☐ No
Laboratory	☒ Yes	☐ No

An adequate stock of monitoring supplies and equipment for monitoring non-stormwater discharges will be available on the project site. Monitoring supplies and equipment will be stored in a cool temperature environment that will not come into contact with rain or direct sunlight. Personnel trained in sampling will be available to collect samples in accordance with the sampling schedule. Supplies maintained at the project site will include, but are not limited to, clean powder-free nitrile gloves, sample collection equipment, field meters, coolers, appropriate number and volume of sample bottles, identification labels, re-sealable storage bags, paper towels, personal rain gear, ice, and *Effluent Sampling Field Log Sheets* and CoC forms provided in CSMP Attachment 3 "Example Forms".

The contractor will obtain and maintain the field testing instruments, as identified in Section 7.7.2, for analyzing samples in the field by contractor sampling personnel.

7.7.4.4 Analytical Constituents

All non-stormwater discharges that flow through a disturbed area shall, at minimum, be monitored for turbidity.

All non-stormwater discharges that flow through an area where they are exposed to pH altering materials shall be monitored for pH.

The QSP shall identify additional pollutants to be monitored for each non-stormwater discharge incident based on the source of the non-stormwater discharge. If the source of an unauthorized non-stormwater discharge is not known, monitoring for pH, turbidity, MBAS, TOC, and residual chlorine or chloramines is recommended to help identify the source of the discharge.

Non-stormwater discharge run-on shall be monitored, at minimum, for pH and turbidity. The QSP shall identify additional pollutants to be monitored for each non-stormwater discharge incident based on the source of the non-stormwater discharge. If the source of an unauthorized non-stormwater discharge is not known, monitoring for pH, turbidity, MBAS, TOC, and residual chlorine or chloramines is recommended to help identify the source of the discharge.

Table 7.22 lists the specific sources and types of potential non-visible pollutants on the project site and the water quality indicator constituent(s) for that pollutant.

Table 7.22 Potential Non-Stormwater Discharge Pollutants and Water Quality Indicator Constituents

Pollutant Source	Pollutant	Water Quality Indicator Constituent
Disturbed Areas	Sediment	Turbidity
Asphalt Concrete Pavement	pH	pH

7.7.4.5 Sample Collection

Samples shall be collected at the discharge locations where the non-stormwater discharge is leaving the project site. Potential discharge locations are shown on the Site Maps in Appendix B and identified in Section 7.7.4.2.

Grab samples shall be collected and preserved in accordance with the methods identified in Table 7.23. Only personnel trained in water quality sampling under the direction of the QSP shall collect samples.

Sample collection and handling requirements are described in Section 7.7.7.

7.7.4.6 Sample Analysis

Samples shall be analyzed using the analytical methods identified in Table 7.23.

7.7.4.7 Data Evaluation and Reporting

The QSP shall complete an evaluation of the water quality sample analytical results.

Turbidity and pH results shall be evaluated for compliance with NALs as identified in Section 7.7.2.7.

Runoff results shall also be evaluated for the constituents suspected in the non-stormwater discharge. Should the runoff sample indicate the discharge of a pollutant which cannot be explained by run-on results, the BMPs, site conditions, and surrounding influences shall be assessed to determine the probable cause for the increase.

As determined by the site and data evaluation, appropriate BMPs shall be repaired or modified to mitigate discharges of non-visible pollutant concentrations. Any revisions to the BMPs shall be recorded as an amendment to the SWPPP.

Non-storm water discharge results shall be submitted with the Annual Report.

The General Permit prohibits the non-storm water discharges that contain hazardous substances equal to or in excess of reportable quantities established in 40 C.F.R. §§ 117.3 and 302.4. The results of any non-stormwater discharge results that indicate the presence of a hazardous substance in excess of established reportable quantities shall be immediately reported to the Regional Water Board.

Table 7.23 Sample Collection, Preservation and Analysis for Monitoring Pollutants in Non-Stormwater Discharges

Constituent	Analytical Method	Minimum Sample Volume	Sample Bottle	Sample Preservation	Reporting Limit	Maximum Holding Time	Maximum Allowable RPD	Recovery Lower Limit	Recovery Upper Limit
pH	EPA 150.1	1 x 100 mL	Polypropylene	None	0.01 pH units	Immediate	20%	NA	NA
Anions (Sulfate, Nitrate, Bromide, Chloride, Flouride, Nitrite, O-Phosphorus)	EPA 300.0	1 x 125 mL	Polypropylene	None	0.05-0.5 mg/L	28 days	20%	90%	110%
TDS	EPA 160.1	1 x 100 mL	Polypropylene	Store at 4°C	1 mg/L	7 days	20%	80%	120%
Total Residual Chlorine	SM 4500	1 x 500 mL	Glass-Amber	Do not expose to light	0.1 mg/L	Immediate	- -	- -	- -

Notes:

ug/L - micrograms per liter
mL - milliliter
EPA - Environmental Protection Agency
mg/L - milligrams per liter
TDS - Total Dissolved Solids
Recovery, lower and upper limits refer to analysis of spiked samples.

7.7.5 Sampling and Analysis Plan for Other Pollutants Required by the Regional Water Board

The Regional Water Board has not specified monitoring for additional pollutants.

7.7.6 Training of Sampling Personnel

Sampling personnel shall be trained to collect, maintain, and ship samples in accordance with the Surface Water Ambient Monitoring program (SWAMP) 2008 Quality Assurance Program Plan (QAPrP). Training records of designated contractor sampling personnel are provided in Appendix K.

7.7.7 Sample Collection and Handling

7.7.7.1 Sample Collection

Samples shall be collected at the designated sampling locations shown on the Site Maps and listed in the preceding sections. Samples shall be collected, maintained and shipped in accordance with the SWAMP 2008 Quality Assurance Program Plan (QAPrP).

Grab samples shall be collected and preserved in accordance with the methods identified in preceding sections.

To maintain sample integrity and prevent cross-contamination, sample collection personnel shall follow the protocols below.

- Collect samples (for laboratory analysis) only in analytical laboratory-provided sample containers;
- Wear clean, powder-free nitrile gloves when collecting samples;
- Change gloves whenever something not known to be clean has been touched;
- Change gloves between sites;
- Decontaminate all equipment (e.g. bucket, tubing) prior to sample collection using a trisodium phosphate water wash, distilled water rinse, and final rinse with distilled water. (Dispose of wash and rinse water appropriately, i.e., do not discharge to storm drain or receiving water). Do not decontaminate laboratory provided sample containers;
- Do not smoke during sampling events;
- Never sample near a running vehicle;
- Do not park vehicles in the immediate sample collection area (even non-running vehicles);
- Do not eat or drink during sample collection; and
- Do not breathe, sneeze, or cough in the direction of an open sample container.

The most important aspect of grab sampling is to collect a sample that represents the entire runoff stream. Typically, samples are collected by dipping the collection container in the runoff flow paths and streams as noted below.

i. For small streams and flow paths, simply dip the bottle facing upstream until full.
ii. For larger stream that can be safely accessed, collect a sample in the middle of the flow stream by directly dipping the mouth of the bottle. Once again making sure that the opening of the bottle is facing upstream as to avoid any contamination by the sampler.

iii. For larger streams that cannot be safely waded, pole-samplers may be needed to safely access the representative flow.
iv. Avoid collecting samples from ponded, sluggish or stagnant water.
v. Avoid collecting samples directly downstream from a bridge as the samples can be affected by the bridge structure or runoff from the road surface.

7.7.7.2 Sample Handling

Turbidity and pH measurements must be conducted immediately. Do not store turbidity or pH samples for later measurement.

Samples for laboratory analysis must be handled as follows. Immediately following sample collection:

- Cap sample containers;
- Complete sample container labels;
- Sealed containers in a re-sealable storage bag;
- Place sample containers into an ice-chilled cooler;
- Document sample information on the *Effluent Sampling Field Log Sheet*; and
- Complete the CoC.

All samples for laboratory analysis must be maintained between 0-6 degrees Celsius during delivery to the laboratory. Samples must be kept on ice, or refrigerated, from sample collection through delivery to the laboratory. Place samples to be shipped inside coolers with ice. Make sure the sample bottles are well packaged to prevent breakage and secure cooler lids with packaging tape.

Ship samples that will be laboratory analyzed to the analytical laboratory right away. Hold times are measured from the time the sample is collected to the time the sample is analyzed. The General Permit requires that samples be received by the analytical laboratory within 48 hours of the physical sampling (unless required sooner by the analytical laboratory).

Laboratory Name:	Weck Laboratories, Inc.
Address:	14859 E. Clark Ave
City, State Zip:	Industry, CA 91745

7.7.7.3 Sample Documentation Procedures

All original data documented on sample bottle identification labels, *Effluent Sampling Field Log Sheet*, and CoCs shall be recorded using waterproof ink. These shall be considered accountable documents. If an error is made on an accountable document, the individual shall make corrections by lining through the error and entering the correct information. The erroneous information shall not be obliterated. All corrections shall be initialed and dated.

Duplicate samples shall be identified consistent with the numbering system for other samples to prevent the laboratory from identifying duplicate samples. Duplicate samples shall be identified in the Effluent Sampling Field Log Sheet.

Sample documentation procedures include the following:

Sample Bottle Identification Labels: Sampling personnel shall attach an identification label to each sample bottle. Sample identification shall uniquely identify each sample location.

Field Log Sheets: Sampling personnel shall complete the *Effluent Sampling Field Log Sheet* and *Receiving Water Sampling Field Log Sheet* for each sampling event, as appropriate.

Chain of Custody: Sampling personnel shall complete the CoC for each sampling event for which samples are collected for laboratory analysis. The sampler will sign the CoC when the sample(s) is turned over to the testing laboratory or courier.

7.8 Active Treatment System Monitoring

An Active Treatment System (ATS) will be deployed on the site?

☐ Yes ☒ No

This project does not require a project specific Sampling and Analysis Plan for an ATS because deployment of an ATS is not planned.

7.9 Bioassessment Monitoring

This project is not subject to bioassessment monitoring because it is not a Risk Level 3 project.

7.10 Watershed Monitoring Option

This project is not participating in a watershed monitoring option.

7.11 Quality Assurance and Quality Control

An effective Quality Assurance and Quality Control (QA/QC) plan shall be implemented as part of the CSMP to ensure that analytical data can be used with confidence. QA/QC procedures to be initiated include the following:

- Field logs;
- Clean sampling techniques;
- CoCs;
- QA/QC Samples; and
- Data verification.

Each of these procedures is discussed in more detail in the following sections.

7.11.1 Field Logs

The purpose of field logs is to record sampling information and field observations during monitoring that may explain any uncharacteristic analytical results. Sampling information to be included in the field log include the date and time of water quality sample collection, sampling personnel, sample container identification numbers, and types of samples that were collected. Field observations should be noted in the field log for any abnormalities at the sampling location (color, odor, BMPs, etc.). Field measurements for pH and turbidity should also be recorded in the field log. A Visual Inspection Field Log and an Effluent Sampling Field Log Sheet are included in CSMP Attachment 3 “Example Forms”.

7.11.2 Clean Sampling Techniques

Clean sampling techniques involve the use of certified clean containers for sample collection and clean powder-free nitrile gloves during sample collection and handling. As discussed in Section 7.7.7, adoption of a clean sampling approach will minimize the chance of field contamination and questionable data results.

7.11.3 Chain of Custody

The sample CoC is an important documentation step that tracks samples from collection through analysis to ensure the validity of the sample. Sample CoC procedures include the following:

- Proper labeling of samples;
- Use of CoC forms for all samples; and
- Prompt sample delivery to the analytical laboratory.

Analytical laboratories usually provide CoC forms to be filled out for sample containers. An example CoC is included in CSMP Attachment 3 "Example Forms".

7.11.4 QA/QC Samples

QA/QC samples provide an indication of the accuracy and precision of the sample collection; sample handling; field measurements; and analytical laboratory methods. The following types of QA/QC will be conducted for this project:

☒ Field Duplicates at a frequency of one duplicate minimum per sampling event
(Required for all sampling plans with field measurements or laboratory analysis)

☐ Equipment Blanks
(Only needed if equipment used to collect samples could add the pollutants to sample)

☐ Field Blanks
(Only required if sampling method calls for field blanks)

☐ Travel Blanks
(Required for sampling plans that include VOC laboratory analysis)

7.11.4.1 Field Duplicates

Field duplicates provide verification of laboratory or field analysis and sample collection. Duplicate samples shall be collected, handled, and analyzed using the same protocols as primary samples. The sample location where field duplicates are collected shall be randomly selected from the discharge locations. Duplicate samples shall be collected immediately after the primary sample has been collected. Duplicate samples must be collected in the same manner and as close in time as possible to the original sample. Duplicate samples shall not influence any evaluations or conclusion.

7.11.4.2 Equipment Blanks

Equipment blanks provide verification that equipment has not introduced a pollutant into the sample. Equipment blanks are typically collected when:

- New equipment is used;
- Equipment that has been cleaned after use at a contaminated site;

- Equipment that is not dedicated for surface water sampling is used; or
- Whenever a new lot of filters is used when sampling metals.

7.11.4.3 Field Blanks

Field blanks assess potential sample contamination levels that occur during field sampling activities. De-ioninzed water field blanks are taken to the field, transferred to the appropriate container, and treated the same as the corresponding sample type during the course of a sampling event.

7.11.4.4 Travel Blanks

Travel blanks assess the potential for cross-contamination of volatile constituents between sample containers during shipment from the field to the laboratory. De-ioninzed water blanks are taken along for the trip and held unopened in the same cooler with the VOC samples.

7.11.5 Data Verification

After results are received from the analytical laboratory, the QSP shall verify the data to ensure that it is complete, accurate, and the appropriate QA/QC requirements were met. Data must be verified as soon as the data reports are received. Data verification shall include:

- Check the CoC and laboratory reports.
  Make sure all requested analyses were performed and all samples are accounted for in the reports.
- Check laboratory reports to make sure hold times were met and that the reporting levels meet or are lower than the reporting levels agreed to in the contract.
- Check data for outlier values and follow up with the laboratory.
  Occasionally typographical errors, unit reporting errors, or incomplete results are reported and should be easily detected. These errors need to be identified, clarified, and corrected quickly by the laboratory. The QSP should especially note data that is an order of magnitude or more different than similar locations, or is inconsistent with previous data from the same location.
- Check laboratory QA/QC results.
  EPA establishes QA/QC checks and acceptable criteria for laboratory analyses. These data are typically reported along with the sample results. The QSP shall evaluate the reported QA/QC data to check for contamination (method, field, and equipment blanks), precision (laboratory matrix spike duplicates), and accuracy (matrix spikes and laboratory control samples). When QA/QC checks are outside acceptable ranges, the laboratory must flag the data, and usually provides an explanation of the potential impact to the sample results.
- Check the data set for outlier values and, accordingly, confirm results and re-analyze samples where appropriate.
  Sample re-analysis should only be undertaken when it appears that some part of the QA/QC resulted in a value out of the accepted range. Sample results may not be discounted unless the analytical laboratory identifies the required QA/QC criteria were not met and confirms this in writing.

Field data including inspections and observations must be verified as soon as the field logs are received, typically at the end of the sampling event. Field data verification shall include:

- Check field logs to make sure all required measurements were completed and appropriately documented;
- Check reported values that appear out of the typical range or inconsistent; Follow-up immediately to identify potential reporting or equipment problems, if appropriate, recalibrate equipment after sampling;
- Verify equipment calibrations;
- Review observations noted on the field logs; and
- Review notations of any errors and actions taken to correct the equipment or recording errors.

7.12 Records Retention

All records of stormwater monitoring information and copies of reports (including Annual Reports) must be retained for a period of at least three years from date of submittal or longer if required by the Regional Water Board.

Results of visual monitoring, field measurements, and laboratory analyses must be kept in the SWPPP along with CoCs, and other documentation related to the monitoring.

Records are to be kept onsite while construction is ongoing. Records to be retained include:

- The date, place, and time of inspections, sampling, visual observations, and/or measurements, including precipitation;
- The individual(s) who performed the inspections, sampling, visual observation, and/or field measurements;
- The date and approximate time of field measurements and laboratory analyses;
- The individual(s) who performed the laboratory analyses;
- A summary of all analytical results, the method detection limits and reporting limits, and the analytical techniques or methods used;
- Rain gauge readings from site inspections;
- QA/QC records and results;
- Calibration records;
- Visual observation and sample collection exemption records;
- The records of any corrective actions and follow-up activities that resulted from analytical results, visual observations, or inspections; and
- NAL Exceedance Reports

CSMP Attachment 1: Weather Reports

CSMP Attachment 2: Monitoring Records

CSMP Attachment 3: Example Forms

Rain Gauge Log Sheet				
Construction Site Name:				
WDID #:				
Date (mm/dd/yy)	Time (24-hr)	Initials	Rainfall Depth (Inches)	Notes:

Risk Level 1, 2, 3 ***Visual Inspection Field Log Sheet***						
Date and Time of Inspection:				Report Date:		
Inspection Type:	☐ Weekly	☐ Before predicted rain	☐ During rain event	☐ Following qualifying rain event	☐ Contained stormwater release	☐ Quarterly non-stormwater
Site Information						
Construction Site Name:						
Construction stage and completed activities:					Approximate area of exposed site:	
Weather and Observations						
Date Rain Predicted to Occur:				Predicted % chance of rain:		
Estimate storm beginning: _____ (date and time)		Estimate storm duration:_____ (hours)		Estimate time since last storm: _____ (days or hours)	Rain gauge reading: _____ (inches)	
Observations: If yes identify location						
Odors	Yes ☐	No ☐				
Floating material	Yes ☐	No ☐				
Suspended Material	Yes ☐	No ☐				
Sheen	Yes ☐	No ☐				
Discolorations	Yes ☐	No ☐				
Turbidity	Yes ☐	No ☐				
Site Inspections						
Outfalls or BMPs Evaluated			**Deficiencies Noted**			
(add additional sheets or attached detailed BMP Inspection Checklists)						
Photos Taken:	Yes ☐	No ☐	Photo Reference IDs:			
Corrective Actions Identified (note if SWPPP/REAP change is needed)						
Inspector Information						
Inspector Name:				Inspector Title:		
Signature:					Date:	

Risk Level 2 ***Effluent Sampling Field Log Sheets***			
Construction Site Name:		Date:	Time Start:
Sampler:			
Sampling Event Type:	☐ Stormwater	☐ Non-stormwater	☐ Non-visible pollutant
Field Meter Calibration			
pH Meter ID No./Desc.: Calibration Date/Time:		Turbidity Meter ID No./Desc.: Calibration Date/Time:	
Field pH and Turbidity Measurements			
Discharge Location Description	pH	Turbidity	Time
Grab Samples Collected			
Discharge Location Description	Sample Type		Time
Additional Sampling Notes:			
Time End:			

Risk Level 3 ***Effluent Sampling Field Log Sheets***			
Construction Site Name:		Date:	Time Start:
Sampler:			
Sampling Event Type:	☐ Stormwater	☐ Non-stormwater	☐ Non-visible pollutant

Field Meter Calibration	
pH Meter ID No./Desc.: Calibration Date/Time:	Turbidity Meter ID No./Desc.: Calibration Date/Time:

Field pH and Turbidity Measurements			
Discharge Location Description	pH	Turbidity	Time

Grab Samples Collected		
Discharge Location Description	Other (specify)	Time

Additional Sampling Notes:
Time End:

Risk Level 3 ***Receiving Water Sampling Field Log Sheets***		
Construction Site Name:	Date:	Time Start:
Sampler:		
Receiving Water Description and Observations		
Receiving Water Name/ID:		
Observations:		
Odors	Yes ☐ No ☐	
Floating material	Yes ☐ No ☐	
Suspended Material	Yes ☐ No ☐	
Sheen	Yes ☐ No ☐	
Discolorations	Yes ☐ No ☐	
Turbidity	Yes ☐ No ☐	
Field Meter Calibration		
pH Meter ID No./Desc.: Calibration Date/Time:	Turbidity Meter ID No./Desc.: Calibration Date/Time:	

Field pH and Turbidity Measurements and SSC Grab Sample			
Upstream Location			
Type	Result	Time	Notes
pH			
Turbidity			
SSC	Collected Yes ☐ No ☐		
Downstream Location			
Type	Result	Time	Notes
pH			
Turbidity			
SSC	Collected Yes ☐ No ☐		
Additional Sampling Notes:			
Time End:			

NAL Exceedance Evaluation Summary Report	Page __ of __
Project Name	
Project WDID	
Project Location	
Date of Exceedance	
Type of Exceedance	**NAL Daily Average ☐ pH ☐ Turbidity** **☐ Other (specify) _____**
Measurement or Analytical Method	**☐ Field meter** **(Sensitivity: _____)** **☐ Lab method (specify) _____** **(Reporting Limit: _____)** **(MDL: _____)**
Calculated Daily Average	**☐ pH _____ pH units** **☐ Turbidity _____ NTU**
Rain Gauge Measurement	**_____ inches**
Compliance Storm Event	**_____ inches (5-year, 24-hour event)**
Visual Observations on Day of Exceedance	

NAL Exceedance Evaluation Summary Report	Page __ of __
Description of BMPs in Place at Time of Event	
Initial Assessment of Cause	
Corrective Actions Taken (deployed after exceedance)	
Additional Corrective Actions Proposed	
Report Completed By	_____ **(Print Name, Title)**
Signature	_____

CHAIN-OF-CUSTODY **DATE:** **Lab ID:**

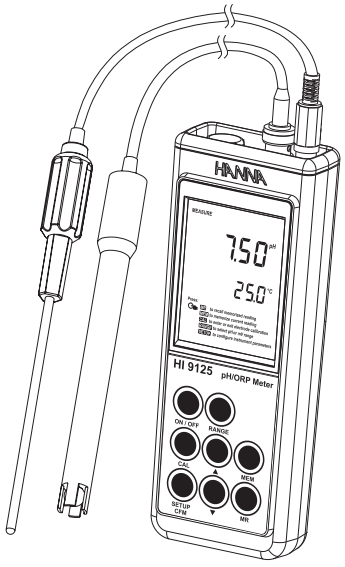
DESTINATION LAB: ATTN: **ADDRESS:** **Office Phone:** **Cell Phone:**							REQUESTED ANALYSIS				Notes:
SAMPLED BY:											
Contact:											
Project Name											
Client Sample ID	**Sample Date**	**Sample Time**	**Sample Matrix**	**Container #**	**Container Type**	**Container Pres.**					

SENDER COMMENTS:	**RELINQUISHED BY**		
	Signature:		
	Print:		
	Company:		
	Date:		TIME:
LABORATORY COMMENTS:	**RECEIVED BY**		
	Signature:		
	Print:		
	Company:		
	Date:	TIME:	

Instruction Manual

HI 9124 HI 9125

Portable Waterproof pH Meters



HANNA® instruments
www.hannainst.com

Dear Customer,

Thank you for choosing a Hanna Instruments product.

Please read this instruction manual carefully before using these instruments. This manual will provide you with the necessary information for correct use of these instruments, as well as a precise idea of their versatility. If you need additional technical information, do not hesitate to e-mail us at tech@hannainst.com.

WARRANTY

HI 9124 & **HI 9125** are guaranteed for two years against defects in workmanship and materials when used for their intended purpose and maintained according to instructions. Electrodes and probes are guaranteed for six months. This warranty is limited to repair or replacement free of charge.

Damage due to accidents, misuse, tampering or lack of prescribed maintenance is not covered.

If service is required, contact the dealer from whom you purchased these instruments. If under warranty, report the model number, date of purchase, serial number and the nature of the problem. If the repair is not covered by the warranty, you will be notified of the charges incurred. If these instruments are to be returned to Hanna Instruments, first obtain a Returned Goods Authorization number from the Technical Service department and then send it with shipping costs prepaid. When shipping any instrument, make sure it is properly packed for complete protection.

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TEMPERATURE CORRELATION FOR pH SENSITIVE GLASS 18
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PRELIMINARY EXAMINATION

Remove the instrument from the packing material and examine it to make sure that no damage has occurred during shipping.

If there is any damage, notify your dealer or the nearest Hanna Customer Service Center.

Each meter is supplied with:

- **HI 1230B** non refillable combination double-junction pH electrode with gelled electrolyte.
- **HI 7662** stainless steel temperature probe with 1 m (3.3") cable
- **pH 4.01 & pH 7.01** buffer solutions, 20 mL sachet
- 100 mL plastic beaker
- 3 x 1.5V AAA, batteries
- Instruction manual
- Rugged carrying case

Note: Save all packing material until you are sure that the instrument functions correctly. All defective items must be returned in the original packing with the supplied accessories.

GENERAL DESCRIPTION

The **HI 9124** and **HI 9125** are state-of-the-art rugged waterproof, hand held pH meters designed to provide laboratory results and accuracy under harsh industrial conditions.

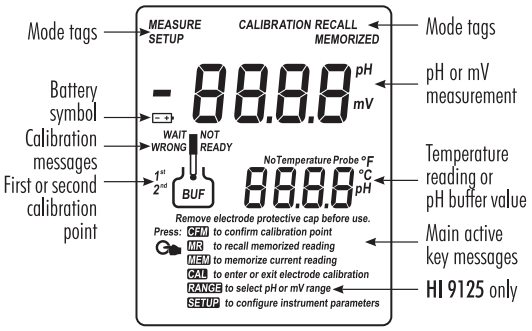
A large multi-level LCD, with clear indications related to the electrode and instrument status, pH and temperature displayed simultaneously, and user friendly symbols and text instructions during calibration.

The pH calibration procedure is automatic with 5 auto recognized buffers (4.01, 6.86, 7.01, 9.18 and 10.01) and automatic temperature compensation.

The **HI 9125** can be used with ORP (Oxidation Reduction Potential) electrodes. mV measurements automatically change from 0.1 to 1 mV resolution when the reading reaches 700 mV.

LCD MESSAGE GUIDE

TAGS & SYMBOLS



- **Mode tags** lights up for indicating the corresponding active mode, and blinks for warning the user.

  MEASURE on: measurement mode.

  SETUP on: SETUP menu mode has been entered.

  CALIBRATION on: calibration mode has been entered.

  MEMORIZE on: measurement stored in the internal memory and frozen on the display

  RECALL MEMORIZED on: stored value recalled.

- **Battery symbol blinking**: low battery condition. Batteries should be replaced.

- **Calibration messages**.

  WAIT NOT READY blinking: buffer has been recognized, but reading is not stable.

  READY on: buffer has been recognized and reading is stable.

  WRONG (BUF) **and WRONG** (probe) **blinking** alternatively: wrong buffer, value not recognized.

- **Main active key messages** light up for indicating the corresponding active key.

  CFM blinking: ask for confirmation of calibration or set value.

  MR on: MR key available.

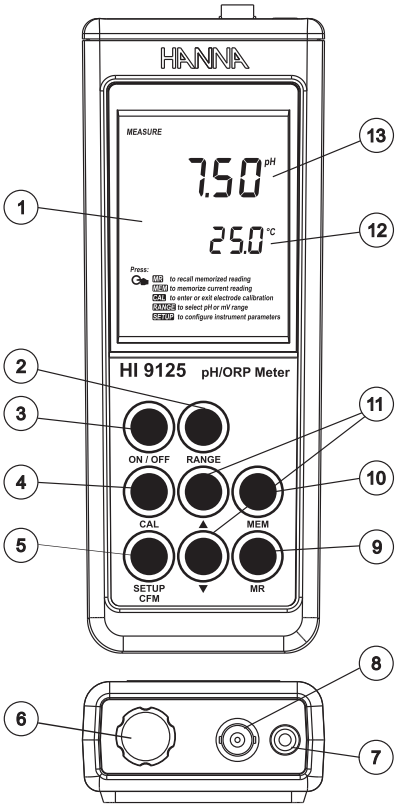
  MEM on: MEM key available.

  CAL on: CAL key available.

  RANGE on: RANGE key available. (**HI 9125** only)

  SETUP on: SETUP key available.

FUNCTIONAL DESCRIPTION



1) Liquid Crystal Display (LCD).
2) **RANGE** key, to select pH or mV (**HI 9125** only).
3) **ON/OFF** key, to turn the meter ON and OFF.
4) **CAL** key, to enter or exit calibration mode.
5) **SETUP/CFM** key, to enter SETUP mode or to confirm calibration.
6) Battery compartment cap.
7) Temperature probe socket.
8) BNC electrode connector.
9) **MR** key, to recall stored value from memory.
10) **MEM** key, to store reading in memory.
11) ▲ and ▼ keys, for manual temperature setting, or selecting pH buffer value.
12) Secondary display.
13) Primary display.

SPECIFICATIONS

RANGE	-2.00 to 16.00 pH
	±699.9 mV / ±1999 mV (HI 9125 only)
	-20.0 to 120.0 °C (-4.0 to 248.0 °F)
RESOLUTION	0.01 pH
	0.1 mV / 1 mV (**HI 9125** only)
	0.1 °C (0.1 °F)
ACCURACY @ 20 °C / 68 °F	±0.01 pH
	±0.2 mV / ±1 mV (**HI 9125** only)
	±0.4 °C (±0.8 °F) (excluding probe error)
Typical EMC Deviation	±0.02 pH
	±0.2 mV / ±1 mV (**HI 9125** only)
	±0.4 °C (±0.8 °F)
pH Calibration	1 or 2-point, with 5 memorized buffers (4.01, 6.86, 7.01, 9.18, 10.01)
Offset Calibration	±1 pH
Slope Calibration	From 80 to 108%
Temperature Compensation	Automatic, from -20.0 to 120.0 °C (-4.0 to 248.0 °F) or manual, without temperature probe
pH Electrode	**HI 1230B** (included)
Temperature Probe	**HI 7662** (included)
Input Impedance	10^{12} ohms
Battery Type & Life	3 x 1.5V AAA batteries approx. 200 hours of continuous use
Auto-off	User selectable: 20 minutes or disabled
Dimensions	185x72x36 mm (7.3x2.8x1.4")
Weight	300 g (10.6 oz.)
Environment	0 – 50 °C (32 – 122 °F) max RH 100%
Warranty	2 years

OPERATIONAL GUIDE

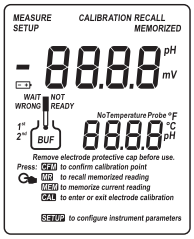
INITIAL PREPARATION

The instrument is supplied with batteries. In order to place the batteries inside the instrument follow the instructions from page 16.

To prepare the instrument for use, connect the pH electrode and the temperature probe to the BNC and temperature sockets on the top of the instrument. The temperature probe can be used independently to take temperature measurements, or it can be used in conjunction with the pH electrode to utilize Automatic Temperature Compensation (ATC) mode. If the probe is disconnected, temperature can also be set manually with the **ARROW** keys.

Turn the instrument ON by pressing **ON/OFF**.

At start-up the display will show all the LCD segments and then the battery percentage while the instrument performs a self check (or as long as the button is held).



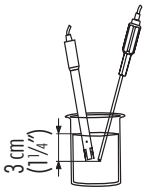
The meter automatically enters measurement mode.

After measurement, switch the meter off. Clean the electrode and store it with a few drops of **HI 70300** storage solution in the protective cap.

To save batteries, the auto-off feature turns the meter off after 20 minutes with no button pressed. To disable this feature, see "Setup Menu" section on page 14.

pH MEASUREMENTS

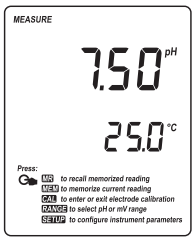
Calibrate the meter and pH electrode before taking measurements. See page 10 for details. To take a pH measurement remove the electrode's protective cap, rinse off pH sensing tip. Submerse the electrode and the temperature probe 3 cm (1¼") into the sample and stir gently.



If necessary, press the **RANGE** key until the display shows pH mode (**HI 9125** only).

Allow time for the reading to stabilize.

The LCD will show the pH measurement and the temperature of the sample.



If several measurements are taken successively in different samples, rinse the electrode thoroughly with deionized or tap water and a small amount of the sample to be measured.

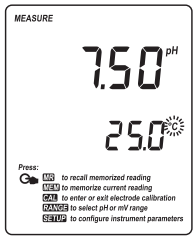
The pH value of the sample is directly affected by temperature. In order for the meter to measure the pH accurately, the value must be compensated for temperature. If the sample temperature is different from the temperature at which the pH electrode was kept, allow a few minutes for thermal equilibrium.

To use the meter's Automatic Temperature Compensation feature, submerse the temperature probe into the sample as close to the electrode as possible and wait for a few minutes.

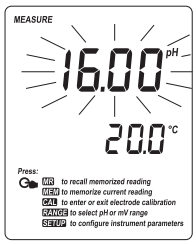
<u>If manual temperature compensation is desired the temperature probe must be disconnected from the instrument</u>.

The display will show the default temperature of "**25 °C**", or the last temperature set with the "**°C**" (or "**°F**") indicator blinking.

The temperature can now be adjusted with the **ARROW** keys. Set the value at the sample temperature.



<u>Notes</u>:
- When the reading is out of range, the display will flash the closest full-scale value.
- If using pH electrode while in mV mode, the meter will measure the mV generated by the pH electrode.

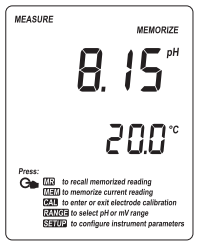


ORP MEASUREMENTS (HI 9125 only)

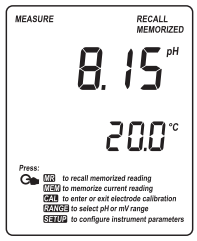
To perform ORP measurements, connect an optional ORP electrode (see "Accessories" section) to the meter and turn it ON.
If necessary, enter the mV mode by pressing **RANGE** until the display changes to mV.
Submerse the ORP electrode 3 cm (1¼") into the sample to be tested and wait a few minutes for the reading to stabilize.
Measurements within the ±699.9 mV range are displayed with 0.1 mV resolution, while outside this range the resolution automatically switches to 1 mV.
For accurate ORP measurements, the surface of the electrode must be clean and smooth. Pretreatment solutions are available to condition the electrode and improve its response time (see "Accessories" section).

MEM & MR FUNCTIONS

The instrument allows the user to store the current measurement (pH and temperature, or mV and temperature) into internal memory by pressing the **MEM** key. The "**MEMORIZE**" tag lights up on display.



Stored values can be recalled by pressing **MR**: the display will show the values and the "**RECALL MEMORIZED**" tag as long as the button is pressed.



pH CALIBRATION

It is recommended to calibrate the instrument frequently, especially if high accuracy is required.

The pH range should be recalibrated:

- Whenever the pH electrode or temperature probe is replaced.
- At least once a week.
- After testing aggressive chemicals.
- When extreme accuracy is required.

PREPARATION

Pour a small quantity of buffer solution into clean beakers. For accurate calibration use two beakers for each buffer solution, the first one for rinsing the electrode and the second one for calibration.

PROCEDURE

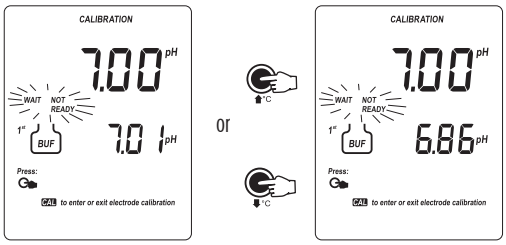
In order to perform pH calibration:

- Make sure that the meter is in the pH mode (**HI 9125** only).
- Remove the protective cap and rinse the electrode with some of the buffer solution to be used for the first calibration point.

There is a choice of 5 memorized buffers: 4.01, 6.86, 7.01, 9.18 and 10.01 pH.

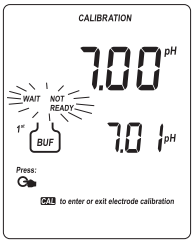
TWO-POINT CALIBRATION

- Press the **CAL** key. The "**CAL**" and "BUF" indicators will be displayed. The secondary LCD will display buffer "**7.01**". If a different calibration buffer is desired (e.g. "**6.86**"), use the **ARROW** keys to change the displayed value.

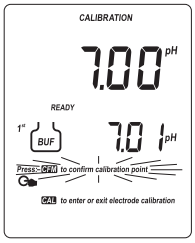


- Submerse the electrode approx. 3 cm (1¼") into the solution, place the temperature probe as close as possible to the electrode and stir gently.

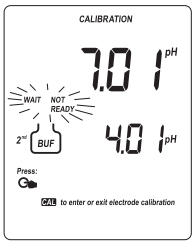
- The LCD will flash the "**WAIT NOT READY**" message.



- Once the reading is stable, if it is not close to the selected buffer, "**WRONG** BUF" and "**WRONG**" will blink alternatively; if it is close to the selected buffer the display will change to "**READY**" and blinking "**Press: CFM to confirm calibration point**".



- Press the **CFM** key to confirm the calibration: the meter stores the offset calibration point. The calibrated reading is then displayed on the primary LCD while the secondary LCD will show the second buffer to be used for calibration (pH 4.01).



- After the first calibration point is confirmed, submerse the electrode into the second buffer (pH 4.01, 10.01 or 9.18) and stir gently. Choose pH 4.01 for acidic samples, and pH 10.01 or 9.18 for alkaline solutions.
- Submerse the electrode approx. 3 cm (1¼") into the solution, place the temperature probe as close as possible to the electrode and stir gently.
- Select the second buffer value on the secondary display by pressing the **ARROW** keys.

- If the reading is not close to the selected buffer, "**WRONG** BUF" and "**WRONG** ↕" will blink alternatively;
- If the reading is close to the selected buffer and the reading is stable, the "**READY**" symbol is displayed and the "**CFM**" symbol starts blinking on the LCD, asking for confirmation.
- Press the **CFM** key: the value is stored into memory and the meter returns to normal mode.

Notes: • The meter automatically skips the buffer used for the first calibration point to avoid erroneous procedure. A difference of at least 1.5 pH unit is required between the two buffers used for the offset and slope calibration: once calibrated at either pH 7.01 or 6.86, the instrument automatically ignores the other value for the second point (same for pH 10.01 and 9.18).

- During calibration, the secondary LCD shows the selected buffer value. For the **HI 9125** model, it is possible to display the buffer temperature during calibration by pressing **RANGE**.
- To clear a previous calibration and return to the default values, in calibration mode press **CFM**, then **CAL** before the first buffer is accepted. The LCD will show "**CLr CAL**" for one second, and then will return to normal mode.

ONE-POINT CALIBRATION

For optimum accuracy it is always recommended to perform a two-point calibration, but for a faster operation a single-point calibration can be used. pH 7.01 or pH 6.86 (NIST) are normally used for this purpose, even though the meters can be calibrated with any of the 5 memorized calibration values.

After calibrating the first point (see above), press the **CAL** key to end the calibration procedure.

pH BUFFER TEMPERATURE DEPENDENCE

Temperature has an effect on pH. The calibration buffer solutions are affected by temperature changes to a lesser degree than normal solutions. During calibration the instrument will automatically calibrate to the pH value corresponding to the measured or set temperature.

TEMP		pH BUFFERS				
°C	°F	4.01	6.86	7.01	9.18	10.01
0	32	4.01	6.98	7.13	9.46	10.32
5	41	4.00	6.95	7.10	9.39	10.24
10	50	4.00	6.92	7.07	9.33	10.18
15	59	4.00	6.90	7.05	9.27	10.12
20	68	4.00	6.88	7.03	9.22	10.06
25	77	4.01	6.86	7.01	9.18	10.01
30	86	4.02	6.85	7.00	9.14	9.96
35	95	4.03	6.84	6.99	9.11	9.92
40	104	4.04	6.84	6.98	9.07	9.88
45	113	4.05	6.83	6.98	9.04	9.85
50	122	4.06	6.83	6.98	9.01	9.82
55	131	4.08	6.84	6.98	8.99	9.79
60	140	4.09	6.84	6.98	8.97	9.77
65	149	4.11	6.84	6.99	8.95	9.76
70	158	4.12	6.85	6.99	8.93	9.75
75	167	4.14	6.86	7.00	8.91	9.74
80	176	4.16	6.87	7.01	8.89	9.74
85	185	4.17	6.87	7.02	8.87	9.74
90	194	4.19	6.88	7.03	8.85	9.75
95	203	4.20	6.89	7.04	8.83	9.76

During calibration the instrument will display the pH buffer value at 25 °C.

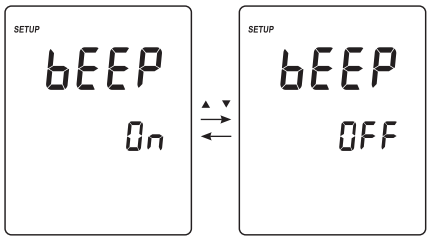
SETUP MENU

Instrument allows the user to configure several parameters through the Setup Menu.

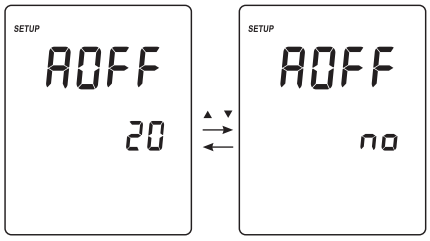
To enter the SETUP mode, while in measurement mode, press and hold the **SETUP** key for about 5 seconds. When the key is released the first parameter will be displayed.

Once the menu is entered, each parameter can be changed by using the **ARROW** keys; then pressing the **CFM** key will confirm the value and scroll to the next parameter.

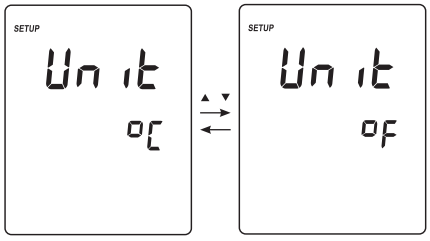
1. Audible signal: On (default) or Off



2. Auto-off feature: 20 minutes (default) or disabled



3. Temperature measure unit: °C (default) or °F



After setting the last parameter, pressing the **CFM** key will confirm the value and return to measurement mode.

mV CALIBRATION (HI 9125 only)

HI 9125 has been precalibrated for mV range at the factory.

For optimum accuracy, it is recommended to recalibrate the meter for mV readings at least once a year. Contact your Dealer or the nearest Hanna Customer Service Center for more information.

TEMPERATURE CALIBRATION

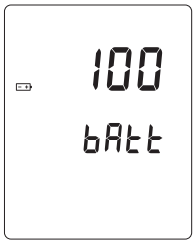
HI 9124 & HI 9125 have been precalibrated for temperature at the factory.

For optimum accuracy, it is recommended to recalibrate the meter for temperature at least once a year. Contact your Dealer or the nearest Hanna Customer Service Center for more information.

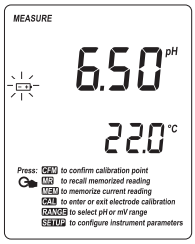
BATTERIES REPLACEMENT

The instrument is supplied with batteries. First time you start working with the instrument, insert the supplied batteries in the battery compartment observing the correct polarity (see page 17).

At start-up the battery percentage is displayed.



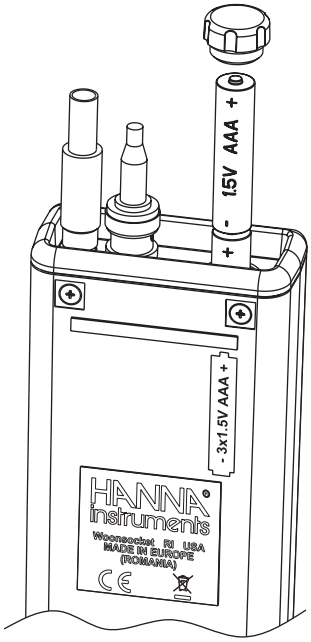
If the batteries become weak, the display will flash the battery symbol to advise the user that approximately 1 hour of working time remains. It is recommended to change the batteries as soon as the battery symbol appears blinking.



The instrument is also provided with the BEPS (Battery Error Prevention System) feature which automatically turns the instrument off when the battery level is too low to ensure reliable readings. At start-up the display will show "**0 batt**" for few seconds, then the instrument automatically turns off.

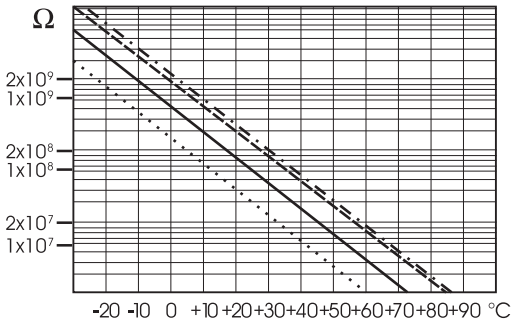
To replace the batteries, follow the next steps:

- Turn the instrument OFF.
- Open the battery compartment cap (located on the top of the instrument).
- Remove old batteries.
- Insert three new 1.5V AAA batteries in the battery compartment, observing the polarity on the rear of the instrument.
- Reattach the battery compartment cap.



TEMPERATURE CORRELATION FOR pH SENSITIVE GLASS

The resistance of glass electrodes partially depends on temperature. The lower the temperature, the higher the resistance. It takes more time for the reading to stabilize if the resistance is higher. In addition, the response time will suffer to a greater degree at temperatures below 25 °C.



Since the resistance of the pH electrode is in the range of 50 – 200 Mohms, the current across the membrane is in the pico Ampere range. Large currents can disturb the calibration of the electrode for many hours.

For these reasons high humidity environments, short circuits and static discharges can be detrimental to a stable pH reading.

The pH electrode's life also depends on the temperature. If constantly used at high temperatures, the electrode life is drastically reduced.

Typical Electrode Life

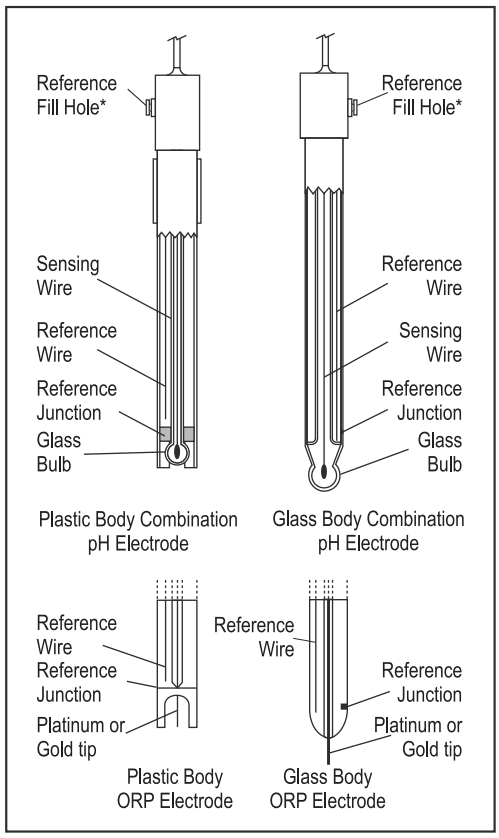
Ambient Temperature	1 – 3 years
90 °C	Less than 4 months
120 °C	Less than 1 month

Alkaline Error

High concentrations of sodium ions interfere with readings in alkaline solutions. The pH at which the interference starts to be significant depends upon the composition of the glass. This interference is called alkaline error and causes the pH to be underestimated. Hanna's glass formulations have the indicated characteristics.

Sodium Ion Correction for Glass at 20-25 °C		
Concentration	pH	Error
0.1 Mol L^{-1} Na^+	13.00	0.10
	13.50	0.14
	14.00	0.20
1.0 Mol L^{-1} Na^+	12.50	0.10
	13.00	0.18
	13.50	0.29
	14.00	0.40

ELECTRODE CONDITIONING & MAINTENANCE



* Not present in gel electrodes.

PREPARATION PROCEDURE

Remove the electrode protective cap.

DO NOT BE ALARMED IF ANY SALT DEPOSITS ARE PRESENT. This is normal with electrodes and they will disappear when rinsed with water.

During transport tiny bubbles of air may have formed inside the glass bulb. The electrode cannot function properly under these conditions. These bubbles can be removed by "shaking down" the electrode as you would do with a glass thermometer.

If the bulb and/or junction are dry, soak the electrode in **HI 70300** Storage Solution for at least one hour or longer.

For refillable electrodes, if the refill solution (electrolyte) is more than 2½ cm (1") below the fill hole, add the appropriate Electrolyte Solution.

MEASUREMENT

Rinse the electrode tip with distilled water, submerse it 3 cm (1¼") in the sample and stir gently for a few seconds.
For a faster response and to avoid cross contamination of the samples, rinse the electrode tip with the solution to be tested, before taking any measurements.

STORAGE PROCEDURE

To minimize clogging and ensure a quick response time, the glass bulb and the junction should always be kept moist.
When not in use, store it with a few drops of **HI 70300** storage solution in the protective cap.
NEVER STORE THE ELECTRODE IN DISTILLED OR DEIONIZED WATER.

PERIODIC MAINTENANCE

Inspect electrode and cable. The cable must be intact. No cracks should be seen on the electrode stem or bulb. If any scratches or cracks are present, replace the electrode. Rinse off any salt deposits with water.
Connectors must be perfectly clean and dry.

For refillable electrodes:

Refill the electrode with fresh electrolyte (see the electrode's specifications to select the correct refilling solution). Allow the electrode to stand upright for 1 hour. Follow the Storage Procedure above.

For nonrefillable electrodes:

Do not be concerned if crystals form in the gel. This will not effect pH electrode response.

CLEANING PROCEDURE

• General	Soak in Hanna **HI 7061** General Cleaning Solution for approximately ½ hour.
• Protein	Soak in Hanna **HI 7073** Protein Cleaning Solution for 15 min.
• Inorganic	Soak in Hanna **HI 7074** Inorganic CleaningSolution for 15 min.
• Oil/grease	Rinse with Hanna **HI 7077** Oil & Fat Cleaning Solution for 1 min.

IMPORTANT: After performing any of the cleaning procedures, rinse the electrode thoroughly with distilled water and soak it in **HI 70300** Storage Solution for at least 1 hour before taking measurements.

TROUBLESHOOTING GUIDE

SYMPTOMS	PROBLEM	SOLUTION
Slow reponse/excessive drift.	Dirty pH electrode.	The electrode needs to be cleaned. Follow the cleaning procedure on page 20.
Reading fluctuates up and down (noise).	Clogged/dirty junction. Low electrolyte level (refillable electrodes only).	Clean the electrode. Refill with fresh electrolyte (refillable electrodes only). Check cable and connector.
Display shows blinking full scale value.	Reading out of range.	Verify the electrode is connected. Check that the sample is within measurable range. Verify that the electrode is in contact with the solution.
Display shows blinking "°C" or "°F".	Broken temperature probe.	Replace temperature probe.
Meter does not work with temperature probe.	Broken temperature probe. Wrong temperature probe.	Replace temperature probe.
Display shows blinking battery symbol.	Low battery level.	Replace the batteries.
Meter fails to calibrate or gives faulty readings.	Broken pH electrode.	Replace electrode.
"**WRONG CALIBRATION**" is displayed during pH calibration procedure.	Wrong or contaminated buffer.	Check that buffer solution is correct and fresh.
Meter shuts off.	Dead batteries or Auto-off feature is enabled: in this case, meter shuts off after 20 min of non-use.	Replace the batteries; Press **ON/OFF**.
"**Er0**", "**Er1**", "**Er2**" message at start up.	EEPROM error.	Contact your dealer or any Hanna Service Center.
"**Clr**" message at start up.	Loaded default pH calibration values.	Perform pH calibration.

ACCESSORIES

pH CALIBRATION SOLUTIONS

HI 70004P	pH 4.01 Buffer Solution, 20 mL sachet, 25 pcs
HI 70007P	pH 7.01 Buffer Solution, 20 mL sachet, 25 pcs
HI 70010P	pH 10.01 Buffer Solution, 20 mL sachet, 25 pcs
HI 7004L	pH 4.01 Buffer Solution, 500 mL bottle
HI 7004M	pH 4.01 Buffer Solution, 230 mL bottle
HI 7006L	pH 6.86 Buffer Solution, 500 mL bottle
HI 7006M	pH 6.86 Buffer Solution, 230 mL bottle
HI 7007M	pH 7.01 Buffer Solution, 500 mL bottle
HI 7007M	pH 7.01 Buffer Solution, 230 mL bottle
HI 7009L	pH 9.18 Buffer Solution, 500 mL bottle
HI 7009M	pH 9.18 Buffer Solution, 230 mL bottle
HI 7010L	pH 10.01 Buffer Solution, 500 mL bottle
HI 7010M	pH 10.01 Buffer Solution, 230 mL bottle

ELECTRODE STORAGE SOLUTION

HI 70300L	Storage Solution, 500 mL bottle
HI 70300M	Storage Solution, 230 mL bottle

ELECTRODE CLEANING SOLUTIONS

HI 70000P	Electrode Rinse Solution, 20 mL sachet, 25 pcs
HI 7061L	General Cleaning Solution, 500 mL bottle
HI 7061M	General Cleaning Solution, 230 mL bottle
HI 7073L	Protein Cleaning Solution, 500 mL bottle
HI 7073M	Protein Cleaning Solution, 230 mL bottle
HI 7074L	Inorganic Cleaning Solution, 500 mL bottle
HI 7074M	Inorganic Cleaning Solution, 230 mL bottle
HI 7077L	Oil & Fat Cleaning Solution, 500 mL bottle
HI 7077M	Oil & Fat Cleaning Solution, 230 mL bottle

REFILLING ELECTROLYTE SOLUTIONS (50 mL, 4 pcs)

HI 7071	3.5M KCl + AgCl Electrolyte for single junction electrodes
HI 7072	1M KNO_3 Electrolyte
HI 7082	3.5M KCl Electrolyte for double junction electrodes
HI 8093	1M KCl + AgCl Electrolyte

ORP PRETREATMENT SOLUTIONS

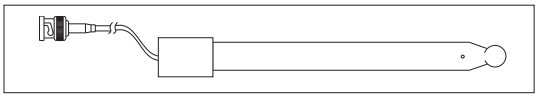
HI 7091L	Reducing Pretreatment Solution, 500 mL bottle
HI 7091M	Reducing Pretreatment Solution, 230 mL bottle
HI 7092L	Oxidizing Pretreatment Solution, 500 mL bottle
HI 7092M	Oxidizing Pretreatment Solution, 230 mL bottle

ORP SOLUTIONS

HI 7020L	Test Solution 200-275 mV, 500 mL bottle
HI 7020M	Test Solution 200-275 mV, 230 mL bottle
HI 7021L	Test Solution 240 mV, 500 mL bottle
HI 7021M	Test Solution 240 mV, 230 mL bottle
HI 7022L	Test Solution 470 mV, 500 mL bottle
HI 7022M	Test Solution 470 mV, 230 mL bottle

pH ELECTRODES

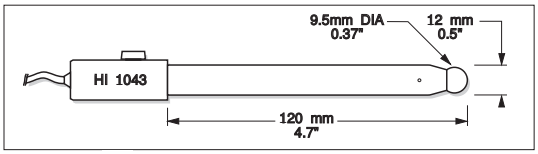
All electrodes part numbers ending in B are supplied with a BNC connector and 1 m (3.3') cable, as shown below:



HI 1043B

Glass-body, double junction, refillable, combination **pH** electrode.

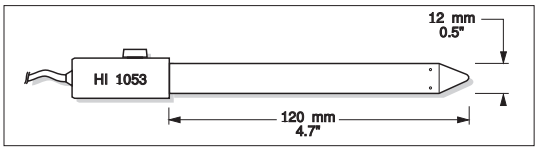
Use: strong acid/alkali.



HI 1053B

Glass-body, triple ceramic, conic shape, refillable, combination **pH** electrode.

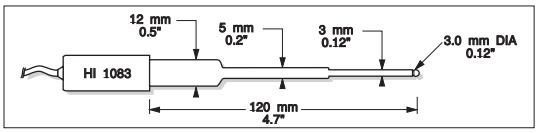
Use: emulsions.



HI 1083B

Glass-body, micro, Viscolene, non-refillable, combination **pH** electrode.

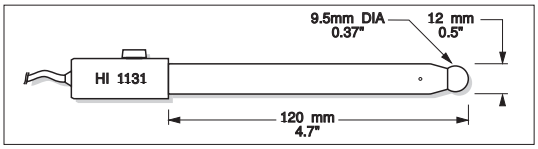
Use: biotechnology, micro titration.



HI 1131B

Glass-body, single junction, refillable, combination **pH** electrode.

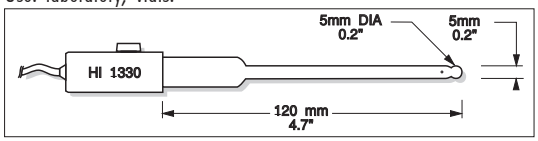
Use: general purpose.



HI 1330B

Glass-body, semimicro, single junction, refillable, combination **pH** electrode.

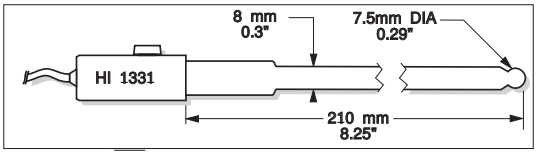
Use: laboratory, vials.



HI 1331B

Glass-body, semimicro, single junction, refillable, combination **pH** electrode.

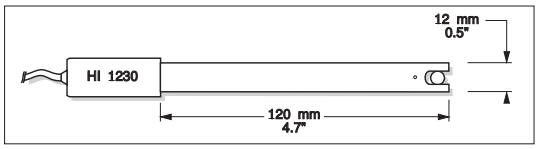
Use: flasks.



HI 1230B

Plastic-body (**PES**), double junction, gel-filled, combination **pH** electrode.

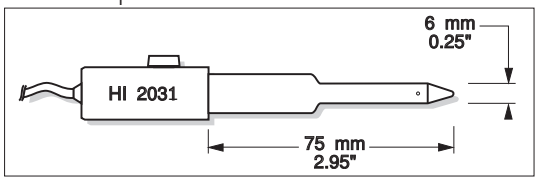
Use: general, field.



HI 2031B

Glass-body, semimicro, conic, refillable, combination **pH** electrode.

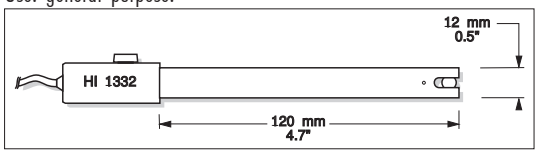
Use: semisolid products.



HI 1332B

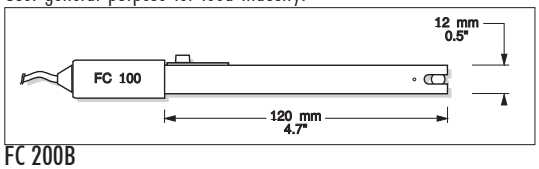
Plastic-body (**PES**), double junction, refillable, combination **pH** electrode.

Use: general purpose.



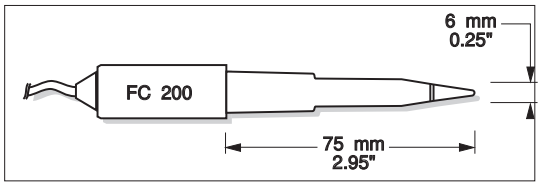
FC 100B

Plastic-body (**PVDF**), double junction, refillable, combination **pH** electrode.
Use: general purpose for food industry.



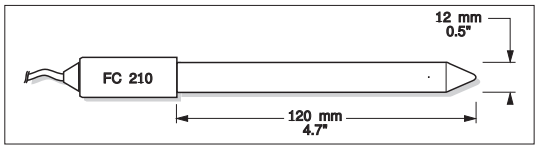
FC 200B

Plastic-body (**PVDF**), open junction, conic, Viscolene, non-refillable, combination **pH** electrode.
Use: meat & cheese.



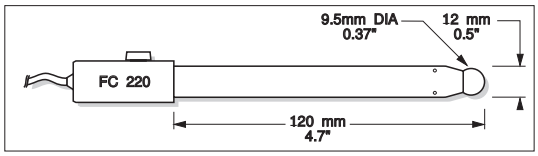
FC 210B

Glass-body, double junction, conic, Viscolene, non-refillable, combination **pH** electrode.
Use: milk, yogurt.



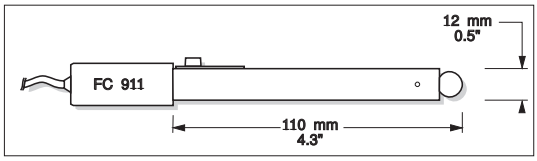
FC 220B

Glass-body, triple-ceramic, single junction, refillable, combination **pH** electrode.
Use: food processing.



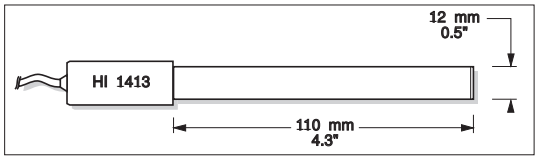
FC 911B

Plastic-body (**PVDF**), double junction, refillable with built-in amplifier, combination **pH** electrode. Use: very high humidity.



HI 1413B

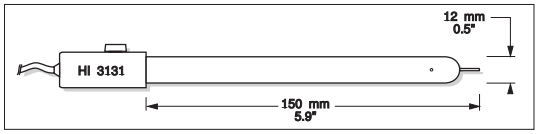
Glass-body, single junction, flat tip, Viscolene, non-refillable, combination **pH** electrode. Use: surface measurement.



ORP ELECTRODES

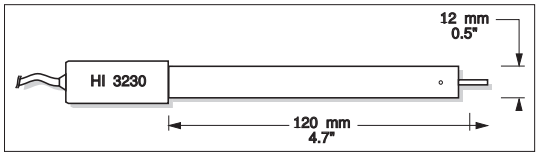
HI 3131B

Glass-body, refillable, combination platinum **ORP** electrode.
Use: titration.



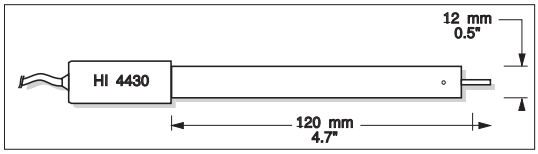
HI 3230B

Plastic-body (**PES**), gel-filled, combination platinum **ORP** electrode.
Use: general purpose.



HI 4430B

Plastic-body (**PES**), gel-filled, combination gold **ORP** electrode.
Use: general purpose.



Consult the Hanna General Catalog for a complete and wide selection of electrodes.

OTHER ACCESSORIES

HI 721317	Rugged carrying case
HI 740157	Plastic electrode refilling pipet (20 pcs)
HI 76405	Electrode holder
HI 7662	Temperature probe with 1 m (3.3') screened cable
HI 8427	pH and ORP electrode simulator with 1 m (3.3') coaxial cable ending in female BNC connectors
HI 931001	pH and ORP electrode simulator with LCD and 1 m (3.3') coaxial cable ending in female BNC connectors

RECOMMENDATIONS FOR USERS

Before using these products, make sure they are entirely suitable for the environment in which they are used.

Operation of these instruments in residential areas could cause unacceptable interferences to radio and TV equipment, requiring the operator to follow all necessary steps to correct interferences.

The glass bulb at the end of the pH electrode is sensitive to electrostatic discharges. Avoid touching this glass bulb at all times.

During operation, ESD wrist straps should be worn to avoid possible damage to the electrode by electrostatic discharges.

Any variation introduced by the user to the supplied equipment may degrade the instruments' EMC performance.

To avoid electrical shock, do not use these instruments when voltages at the measurement surface exceed 24 VAC or 60 VDC.

To avoid damage or burns, do not perform any measurement in microwave ovens.

Hanna Instruments reserves the right to modify the design, construction and appearance of its products without advance notice.

Hanna Instruments Inc.
Highland Industrial Park
584 Park East Drive
Woonsocket, RI 02895 USA

Technical Support for Customers
Tel. (800) 426 6287
Fax (401) 765 7575
E-mail tech@hannainst.com
www.hannainst.com

Local Sales and Customer Service Office

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MAN9125Y 09/10

Instruction Manual

HI 93703

Portable Microprocessor Turbidity Meter

HANNA instruments®

Dear Customer,

Thank you for choosing a HANNA instruments® product.

Please read this instruction manual carefully before using the instrument.

This manual will provide you with all the necessary information for the correct use of the instrument. If you need additional technical information, do not hesitate to e-mail us at **tech@hannainst.com**.

This instrument is in compliance with the CE directives.

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PRELIMINARY EXAMINATION

Remove the instrument from the packing material and examine it to make sure that no damage has occurred during shipping. If there is any damage, notify your dealer.

HI 93703 is supplied complete with:
- Glass cuvet with cap
- Batteries (4 x 1.5V AA) and instructions

HI 93703C is a complete kit supplied with:
- 2 glass cuvets with caps
- Batteries (4 x 1.5V AA) and instructions
- **HI 93703-0** & **HI 93703-10** cal. solutions
- **HI 93703-50** cleaning solution
- Tissue for wiping cuvets
- Rugged carrying case

Note: Save all packing material until you are sure that the meter functions correctly. All defective items must be returned in its original packaging with the supplied accessories.

GENERAL DESCRIPTION

With **HI 93703** turbidity measurements can be performed with high precision in the field as well as in the laboratory.

HI 93703 turbidity meter is a portable, microprocessor-based instrument used to determine the turbidity of water and wastewater. The meter covers a 0 to 1000 FTU range in two scales: 0.00 to 50.00 FTU and 50 to 1000 FTU. The auto-ranging feature sets the appropriate range for the measurement.

HI 93703 has been designed according to the ISO7027 International Standard, consequently the turbidity unit is the FTU (Formazine Turbidity Unit). FTU is equivalent to the other internationally recognized unit: NTU (Nephelometric Turbidity Unit).

The meter housing is a rugged and lightweight case, with an easy-to-read LCD.

To save battery-life, the instrument is equipped with an automatic shut-off feature which is activated after 4 minutes of non-use.

The meter is very simple to use: all operations can be carried out with only four keys and troubleshooting functions can be performed with displayed error code guides.

An exclusive positive-locking system guarantees that the cuvet is firmly placed in the cell. The keypad is water-resistant and can be wiped with a moist cloth for quick cleanups.

The one-point calibration at 10 FTU* can be easily performed using the available standard. In addition, **HI 93703** is the first portable turbidity meter that allows to store the last calibration date and to retrieve it at the user's convenience.

HANNA instruments has chosen 10 FTU* as the calibration point because it is the value that best fits the water turbidity measurements in different applications, from drinking water to wastewater treatment.

HANNA instruments uses the primary standard AMCO-AEPA-1 to avoid all formazine-related problems. Formazine is a very toxic, unstable substance, which requires particular care: its standards have to be prepared only a few minutes before performing the calibration, and cannot be reused because of their short life. Hanna Instruments standards are extremely stable, can be reused, and last up to six months, if free from contamination.

HI 93703 can be used with both standards.

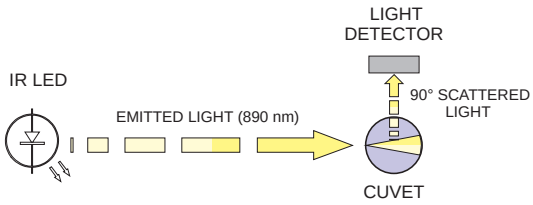
* 1 FTU = 1 NTU

PRINCIPLE OF OPERATION

HI 93703 has been designed to perform measurements according to the ISO 7027 International Standard.

The instrument functions by passing a beam of infrared light through a vial containing the sample being measured.
The light source is a High Emission Infrared LED with a wavelength peaking at 890 nm, ensuring that the interference caused by colored samples is minimum.

A sensor, positioned at 90° with respect to the direction of light, detects the amount of light scattered by the undissolved particles present in the sample. The microprocessor converts such readings into FTU* values.

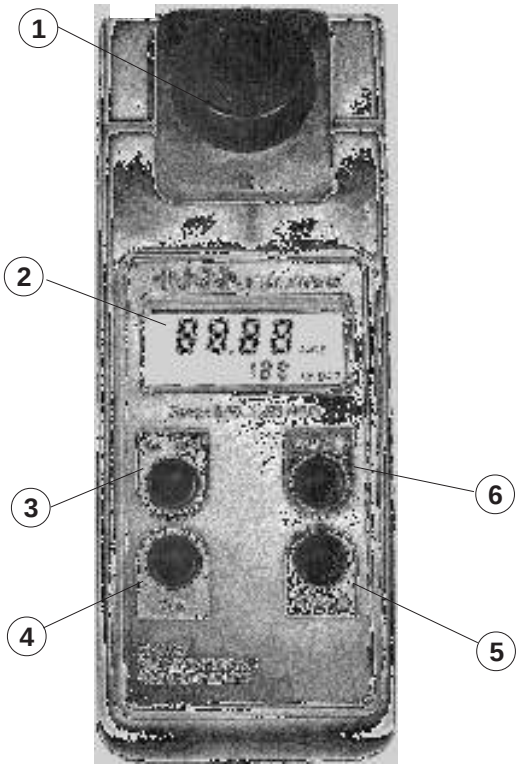


As noted above, FTU unit is equal to the NTU unit. However, there are other known measurement units for turbidity: Jackson Turbidity Unit (JTU) based on the old method of Jackson's candle, and Silica Unit (mg/L of SiO_2). For your reference the conversion table between these measurement units is shown below:

	JTU	FTU/NTU	SiO_2 (mg/L)
JTU	1	19	2.5
FTU/NTU	0.053	1	0.13
SiO_2 (mg/L)	0.4	7.5	1

* 1 FTU = 1 NTU

FUNCTIONAL DESCRIPTION



1) Measurement cell
2) LCD (Liquid Crystal Display)
3) ON/OFF key
4) CAL key, to enter the calibration mode
5) READ/⇑ key, to perform measurements and to set the date (day and month) of the last calibration
6) DATE/⇒ key, to display the last calibration date and to select either the month or the day of last calibration

SPECIFICATIONS

Range	0.00 to 50.00 FTU * 50 to 1000 FTU *
Resolution	0.01 and 1 FTU *
Accuracy	±0.5 FTU* or ±5% of reading (whichever is greater)
Typical EMC Deviation	±2% FS
Calibration	3 point (0, 10 and 500 FTU*)
Light Source	Infrared LED
Light Source Life	Life of the instrument
Light Detector	Silicon Photocell
Battery Type	4 x 1.5V AA alkaline
Battery Life	Approx. 60 hours of use or 900 measurements
Auto-off	After 5 minutes of non-use
Environment	0 to 50˚C (32 to 122˚F); RH max 95% non-condensing
Dimensions	220 x 82 x 66 mm (8.7 x 3.2 x 2.6")
Weight	510 g (1.1 lb.)

* 1 FTU = 1 NTU

OPERATIONAL GUIDE

To prepare the instrument for taking measurements, first install the batteries (see Battery Replacement section on page 17) and then turn the instrument on.

To maximize the battery life the meter is automatically switched off after 5 minutes of non-use. To reactivate it, simply press the ON/OFF key.

MEASUREMENT PROCEDURE

- Turn the meter on by pressing the ON/OFF key.

- The meter will carry out a self-test displaying a full set of figures. After the test, the LCD will change to the measurement mode.

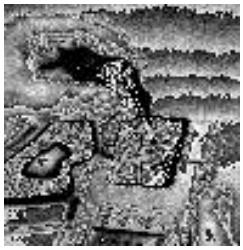
- When the LCD displays "----" the meter is ready to measure.

- Fill a clean cuvette up to one quarter inch (0.5 cm) from its rim with the thoroughly agitated sample.

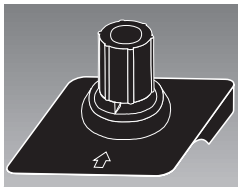
- Allow sufficient time for bubbles to escape before securing the cap.

- Wipe the cuvette thoroughly with a lint-free tissue (HI 93703-70) before inserting into the measurement cell. The cuvette must be completely free of fingerprints and other oil or dirt, particularly in the area where the light goes through (approximately the bottom 2 cm/1 inch of the cuvette).

- Place the cuvette into the cell and check that the notch on the cap is positioned securely into the groove.



- The mark on the cuvette cap should point towards the LCD.



- Press the READ/⇑ key and the LCD will display a blinking "SIP" (Sampling in Process). The turbidity value will appear after approximately 25 seconds.

- Even though **HI93703** covers a very wide range of turbidity values, for very accurate measurements of samples exceeding 40 FTU*, Standard Methods require dilution. In such cases, the correct amount of **HI 93703-0** or turbidity-free water to be added to the sample can be calculated as follows:

Vos = 3000 / T

where: Vos = volume of sample (mL) to be combined with HI 93703-0 to obtain the final volume of 100 mL.
T = HI 93703 reading (exceeding 40 FTU*)

E.g.: HI 93703 reading = 200 FTU *
3000 / 200 = 15 mL (Vos)
15 mL (Vos)+85 mL (HI 93703-0) = 100 mL

At this point, take a sample of this solution and measure turbidity.
The correct turbidity value of the original sample will be:

$$T_n \times 100\ mL / Vos = T_a$$

where: T_n = new HI 93703 reading
T_a = actual turbidity value of the original sample

* 1 FTU = 1 NTU

HOW TO ENSURE ACCURATE MEASUREMENTS

- Each time the cuvette is used, tighten the cap to the same degree.
- Discard the sample soon after the reading is taken to avoid permanently clouding the glass.
- All glassware used to contain the standards and the samples should be maintained clean, washed with **HI 93703-50** cleaning solution and rinsed with **HI 93703-0** or turbidity-free water.
- Collect the samples in clean glass or plastic bottles, fit stoppers and perform the analysis quickly. If unavoidable, store the sample in a cool, dark place, but not for longer than 24 hours (the sample needs to be kept at room temperature prior to the analysis).
- To obtain a representative sample, gently, but thoroughly, mix it before samples are taken. Do not shake (to prevent air bubbles) and do not let the sample settle.
- It is recommended to monthly calibrate the meter with the supplied **HI 93703-10** @10 FTU* standard or more frequently for greatest accuracy.
- Before inserting vials into the instrument, wipe them with **HI 93703-70** soft, lint-free tissue. Handle vials so that no fingerprints can get on the areas where light passes (approximately 2 cm/1 inch from the bottom of the vial).

If you experience any problems in taking measurements, please contact your dealer or the nearest Hanna Instruments Customer Service Department.

* 1 FTU = 1 NTU

SOURCES OF INTERFERENCE

- Presence of floating debris and coarse sediments which settle out rapidly will give false readings.
- The infrared light source used for **HI 93703** turbidity meter, according to ISO 7027 International Standard, can effectively minimize errors due to colored dissolved substances. This effect, named "true color", is a common interference for most commercially available instruments operating in the range of visible light.
- Air bubbles and the effect of vibrations that disturb the surface of the sample will give false results.
- Dirty glassware could also affect readings along with scratched or edged vials.

CALIBRATION

A monthly calibration is recommended. To check the date of last calibration, simply hold the DATE/⇒ key down for few seconds.

A more frequent check of the instrument is suggested by using the supplied standard solution.

CALIBRATION PROCEDURE

- Turn the meter on and wait for the display to show "----".

- Press the CAL key once, the "CAL" message will blink on the display for about 6 seconds, then the calibration mode stops.

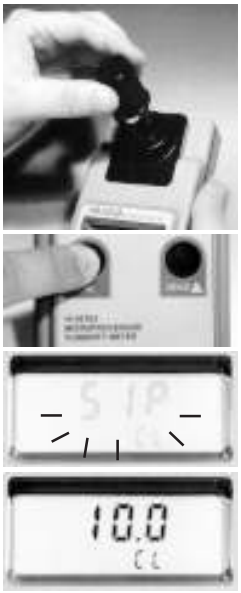
- While the "CAL" message is still blinking, press CAL again. The instrument is now in the calibration mode and a "CL" will appear on the lower part of the display. The date of calibration can be edited now by simply pressing the DATE/⇒ key. To scroll to the correct number press the READ/⇑ key. The default blinking parameter is the month, on the left hand of the display (MM.DD).

- To confirm the displayed data values and to go to the next step, press the CAL key once. A blinking "ZERO" message will appear.

- Take the **HI 93703-0** bottle containing the ZERO FTU* Standard (or turbidity-free dilution water) and fill the measurement cuvette.

Note: In order to minimize any error introduced by the cuvette, it is recommended to use, during calibration, the same cuvette you are going to use to perform the measurement.

- Insert the cuvette with the **HI 93703-0** @ ZERO FTU* standard solution (or turbidity-free dilution water) into the measurement cell and press the CAL key. A blinking "SIP" message indicates that the instrument is performing the measurement. After approximately 50 seconds the instrument will ask for the **HI 93703-10** standard solution @10 FTU* by displaying "10.0".



- Repeat the same procedure with **HI 93703-10** @ 10FTU * standard solution.

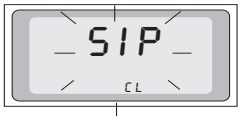
- Insert the cuvette with the **HI 93703-10** AMCO-AEPA-1 standard @10 FTU* into the measurement cell and press the CAL key again.

- After the second calibration point (10.00 FTU*) has been accepted, the meter will display “500”, asking for the 500 FTU* solution to be placed in the cuvet holder.

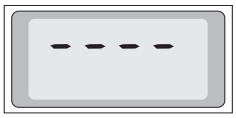
Note: At this point the user can exit the calibration mode and save the two-point calibration by pressing READ.

To perform a three-point calibration, place the 500 FTU* standard solution in the cuvet holder.

- Press CAL: “SIP” and “CL” will start blinking.



- After approximately 30 seconds, the display will show "----".



Now the meter is calibrated and ready for use.

Note: If "ERR1" is displayed, the calibration data are maintained

* 1 FTU = 1 NTU

HOW TO ENSURE ACCURATE CALIBRATION

The instructions listed below should be carefully followed during testing and during calibration:

- All glassware that comes into contact with standards should be maintained clean. Wash with **HI 93703-50** cleaning solution and rinse with **HI 93703-0** or turbidity free water.
- Rinse the vial twice with 5 ml of the liquid to be tested. This removes the effect of any previous liquid and any dust or foreign matter that may be present inside. Gently pour the liquid down the side of the vial to reduce air bubbles (no mixing is required when **HI 93703-0** and **HI 93703-10** AMCO-AEPA-1 standards are used).
- Before inserting the vial into the instrument, wipe it with **HI 93703-70** soft, lint-free tissue. Handle vials so that no fingerprints can get on the areas where light passes (approx. 2 cm/ 1" from the bottom of the vial).

STANDARD SUSPENSION

Presently, there are only two recognized primary standards: AMCO-AEPA-1 and formazine.

HANNA instruments supplies **HI 93703** with the AMCO-AEPA-1 which has a much longer shelf life at all concentrations (approximately six months, if free from contamination). In addition, no special handling or disposal is required and a much higher stability of suspended particles has been observed.

On the other hand, formazine is a very toxic substance, generated by a known carcinogen, its stability is poor (particles flocculate and settle quickly). Lower concentrations change value within a few days or hours after dilution from stock solutions.

The consistency of **HI 93703** readings by using both standards has been separately established by Advanced Polymer Systems and HANNA instruments.

Additional documentation about the formazine standard and more complex calibration procedures is available upon request.

VIEWING THE CALIBRATION DATE

- Turn the meter on and wait for the display to show "----".

- Press and hold the DATE/⇒ key and a "MM.DD" message appears while the key is held.

Note: The displayed date is the date that was input by the user at the beginning of the last calibration.

BATTERY REPLACEMENT

All components have been selected to minimize current drain without compromising functionality.

In order to minimize the battery consumption, the meter is equipped with an auto-off function which switches the meter off after 5 minutes of non-use.

The power source are 4 alkaline batteries (1.5V AA) with an expected life of 60 hours, or 900 measurements.

To always grant accurate measurements, the batteries are monitored to ensure that readings are not taken when there is insufficient power. A "**LO BAT**" indication will appear on the lower right corner of the display when the batteries are weak and require replacement. The instrument can still perform approx. 50 measurements.

A "**-BA-**" indication will appear on the display when the batteries are too weak to perform reliable measurements. The message appears for a few seconds, and then the meter will automatically switch off. Batteries must be immediately replaced.

Battery replacement must only take place in a safe area and using the battery types specified in this instruction manual.

To install or replace the batteries, turn the unit off and unscrew the 2 screws located on the back of the meter.

Remove the battery cover and insert the new batteries in the compartment while paying attention to the polarity.

After the batteries have been installed, close the battery cover and tighten the 2 screws.

LCD AND ERROR MESSAGES

HI 93703 will display several different LCD messages to help the user throughout all operations.

The meter is in a ready state and measurement or calibration can be performed.

Calibration mode is active. If the CAL key is not pressed within 6 seconds, the meter will automatically switch to the measurement mode.

Calibration date setting mode is active.

0 FTU* standard for calibration is required.

Calibration is in progress.

10 FTU* standard for calibration is required.

Last calibration date (MM.DD).

* 1 FTU = 1 NTU

"Sample In Progress": measurement is being performed.

Low battery: when this message appears, the instrument can still perform approx. 50 measurements.

Batteries are too weak to ensure reliable measurements. This message appears for a few seconds, then the meter will automatically switch off. Batteries must be replaced immediately.

* 1 FTU = 1 NTU

ACCESSORIES

HI 731318	Tissue for wiping cuvets (4 pcs)
HI 731321	Spare glass cuvet (4 pcs)
HI 731313	Maintenance kit: rugged carrying case including **HI 93703-0** and **HI 93703-10** calibration solutions, **HI 93703-50** cuvet cleaning solution, 1 tissue for wiping cuvets and 2 cuvets
HI 93703-0	AMCO-AEPA-1 @0 FTU* calibration solution, 30 mL
HI 93703-05	AMCO-AEPA-1 @500 FTU* calibration solution, 30 mL
HI 93703-10	AMCO-AEPA-1 @10 FTU* calibration solution, 30 mL
HI 93703-50	Cuvet cleaning solution, 230 mL

WARRANTY

All Hanna Instruments **meters are warranted for two years** against defects in workmanship and materials when used for their intended purpose and maintained according to instructions. This warranty is limited to repair or replacement free of charge. Damages due to accidents, misuse, tampering or lack of prescribed maintenance are not covered. If service is required, contact the dealer from whom you purchased the instrument. If under warranty, report the model number, date of purchase, serial number and the nature of the failure.
First obtain a Returned Goods Authorization number from the Customer Service department, then return the instrument with the Authorization # included along with shipment costs prepaid. If the repair is not covered by the warranty, you will be notified of the charges. When shipping any instrument, make sure it is properly packaged for complete protection.

All rights are reserved. Reproduction in whole or in part is prohibited without the written consent of the copyright owner.

* 1 FTU = 1 NTU

CE DECLARATION OF CONFORMITY

HANNA instruments

CE

DECLARATION OF CONFORMITY

We

Hanna Instruments Italia Srl
via E.Fermi, 10
35030 Sarmeola di Rubano - PD
ITALY

herewith certify that the turbidity meter

HI 93703

has been tested and found to be in compliance with EMC Directive 89/336/EEC and Low Voltage Directive 73/23/EEC according to the following applicable normatives:

EN 50082-1: Electromagnetic Compatibility - Generic Immunity Standard
IEC 801-2 Electrostatic Discharge
IEC 801-3 RF Radiated

EN 50081-1: Electromagnetic Compatibility - Generic Emission Standard
EN 55022 Radiated, Class B

EN61010-1: Safety requirements for electrical equipment for measurement, control and laboratory use

Date of Issue: 27-11-1998

P. Cesa - Technical Director
On behalf of
Hanna Instruments S.r.l.

Recommendations for Users

Before using this product, make sure that it is entirely suitable for the environment in which it is used.

Operation of this instrument in residential area could cause unacceptable interferences to radio and TV equipments, requiring the operator to take all necessary steps to correct interferences.

Any variation introduced by the user to the supplied equipment may degrade the instrument's EMC performance.

To avoid electrical shock, do not use this instrument when voltages at the measurement surface exceed 24 Vac or 60 Vdc.

To avoid damages or burns, do not perform any measurement in microwave ovens.

Hanna Instruments reserves the right to modify the design, construction and appearance of its products without advance notice.

SALES & TECHNICAL SERVICE CONTACTS

Australia:
Tel. (03) 9769.0666 • Fax (03) 9769.0699

China:
Tel. (10) 88570068 • Fax (10) 88570060

Egypt:
Tel. & Fax (02) 2758.683

Germany:
Tel. (07851) 9129-0 • Fax (07851) 9129-99

Greece:
Tel. (210) 823.5192 • Fax (210) 884.0210

Indonesia:
Tel. (21) 4584.2941 • Fax (21) 4584.2942

Japan:
Tel. (03) 3258.9565 • Fax (03) 3258.9567

Korea:
Tel. (02) 2278.5147 • Fax (02) 2264.1729

Malaysia:
Tel. (603) 5638.9940 • Fax (603) 5638.9829

Singapore:
Tel. 6296.7118 • Fax 6291.6906

South Africa:
Tel. (011) 615.6076 • Fax (011) 615.8582

Taiwan:
Tel. 886.2.2739.3014 • Fax 886.2.2739.2983

Thailand:
Tel. 66.2619.0708 • Fax 66.2619.0061

United Kingdom:
Tel. (01525) 850.855 • Fax (01525) 853.668

USA:
Tel. (401) 765.7500 • Fax (401) 765.7575

MANTURBR4 08/05

For e-mail contacts and complete list of Sales and Technical offices, please see ***www.hannainst.com***

Section 8 References

Project Plans and Specifications for the subject project, prepared by Psomas

State Water Resources Control Board (2009). Order 2009-0009-DWQ, NPDES General Permit No. CAS000002: National Pollutant Discharges Elimination System (NPDES) California General Permit for Storm Water Discharge Associated with Construction and Land Disturbing Activities. Available on-line at: http://www.waterboards.ca.gov/water_issues/programs/stormwater/construction.shtml

State Water Resources Control Board (2010). Order 2010-0014-DWQ, NPDES General Permit No. CAS000002: National Pollutant Discharges Elimination System (NPDES) California General Permit for Storm Water Discharge Associated with Construction and Land Disturbing Activities. Available on-line at: http://www.waterboards.ca.gov/water_issues/programs/stormwater/construction.shtml

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CASQA 2013, *Stormwater BMP Handbook Portal: Construction*, November 2013, www.casqa.org

Water Boards Storm Water Multiple Application & Report Tracking System

Help Logout

You are logged-in as: **Patrick Patrick - MM Meteorites.**
If this account does not belong to you, please log out.

Navigate To:

Risk

The application is organized into different tabs. Please complete all applicable tabs before submitting the form. If you want to complete the application at a later time, please click on "Save & Exit".

WDID:
Application ID: 472647
Status: Not Submitted
Previous ID: -

Owner/Operator: MM Meteorites
600 N Mountain Ave Upland CA 91786
Site/Facility: Mt. SAC West Parcel
1100 N Grand Ave. Walnut CA 91789

Certified Date:
Processed Date:
NOT Effective Date:
Permit Type: Construction - NOI

Owner Info | Developer Info | Site Info | Risk | Addtl Site Info | Post Construction | Billing Info | Attachments | Certification | Inspections | Print | Status History | Linked Users | NOTs | COIs

SEDIMENT RISK FACTOR WORKSHEET
Instructions: Enter R,K and LS factor values. System will calculate watershed erosion estimates and site sediment risk factor
A. Sediment Risk

A) R Factor Value: (What's this?)	54.52 * Erovisity Calculator
B) K Factor Value (weighted average, by area, for all site soils) (What's this?) ***If not using the SWRCB map(Populate K Factor) upload your analysis on the Attachment Tab prior to submitting to the SWRCB.	0.32 * Populate K Factor
C) LS Factor (weighted average, by area, for all slopes) (What's this?) ***If not using the SWRCB map(Populate LS Factor) upload your analysis on the Attachment Tab prior to submitting to the SWRCB.	4.19 * Populate LS Factor
Watershed Erosion Estimate (=R*K*LS) in tons/acre	73.1
Site Sediment Risk Factor Low Sediment Risk: < 15 tons/acre Medium Sediment Risk: >/= 15 and <75 tons/acre High Sediment Risk: >/= 75 tons/acre	Medium

RECEIVING WATER (RW) RISK FACTOR WORKSHEET
A. Watershed Characteristics

A.1.(a) Does the disturbed area discharge directly or indirectly to a 303(d) listed waterbody impaired by sediment? OR A.1.(b) Is the disturbed area located within a sub-watershed draining to a 303(d) listed waterbody impaired by sediment? OR A.2. Is the disturbed area located within a planning watershed draining to a waterbody with designated beneficial uses of COLD, SPAWN AND MIGRATORY?	Populate Receiving Water Risk No * Yes = High, No = Low Statewide Map of High Receiving Water Risk Watersheds	Low

C. Combined Risk Level Matrix

		Sediment Risk: Low	Sediment Risk: Medium	Sediment Risk: High
Receiving Water Risk	Low	Level1	Level2	
	High		Level2	Level3

Project Sediment Risk: Medium
Project Receiving Water Risk: Low
Project Combined Risk: Level2

Save & Exit | Save & Continue

Fields marked with * are mandatory fields.

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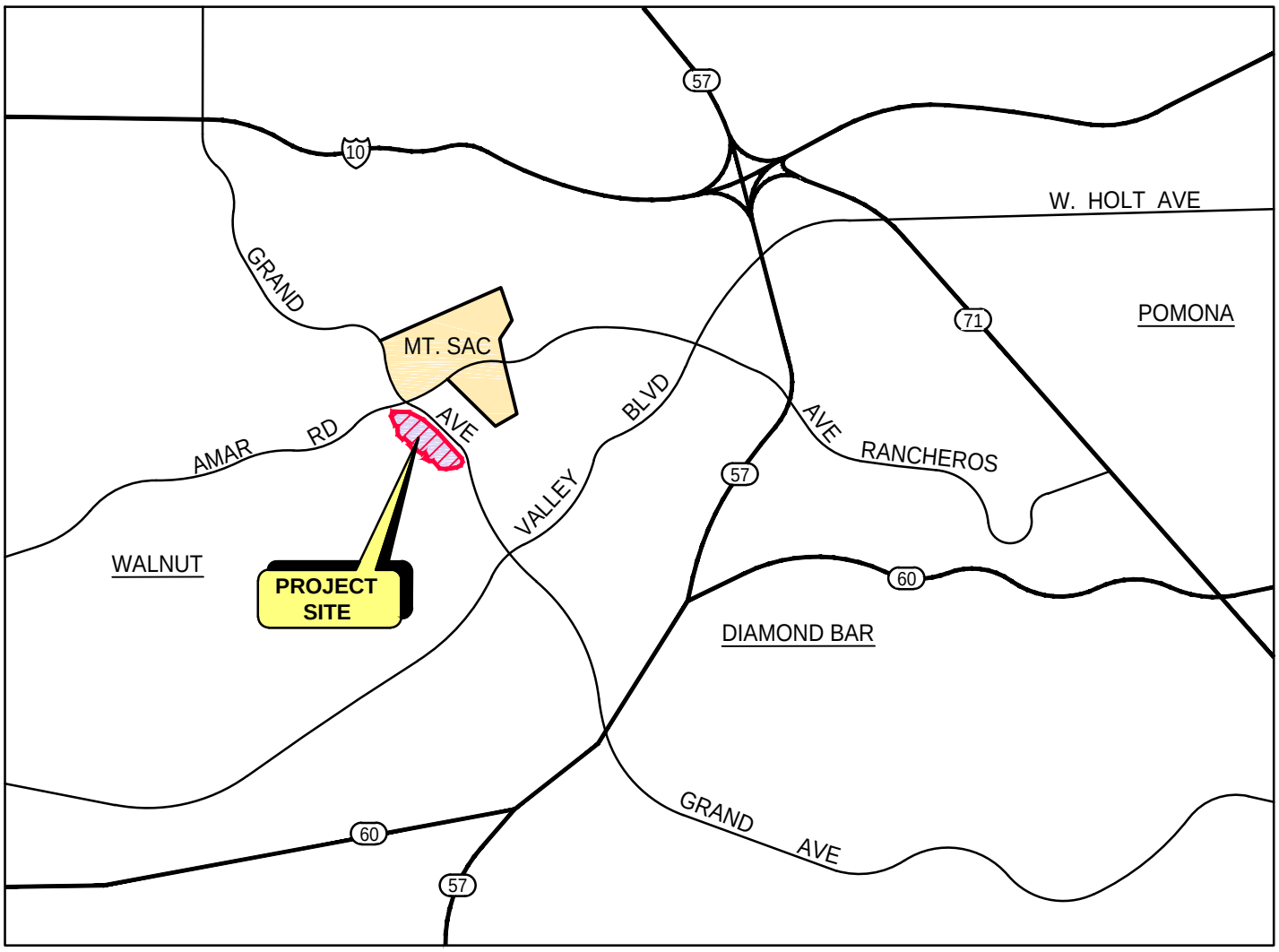


Vicinity Map

NORTH
NOT TO SCALE

PSOMAS

DATE: OCT 2016 REVISED ON:
JOB No:1HMC017000

SHEET 1 OF 1
WQ-01

Mt. SAC

W:\Mt_SAC\1HMC017000\ENGR\EXHIB\WQ-01_Vicinity Map.dwg Wed.,12 Oct.2016 - 5:03pm Plotted by: michael.mulgrew

W:\ML-SAC\HMC\D17000\ENGR\EXHIB\EC_PLAN.dwg Wed.,12 Oct.2016-4:42pm Plotted by: michael.mulgrew

HMC Architects
3546 Concours Street / Ontario, CA 91764
T 909 989 9979/ www.hmcarchitects.com

PSOMAS
555 South Flower Street, Suite 4300
Los Angeles, CA 90071
Tel. (213) 223-1400 Fax (213) 223-1444

CONSTRUCTION NOTES:

- CONSTRUCT
- EXISTING TO REMAIN -PROTECT IN PLACE
- EXISTING TO REMOVE
- REMOVE & RELOCATE
- ADJUST TO GRADE
- PER SEPARATE CONTRACT

1. INSTALL FIBER ROLL PER SE-5
2. INSTALL STABILIZED CONSTRUCTION ENTRANCE PER TC-1
3. INSTALL STORM DRAIN INLET PROTECTION PER SE-10
4. IMPLEMENT STAGING AREA FOR VEHICLE AND EQUIPMENT CLEANING PER NS-8, VEHICLE AND EQUIPMENT FUELING PER NS-9, VEHICLE AND EQUIPMENT MAINTENANCE PER NS-10, AND MATERIAL DELIVERY AND STORAGE PER WM-1. LOCATION SHALL BE FIELD DETERMINED BY CONTRACTOR.
5. CONCRETE WASTE MANAGEMENT PER WM-8. LOCATION SHALL BE FIELD DETERMINED BY CONTRACTOR.
6. SAMPLING LOCATION
7. INSTALL SILT FENCE PER SE-1

LEGEND:

- SILT FENCE
- LIMIT OF WORK
- GRAVEL BAG BERM
- FIBER ROLL
- INLET PROTECTION

NOTES

1. REFER TO THE LATEST EDITION OF THE CALIFORNIA STORMWATER BEST MANAGEMENT PRACTICE HANDBOOK FOR THE BMP OUTLINED ON THIS PLAN.

Key Plan

Consultant Seal

REGISTERED PROFESSIONAL ENGINEER
ALISON J. WELLAND
No. C69927
Exp. 09/30/15
CIVIL
STATE OF CALIFORNIA

Project Title

MT. SAC
Mt. San Antonio College

SOUTH CAMPUS SITE IMPROVEMENTS - WEST

1100 N GRAND AVE.
WALNUT, CA 91789

No.	Description	Date
1	IB-01: Instructional Bulletin 01	7/29/16

Drawing Title:

EROSION CONTROL PLAN

Architect's Seal

Designed:	MM	Project No.	5018.012.100
Drawn:	GA	Scale:	AS SHOWN
QAQC	AW	Drawing No.	EC.1
Date:	07/30/2016		

PLEASE RECYCLE

100% CONSTRUCTION DOCUMENTS

Permit Registration Documents included in this Appendix

Y/N	Permit Registration Document
Y	Notice of Intent – once available
Y	Risk Assessment – see Appendix A
Y	Certification – once available
N	Post Construction Water Balance
N	Copy of Annual Fee Receipt
N/A	ATS Design Documents
Y	Site Map – see Appendix B

SWPPP Amendment No. _____

Project Name: _____

Qualified SWPPP Developer's Certification of the

Stormwater Pollution Prevention Plan Amendment

"This Stormwater Pollution Prevention Plan and attachments were prepared under my direction to meet the requirements of the California Construction General Permit (SWRCB Order No. 2009-009-DWQ as amended by 2010-0014-DWQ and 2012-006-DWQ). I certify that I am a Qualified SWPPP Developer in good standing as of the date signed below."

QSD's Signature	Date
QSD Name	QSD Certificate Number
Title and Affiliation	Telephone
Address	Email

Log of Updated PRDs

The General Permit allows for the reduction or increase of the total acreage covered under the General Permit when a portion of the project is complete and/or conditions for termination of coverage have been met; when ownership of a portion of the project is purchased by a different entity; or when new acreage is added to the project.

Modified PRDs shall be filed electronically within 30 days of a reduction or increase in total disturbed area if a change in permit covered acreage is to be sought. The SWPPP shall be modified appropriately, with revisions and amendments recorded in Appendix C. Updated PRDs submitted electronically via SMARTS can be found in this Appendix.

This appendix includes all of the following updated PRDs (check all that apply):

☐ Revised Notice of Intent (NOI);

☐ Revised Site Map;

☐ Revised Risk Assessment;

☐ New landowner's information (name, address, phone number, email address); and

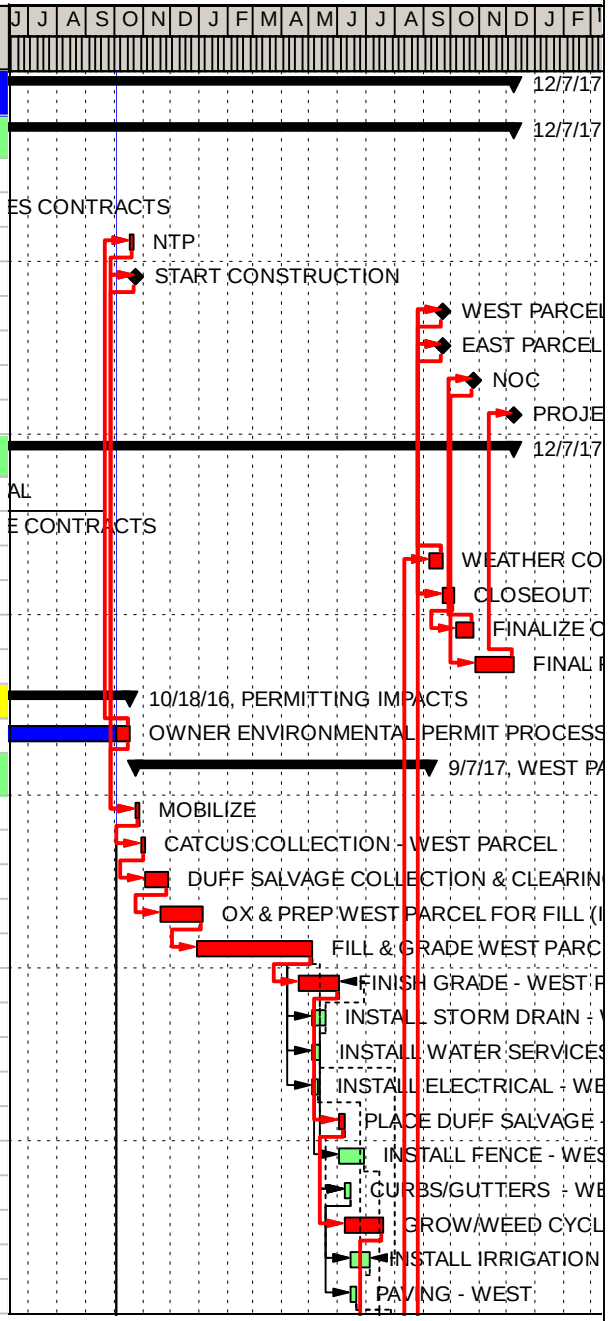
☐ New signed certification statement.

_____
Legally Responsible Person

_____ _____
Signature of Legally Responsible Person or Approved Signatory | Date

_____ _____
Name of Legally Responsible Person or Approved Signatory | Telephone Number

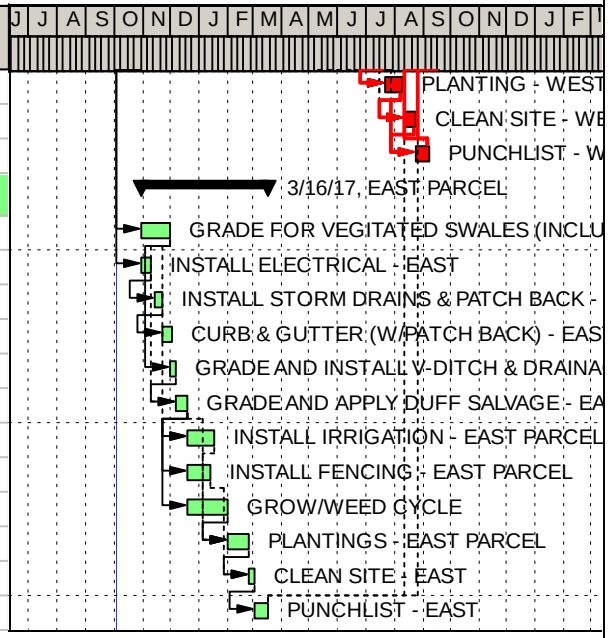
#	Activity ID	Activity Name	Original Duration	Start	Finish
1		**MtSAC South Campus Site Improvements - West &**	533	11/5/15 A	12/7/17
2		**MILESTONES**	533	11/5/15 A	12/7/17
3	A2110	PROJECT BIDS	0	11/5/15 A	
4	A2170	BOARD APPROVES CONTRACTS	0	11/18/15 A	
5	A2180	NTP	3	10/19/16*	10/21/16
6	A2190	START CONSTRUCTION	0	10/24/16	
7	A2200	WEST PARCEL CONSTRUCTION COMPLETE	0		9/21/17
8	A2210	EAST PARCEL CONSTRUCTION COMPLETE	0		9/21/17
9	A2220	NOC	0		10/26/17
10	A2230	PROJECT COMPLETE	0		12/7/17
11		**ADMINISTRATIVE**	533	11/5/15 A	12/7/17
12	A2120	REVIEW/APPROVAL	5	11/5/15 A	11/12/15 A
13	A2130	ISSUE/EXECUTE CONTRACTS	10	11/18/15 A	12/3/15 A
14	A2240	WEATHER CONTINGENCY	10	9/8/17	9/21/17
15	A2140	CLOSEOUT	10	9/22/17	10/5/17
16	A2150	FINALIZE CONTRACTS	15	10/6/17	10/26/17
17	A2160	FINAL PAYMENTS	30	10/27/17	12/7/17
18		**PERMITTING IMPACTS**	40	11/5/15 A	10/18/16
19	I1000	OWNER ENVIRONMENTAL PERMIT PROCESS	40	11/5/15 A	10/18/16
20		**WEST PARCEL**	224	10/24/16	9/7/17
21	A1000	MOBILIZE	5	10/24/16	10/28/16
22	A1020	CATCUS COLLECTION - WEST PARCEL	4	10/31/16	11/3/16
23	A1010	DUFF SALVAGE COLLECTION & CLEARING - WEST	15	11/4/16	11/29/16
24	A1030	OX & PREP WEST PARCEL FOR FILL (INSTALL BAC	30	11/21/16	1/4/17
25	A1040	FILL & GRADE WEST PARCEL - WEST PARCEL	90	12/29/16	5/3/17
26	A1130	FINISH GRADE - WEST PARCEL	30	4/20/17	6/1/17
27	A1050	INSTALL STORM DRAIN - WEST PARCEL	10	5/4/17	5/17/17
28	A1070	INSTALL WATER SERVICES - WEST PARCEL	6	5/4/17	5/11/17
29	A1170	INSTALL ELECTRICAL - WEST PARCEL	5	5/4/17	5/10/17
30	A1090	PLACE DUFF SALVAGE - WEST PARCEL	5	6/2/17	6/8/17
31	A1150	INSTALL FENCE - WEST PARCEL	20	6/2/17	6/29/17
32	A1060	CURBS/GUTTERS - WEST PARCEL	4	6/9/17	6/14/17
33	A1100	GROW/WEED CYCLE	30	6/9/17	7/20/17
34	A1080	INSTALL IRRIGATION - WEST PARCEL	15	6/15/17	7/5/17
35	A1120	PAVING - WEST	4	6/15/17	6/20/17



Actual Work | Critical Remaining ... | Remaining Work | Milestone

Tilden-Coil Constructors

#	Activity ID	Activity Name	Original Duration	Start	Finish
36	A1110	PLANTING - WEST PARCEL	15	7/21/17	8/10/17
37	A1140	CLEAN SITE - WEST PARCEL	10	8/11/17	8/24/17
38	A1160	PUNCHLIST - WEST PARCEL	10	8/25/17	9/7/17
39	**EAST PARCEL**		95	10/31/16	3/16/17
40	A2000	GRADE FOR VEGITATED SWALES (INCLUDES PIPE	20	10/31/16	11/30/16
41	A2070	INSTALL ELECTRICAL - EAST	9	10/31/16	11/10/16
42	A2050	INSTALL STORM DRAINS & PATCH BACK - EAST PA	7	11/14/16	11/22/16
43	A2060	CURB & GUTTER (W/PATCH BACK) - EAST PARCEL	6	11/23/16	12/2/16
44	A2010	GRADE AND INSTALL V-DITCH & DRAINAGE - EAST	5	12/1/16	12/7/16
45	A2030	GRADE AND APPLY DUFF SALVAGE - EAST	8	12/8/16	12/19/16
46	A2020	INSTALL IRRIGATION - EAST PARCEL	20	12/20/16	1/17/17
47	A2080	INSTALL FENCING - EAST PARCEL	18	12/20/16	1/13/17
48	A2250	GROW/WEED CYCLE	30	12/20/16	1/31/17
49	A2040	PLANTINGS - EAST PARCEL	17	2/1/17	2/23/17
50	A2090	CLEAN SITE - EAST	5	2/24/17	3/2/17
51	A2100	PUNCHLIST - EAST	10	3/3/17	3/16/17



Actual Work | Critical Remaining ... | Remaining Work | Milestone

Tilden-Coil Constructors

Table G.a POLLUTANTS ASSOCIATED WITH CONSTRUCTION ACTIVITIES

General Work Activity/ Products With Potential Stormwater Pollutants	Specific Work Activity/Products With Potential Stormwater Pollutants	Pollutant Categories
Adhesives	• Adhesives, glues, resins, epoxy synthetics, PVC cement • Caulks, sealers, putty, sealing agents and • Coal tars (naphtha, pitch)	Oil and Grease, Synthetic Organics[1]
Asphalt paving/curbs	• Hot and cold mix asphalt	Oil and Grease
Cleaners	• Polishes (metal, ceramic, tile) • Etching agents • Cleaners, ammonia, lye, caustic sodas, bleaching agents and chromate salts	Metals, Synthetic Organics
Concrete / Masonry	• Cement and brick dust • Colored chalks • Concrete curing compounds • Glazing compounds • Surfaces cleaners • Saw cut slurries • Tile cutting	Metals, Synthetic Organics
Drywall	• Saw-cutting drywall	Metals
Framing/Carpentry	• Sawdust, particle board dust, and treated woods • Saw cut slurries	Metals, Synthetic Organics
Heating, Ventilation, Air Conditioning	• Demolition or construction of air condition and heating systems	Metals, Synthetic Organics
Insulation	• Demolition or construction involving insulation, venting systems	Metals, Synthetic Organics
Liquid waste	• Wash waters • Irrigation line testing/flushing	Metals, Synthetic Organics
Painting	• Paint thinners, acetone, methyl ethyl ketone, stripper paints, lacquers, varnish, enamels, turpentine, gum spirit, solvents, dyes, stripping pigments and sanding	Metals, Synthetic Organics
Planting / Vegetation Management	• Vegetation control (pesticides/herbicides) • Planting • Plant maintenance • Vegetation removal	Nutrients, Metals, Synthetic Organics
Plumbing	• Solder (lead, tin), flux (zinc chloride), pipe fitting • Galvanized metal in nails, fences, and electric wiring	Metals, Synthetic Organics
Pools/fountains	• Chlorinated water	Synthetic Organics
Removal of existing structures	• Demolition of asphalt, concrete, masonry, framing, roofing, metal structures.	Metals, Oil and Grease, Synthetic Organics
Roofing	• Flashing • Saw cut slurries (tile cutting) • Shingle scrap and debris	Metals, Oil and Grease, Synthetic Organics
Sanitary waste	• Portable toilets • Disturbance of existing sewer lines.	Nutrients
Soil preparation/amendments	• Use of soil additives/amendments	Nutrients

Table G.a POLLUTANTS ASSOCIATED WITH CONSTRUCTION ACTIVITIES

General Work Activity/ Products With Potential Stormwater Pollutants	Specific Work Activity/Products With Potential Stormwater Pollutants	Pollutant Categories
Solid waste	• Litter, trash and debris • Vegetation	Gross Pollutants
Utility line testing and flushing	• Hydrostatic test water • Pipe flushing	Synthetic Organics
Vehicle and equipment use	• Equipment operation • Equipment maintenance • Equipment washing • Equipment fueling	Oil and Grease
[1] Synthetic Organics are defined in Table 1.2 of the CASQA *Stormwater BMP Handbook Portal: Construction* as adhesives, cleaners, sealants, solvents, etc. These are generally categorized as VOCs or SVOCs.		

Activity	Construction Site Material	Visually Observable?	Pollutant Indicators [2]	Suggested Analyses Field [3]	Laboratory
Paving	Hot Asphalt	Yes - Rainbow Surface or Brown Suspension	Visually Observable - No Testing Required		
	Asphalt Emulsion				
	Liquid Asphalt (tack coat)				
	Cold Mix				
	Crumb Rubber	Yes – Black, solid material	Visually Observable - No Testing Required		
	Asphalt Concrete (Any Type)	Yes - Rainbow Surface or Brown Suspension	Visually Observable - No Testing Required		
Cleaning	Acids	No	**pH** Acidity Anions (acetic acid, phosphoric acid, sulfuric acid, nitric acid, hydrogen chloride)	pH Meter Acidity Test Kit	EPA 150.1 (pH) SM 2310B (Acidity) EPA 300.0 (Anion)
	Bleaches	No	Residual Chlorine	Chlorine	SM 4500-CL G (Res. Chlorine)
	Detergents	Yes - Foam	Visually Observable - No Testing Required		
	TSP	No	Phosphate	Phosphate	EPA 365.3 (Phosphate)
	Solvents	No	**VOC**	None	EPA 601/602 or EPA 624 (VOC)
			SVOC	None	EPA 625 (SVOC)
Concrete & Masonry	Portland Cement (PCC)	Yes - Milky Liquid	Visually Observable - No Testing Required		
	Masonry	No	**pH**	pH Meter	EPA 150.1 (pH)

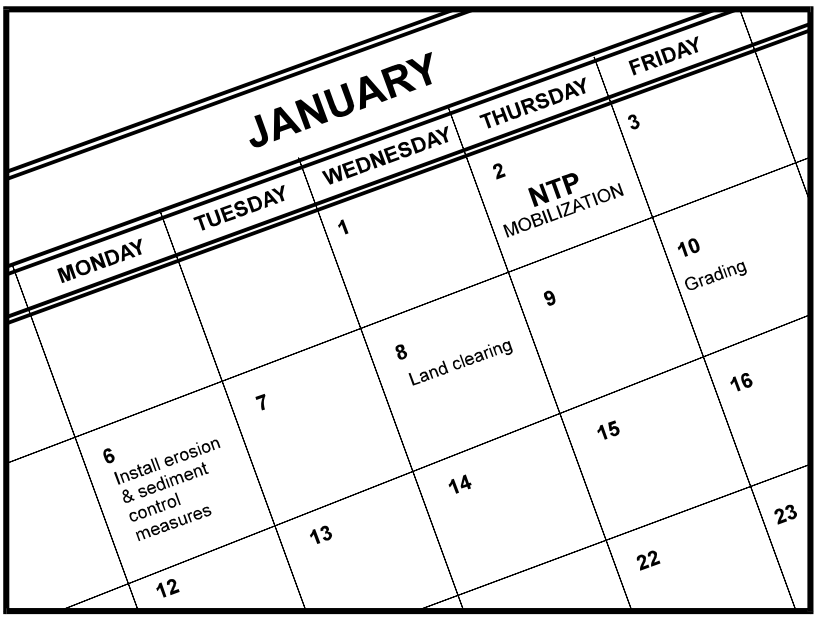
Activity	Construction Site Material	Visually Observable?	Pollutant Indicators [2]	Suggested Analyses Field [3]	Laboratory
	products		Alkalinity	Alkalinity or Acidity Test Kit	SM 2320 (Alkalinity)
	Sealant (Methyl Methacrylate - MMA)	No	Methyl Methacrylate	None	EPA 625 (SVOC)
			Cobalt		EPA 200.8 (Metal)
			Zinc		
	Incinerator Bottom Ash Bottom Ash Steel Slag Foundry Sand Fly Ash Municipal Solid Waste	No	**Aluminum Calcium Vanadium Zinc**	Calcium Test	EPA 200.8 (Metal) EPA 200.7 (Calcium)
	Mortar	Yes - Milky Liquid	Visually Observable - No Testing Required		
	Concrete Rinse Water	Yes - Milky Liquid	Visually Observable - No Testing Required		
	Non-Pigmented Curing Compounds	No	Acidity	pH Meter Alkalinity or Acidity Test Kit	SM 2310B (Acidity)
			Alkalinity		SM 2320 (Alkalinity)
			pH		EPA 150.1 (pH)
			VOC		EPA 601/602 or EPA 624 (VOC)
			SVOC		EPA 625 (SVOC)
Landscaping	Aluminum Sulfate	No	Aluminum	TDS Meter Sulfate	EPA 200.8 (Metal)
			TDS		EPA 160.1 (TDS)
			Sulfate		EPA 300.0 (Sulfate)
	Sulfur-Elemental	No	Sulfate	Sulfate	EPA 300.0 (Sulfate)

Activity	Construction Site Material	Visually Observable?	Pollutant Indicators [2]	Suggested Analyses Field [3]	Laboratory
	Fertilizers-Inorganic [4]	No	Nitrate	Nitrate	EPA 300.0 (Nitrate)
			Phosphate	Phosphate	EPA 365.3 (Phosphate)
			Organic Nitrogen	None	EPA 351.3 (TKN)
			Potassium	None	EPA 200.8 (Metal)
	Fertilizers-Organic	No	TOC	Nitrate	EPA 415.1 (TOC)
			Nitrate		EPA 300.0 (Nitrate)
			Organic Nitrogen		EPA 351.3 (TKN)
			COD		EPA 410.4 (COD)
	Natural Earth (Sand, Gravel, and Topsoil)	Yes - Cloudiness and turbidity	Visually Observable - No Testing Required		
	Herbicide	No	Herbicide	None	Check lab for specific herbicide or pesticide
	Pesticide		Pesticide		
	Lime		Alkalinity	pH Meter	SM 2320 (Alkalinity)
			pH	Alkalinity or Acidity Test Kit	EPA 150.1 (pH)
Painting	Paint	Yes	Visually Observable - No Testing Required		
	Paint Strippers	No	VOC	None	EPA 601/602 or EPA 624 (VOC)
			SVOC	None	EPA 625 (SVOC)
	Resins	No	COD	None	EPA 410.4 (COD)
			SVOC		EPA 625 (SVOC)
	Sealants	No	COD	None	EPA 410.4 (COD)
	Solvents	No	COD	None	EPA 410.4 (COD)

Activity	Construction Site Material	Visually Observable?	Pollutant Indicators [2]	Suggested Analyses Field [3]	Laboratory
			VOC		EPA 601/602 or EPA 624 (VOC)
			SVOC		EPA 625 (SVOC)
	Lacquers, Varnish, Enamels, and Turpentine	No	COD	None	EPA 410.4 (COD)
			VOC		EPA 601/602 or EPA 624 (VOC)
			SVOC		EPA 625 (SVOC)
	Thinners	No	VOC	None	EPA 601/602 or EPA 624 (VOC)
			COD		EPA 410.4 (COD)
Portable Toilets	Portable Toilet Waste	Yes	Visually Observable - No Testing Required		
Contaminated Soil [5]	Aerially Deposited Lead[3]	No	Lead	None	EPA 200.8 (Metal)
	Petroleum	Yes – Rainbow Surface Sheen and Odor	Visually Observable - No Testing Required		
	Other	No	Contaminant Specific	Contaminant Specific	Contaminant Specific
Line Flushing Products	Chlorinated Water	No	Total chlorine	Chlorine	SM 4500-CL G (Res. Chlorine)
Adhesives	Adhesives	No	COD	None	EPA 410.4 (COD)
			Phenols	Phenol	EPA 420.1 (Phenol)
			SVOC	None	EPA 625 (SVOC)
Dust Palliative Products	Salts (Magnesium Chloride, Calcium	No	Chloride	Chloride	EPA 300.0 (Chloride)
			TDS	TDS Meter	EPA 160.1 (TDS)

Activity	Construction Site Material	Visually Observable?	Pollutant Indicators [2]	Suggested Analyses Field [3]	Laboratory
	Chloride, and Natural Brines)		Cations (Sodium, Magnesium, Calcium)	None	EPA 200.7 (Cations)
Vehicle	Antifreeze and Other Vehicle Fluids	Yes - Colored Liquid	Visually Observable - No Testing Required		
	Batteries	No	Sulfuric Acid	None	EPA 300.0 (Sulfate)
			Lead	None	EPA 200.8 (Metal)
			pH	pH Meter Alkalinity or Acidity Test Kit	EPA 150.1 (pH)
	Fuels, Oils, Lubricants	Yes - Rainbow Surface Sheen and Odor	Visually Observable - No Testing Required		
Soil Amendment/ Stabilization Products	Polymer/Copolymer [6, 7]	No	Organic Nitrogen	None	EPA 351.3 (TKN)
			BOD	None	EPA 405.1 (BOD)
			COD	None	EPA 410.4 (COD)
			DOC	None	EPA 415.1 (DOC)
			Nitrate	Nitrate	EPA 300.0 (Nitrate)
			Sulfate	Sulfate	EPA 300.0 (Sulfate)
			Nickel	None	EPA 200.8 (Metal)
	Straw/Mulch	Yes - Solids	Visually Observable - No Testing Required		
	Lignin Sulfonate	No	Alkalinity	Alkalinity	SM 2320 (Alkalinity)
			TDS	TDS Meter	EPA 160.1 (TDS)
	Psyllium	No	COD	None	EPA 410.4 (COD)
			TOC		EPA 415.1 (TOC)
	Guar/Plant	No	COD	None	EPA 410.4 (COD)

Scheduling EC-1



Objectives

EC	Erosion Control	☑
SE	Sediment Control	☒
TR	Tracking Control	☒
WE	Wind Erosion Control	☒
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Description and Purpose

Scheduling is the development of a written plan that includes sequencing of construction activities and the implementation of BMPs such as erosion control and sediment control while taking local climate (rainfall, wind, etc.) into consideration. The purpose is to reduce the amount and duration of soil exposed to erosion by wind, rain, runoff, and vehicle tracking, and to perform the construction activities and control practices in accordance with the planned schedule.

Suitable Applications

Proper sequencing of construction activities to reduce erosion potential should be incorporated into the schedule of every construction project especially during rainy season. Use of other, more costly yet less effective, erosion and sediment control BMPs may often be reduced through proper construction sequencing.

Limitations

- Environmental constraints such as nesting season prohibitions reduce the full capabilities of this BMP.

Implementation

- Avoid rainy periods. Schedule major grading operations during dry months when practical. Allow enough time before rainfall begins to stabilize the soil with vegetation or physical means or to install sediment trapping devices.
- Plan the project and develop a schedule showing each phase of construction. Clearly show how the rainy season relates to soil

disturbing and re-stabilization activities. Incorporate the construction schedule into the SWPPP.

- Include on the schedule, details on the rainy season implementation and deployment of:
  - Erosion control BMPs
  - Sediment control BMPs
  - Tracking control BMPs
  - Wind erosion control BMPs
  - Non-stormwater BMPs
  - Waste management and materials pollution control BMPs
- Include dates for activities that may require non-stormwater discharges such as dewatering, sawcutting, grinding, drilling, boring, crushing, blasting, painting, hydro-demolition, mortar mixing, pavement cleaning, etc.
- Work out the sequencing and timetable for the start and completion of each item such as site clearing and grubbing, grading, excavation, paving, foundation pouring utilities installation, etc., to minimize the active construction area during the rainy season.
  - Sequence trenching activities so that most open portions are closed before new trenching begins.
  - Incorporate staged seeding and re-vegetation of graded slopes as work progresses.
  - Schedule establishment of permanent vegetation during appropriate planting time for specified vegetation.
- Non-active areas should be stabilized as soon as practical after the cessation of soil disturbing activities or one day prior to the onset of precipitation.
- Monitor the weather forecast for rainfall.
- When rainfall is predicted, adjust the construction schedule to allow the implementation of soil stabilization and sediment treatment controls on all disturbed areas prior to the onset of rain.
- Be prepared year round to deploy erosion control and sediment control BMPs. Erosion may be caused during dry seasons by un-seasonal rainfall, wind, and vehicle tracking. Keep the site stabilized year round, and retain and maintain rainy season sediment trapping devices in operational condition.
- Apply permanent erosion control to areas deemed substantially complete during the project's defined seeding window.

Costs

Construction scheduling to reduce erosion may increase other construction costs due to reduced economies of scale in performing site grading. The cost effectiveness of scheduling techniques should be compared with the other less effective erosion and sedimentation controls to achieve a cost effective balance.

Inspection and Maintenance

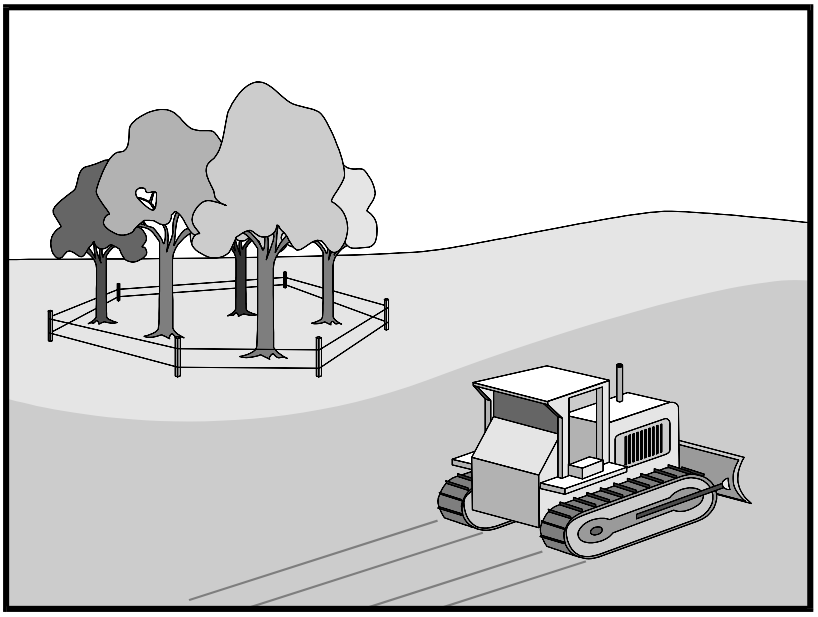
- Verify that work is progressing in accordance with the schedule. If progress deviates, take corrective actions.
- Amend the schedule when changes are warranted.
- Amend the schedule prior to the rainy season to show updated information on the deployment and implementation of construction site BMPs.

References

Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities Developing Pollution Prevention Plans and Best Management Practices (EPA 832-R-92-005), U.S. Environmental Protection Agency, Office of Water, September 1992.

Preservation Of Existing Vegetation EC-2



Description and Purpose

Carefully planned preservation of existing vegetation minimizes the potential of removing or injuring existing trees, vines, shrubs, and grasses that protect soil from erosion.

Suitable Applications

Preservation of existing vegetation is suitable for use on most projects. Large project sites often provide the greatest opportunity for use of this BMP. Suitable applications include the following:

- Areas within the site where no construction activity occurs, or occurs at a later date. This BMP is especially suitable to multi year projects where grading can be phased.
- Areas where natural vegetation exists and is designated for preservation. Such areas often include steep slopes, watercourse, and building sites in wooded areas.
- Areas where local, state, and federal government require preservation, such as vernal pools, wetlands, marshes, certain oak trees, etc. These areas are usually designated on the plans, or in the specifications, permits, or environmental documents.
- Where vegetation designated for ultimate removal can be temporarily preserved and be utilized for erosion control and sediment control.

Objectives

EC	Erosion Control	☑
SE	Sediment Control	
TR	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

EC-2 Preservation Of Existing Vegetation

Limitations

- Requires forward planning by the owner/developer, contractor, and design staff.
- Limited opportunities for use when project plans do not incorporate existing vegetation into the site design.
- For sites with diverse topography, it is often difficult and expensive to save existing trees while grading the site satisfactory for the planned development.

Implementation

The best way to prevent erosion is to not disturb the land. In order to reduce the impacts of new development and redevelopment, projects may be designed to avoid disturbing land in sensitive areas of the site (e.g., natural watercourses, steep slopes), and to incorporate unique or desirable existing vegetation into the site's landscaping plan. Clearly marking and leaving a buffer area around these unique areas during construction will help to preserve these areas as well as take advantage of natural erosion prevention and sediment trapping.

Existing vegetation to be preserved on the site must be protected from mechanical and other injury while the land is being developed. The purpose of protecting existing vegetation is to ensure the survival of desirable vegetation for shade, beautification, and erosion control. Mature vegetation has extensive root systems that help to hold soil in place, thus reducing erosion. In addition, vegetation helps keep soil from drying rapidly and becoming susceptible to erosion. To effectively save existing vegetation, no disturbances of any kind should be allowed within a defined area around the vegetation. For trees, no construction activity should occur within the drip line of the tree.

Timing

- Provide for preservation of existing vegetation prior to the commencement of clearing and grubbing operations or other soil disturbing activities in areas where no construction activity is planned or will occur at a later date.

Design and Layout

- Mark areas to be preserved with temporary fencing. Include sufficient setback to protect roots.
  - Orange colored plastic mesh fencing works well.
  - Use appropriate fence posts and adequate post spacing and depth to completely support the fence in an upright position.
- Locate temporary roadways, stockpiles, and layout areas to avoid stands of trees, shrubs, and grass.
- Consider the impact of grade changes to existing vegetation and the root zone.
- Maintain existing irrigation systems where feasible. Temporary irrigation may be required.
- Instruct employees and subcontractors to honor protective devices. Prohibit heavy equipment, vehicular traffic, or storage of construction materials within the protected area.

Costs

There is little cost associated with preserving existing vegetation if properly planned during the project design, and these costs may be offset by aesthetic benefits that enhance property values. During construction, the cost for preserving existing vegetation will likely be less than the cost of applying erosion and sediment controls to the disturbed area. Replacing vegetation inadvertently destroyed during construction can be extremely expensive, sometimes in excess of $10,000 per tree.

Inspection and Maintenance

During construction, the limits of disturbance should remain clearly marked at all times. Irrigation or maintenance of existing vegetation should be described in the landscaping plan. If damage to protected trees still occurs, maintenance guidelines described below should be followed:

- Verify that protective measures remain in place. Restore damaged protection measures immediately.
- Serious tree injuries shall be attended to by an arborist.
- Damage to the crown, trunk, or root system of a retained tree shall be repaired immediately.
- Trench as far from tree trunks as possible, usually outside of the tree drip line or canopy. Curve trenches around trees to avoid large roots or root concentrations. If roots are encountered, consider tunneling under them. When trenching or tunneling near or under trees to be retained, place tunnels at least 18 in. below the ground surface, and not below the tree center to minimize impact on the roots.
- Do not leave tree roots exposed to air. Cover exposed roots with soil as soon as possible. If soil covering is not practical, protect exposed roots with wet burlap or peat moss until the tunnel or trench is ready for backfill.
- Cleanly remove the ends of damaged roots with a smooth cut.
- Fill trenches and tunnels as soon as possible. Careful filling and tamping will eliminate air spaces in the soil, which can damage roots.
- If bark damage occurs, cut back all loosened bark into the undamaged area, with the cut tapered at the top and bottom and drainage provided at the base of the wood. Limit cutting the undamaged area as much as possible.
- Aerate soil that has been compacted over a trees root zone by punching holes 12 in. deep with an iron bar, and moving the bar back and forth until the soil is loosened. Place holes 18 in. apart throughout the area of compacted soil under the tree crown.
- Fertilization
  - Fertilize stressed or damaged broadleaf trees to aid recovery.
  - Fertilize trees in the late fall or early spring.

- Apply fertilizer to the soil over the feeder roots and in accordance with label instructions, but never closer than 3 ft to the trunk. Increase the fertilized area by one-fourth of the crown area for conifers that have extended root systems.

- Retain protective measures until all other construction activity is complete to avoid damage during site cleanup and stabilization.

References

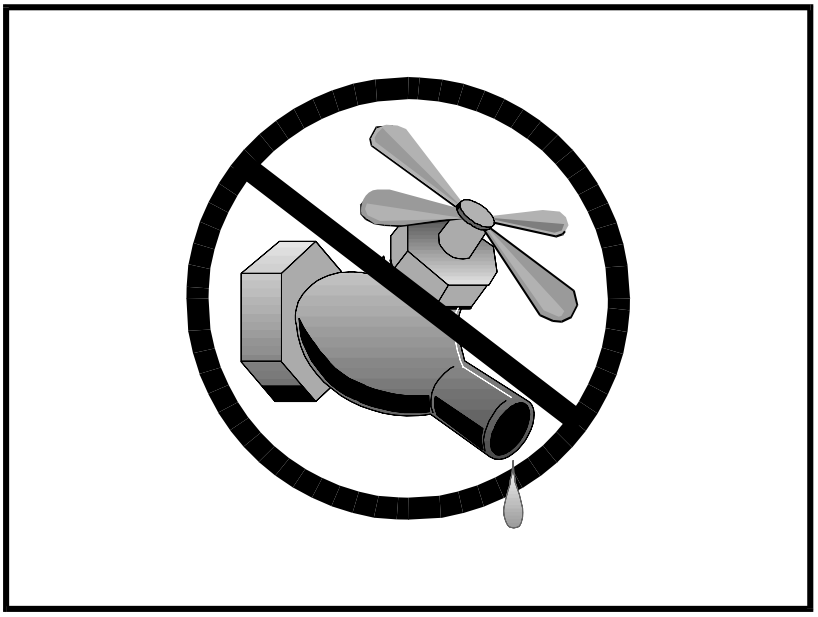
County of Sacramento Tree Preservation Ordinance, September 1981.

Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management of the Puget Sound Basin, Technical Manual, Publication #91-75, Washington State Department of Ecology, February 1992.

Water Quality Management Plan for The Lake Tahoe Region, Volume II, Handbook of Management Practices, Tahoe Regional Planning Agency, November 1988.

Water Conservation Practices NS-1



Objectives

EC	Erosion Control	☒
SE	Sediment Control	☒
TR	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	

Legend:

☑ Primary Objective

☒ Secondary Objective

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Description and Purpose

Water conservation practices are activities that use water during the construction of a project in a manner that avoids causing erosion and the transport of pollutants offsite. These practices can reduce or eliminate non-stormwater discharges.

Suitable Applications

Water conservation practices are suitable for all construction sites where water is used, including piped water, metered water, trucked water, and water from a reservoir.

Limitations

- None identified.

Implementation

- Keep water equipment in good working condition.
- Stabilize water truck filling area.
- Repair water leaks promptly.
- Washing of vehicles and equipment on the construction site is discouraged.
- Avoid using water to clean construction areas. If water must be used for cleaning or surface preparation, surface should be swept and vacuumed first to remove dirt. This will minimize amount of water required.

- Direct construction water runoff to areas where it can soak into the ground or be collected and reused.
- Authorized non-stormwater discharges to the storm drain system, channels, or receiving waters are acceptable with the implementation of appropriate BMPs.
- Lock water tank valves to prevent unauthorized use.

Costs

The cost is small to none compared to the benefits of conserving water.

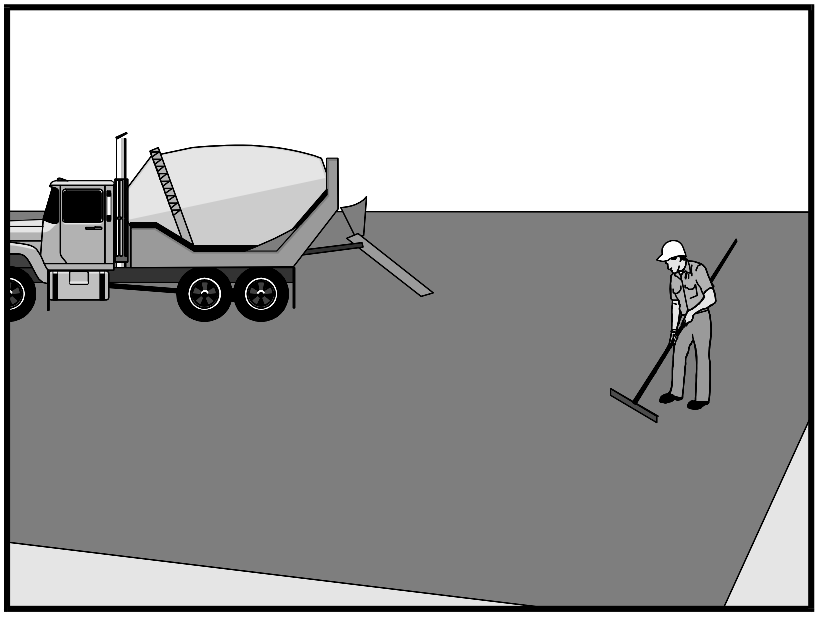
Inspection and Maintenance

- Inspect and verify that activity based BMPs are in place prior to the commencement of authorized non-stormwater discharges.
- Inspect BMPs subject to non-stormwater discharges daily while non-stormwater discharges are occuring.
- Repair water equipment as needed to prevent unintended discharges.
  - Water trucks
  - Water reservoirs (water buffalos)
  - Irrigation systems
  - Hydrant connections

References

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Paving and Grinding Operations NS-3



Objectives		
EC	Erosion Control	
SE	Sediment Control	
TR	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	☒

Legend:
☑ **Primary Objective**
☒ **Secondary Objective**

Targeted Constituents	
Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	☑
Organics	

Potential Alternatives

None

Description and Purpose

Prevent or reduce the discharge of pollutants from paving operations, using measures to prevent runon and runoff pollution, properly disposing of wastes, and training employees and subcontractors.

Suitable Applications

These procedures are implemented where paving, surfacing, resurfacing, or sawcutting, may pollute stormwater runoff or discharge to the storm drain system or watercourses.

Limitations

- Finer solids are not effectively removed by filtration systems.
- Paving opportunities may be limited during wet weather.

Implementation

General

- Avoid paving during the wet season when feasible.
- Reschedule paving and grinding activities if rain is in the forecast.
- Train employees and sub-contractors in pollution prevention and reduction.
- Store materials away from drainage courses to prevent stormwater runon (see WM-1, Material Delivery and Storage).

- Protect drainage courses, particularly in areas with a grade, by employing BMPs to divert runoff or to trap and filter sediment.
- If paving involves an onsite mixing plant, follow the stormwater permitting requirements for industrial activities.
- Stockpile material removed from roadways away from drain inlets, drainage ditches, and watercourses, These materials should be stored consistent with WM-3, Stockpile Management.
- Disposal of PCC and AC waste should be in conformance with WM-8, Concrete Waste Management.

Saw Cutting, Grinding, and Pavement Removal

- Shovel or vacuum saw-cut slurry and remove from site. Cover or barricade storm drains during saw cutting to contain slurry.
- When paving involves AC, the following steps should be implemented to prevent the discharge of grinding residue, uncompacted or loose AC, tack coats, equipment cleaners, or unrelated paving materials:
  - AC grindings, pieces, or chunks used in embankments or shoulder backing must not be allowed to enter any storm drains or watercourses. Install silt fence until structure is stabilized or permanent controls are in place. Examples of temporary perimeter controls can be found in EC-9, Earth Dikes and Drainage Swales; SE-1, Silt Fence; or SE-5, Fiber Rolls.
  - Collect and remove all broken asphalt and recycle when practical. Old or spilled asphalt must be recycled or disposed.
  - Any AC chunks and pieces used in embankments must be placed above the water table and covered by at least 1 ft of material.
- Do not allow saw-cut slurry to enter storm drains or watercourses. Residue from grinding operations should be picked up by means of a vacuum attachment to the grinding machine, should not be allowed to flow across the pavement, and should not be left on the surface of the pavement. See also WM-8, Concrete Waste Management, and WM-10, Liquid Waste Management.
- Dig out activities should not be conducted in the rain.
- Collect dig out material by mechanical or manual methods. This material may be recycled for use as shoulder backing or base material.
- If dig out material cannot be recycled, transport the material back to an approved storage site.

Asphaltic Concrete Paving

- If paving involves asphaltic cement concrete, follow these steps:

- Do not allow sand or gravel placed over new asphalt to wash into storm drains, streets, or creeks. Vacuum or sweep loose sand and gravel and properly dispose of this waste by referring to WM-5, Solid Waste Management.

- Old asphalt must be disposed of properly. Collect and remove all broken asphalt from the site and recycle whenever possible.

Portland Cement Concrete Paving

- Do not wash sweepings from exposed aggregate concrete into a storm drain system. Collect and return to aggregate base stockpile or dispose of properly.

- Allow aggregate rinse to settle. Then, either allow rinse water to dry in a temporary pit as described in WM-8, Concrete Waste Management, or pump the water to the sanitary sewer if allowed by the local wastewater authority.

Sealing Operations

- During chip seal application and sweeping operations, petroleum or petroleum covered aggregate must not be allowed to enter any storm drain or water courses. Apply temporary perimeter controls until structure is stabilized.

- Drainage inlet structures and manholes should be covered with filter fabric during application of seal coat, tack coat, slurry seal, and fog seal.

- Seal coat, tack coat, slurry seal, or fog seal should not be applied if rainfall is predicted to occur during the application or curing period.

Paving Equipment

- Leaks and spills from paving equipment can contain toxic levels of heavy metals and oil and grease. Place drip pans or absorbent materials under paving equipment when not in use. Clean up spills with absorbent materials rather than burying. See NS-10, Vehicle and Equipment Maintenance, WM-4, Spill Prevention and Control, and WM-10, Liquid Waste Management.

- Substances used to coat asphalt transport trucks, and asphalt spreading equipment should not contain soap and should be non-foaming and non-toxic.

- Use only non-toxic substances to coat asphalt transport trucks and asphalt spreading equipment.

- Paving equipment parked onsite should be parked over plastic to prevent soil contamination.

- Clean asphalt coated equipment offsite whenever possible. When cleaning dry, hardened asphalt from equipment, manage hardened asphalt debris as described in WM-5, Solid Waste Management. Any cleaning onsite should follow NS-8, Vehicle and Equipment Cleaning.

Thermoplastic Striping

- Thermoplastic striper and pre-heater equipment shutoff valves should be inspected to ensure that they are working properly to prevent leaking thermoplastic from entering drain inlets, the stormwater drainage system, or watercourses.
- Pre-heaters should be filled carefully to prevent splashing or spilling of hot thermoplastic. Leave six inches of space at the top of the pre-heater container when filling thermoplastic to allow room for material to move when the vehicle is deadheaded.
- Do not pre-heat, transfer, or load thermoplastic near drain inlets or watercourses.
- Clean truck beds daily of loose debris and melted thermoplastic. When possible, recycle thermoplastic material.

Raised/Recessed Pavement Marker Application and Removal

- Do not transfer or load bituminous material near drain inlets, the stormwater drainage system, or watercourses.
- Melting tanks should be loaded with care and not filled to beyond six inches from the top to leave room for splashing when vehicle is deadheaded.
- When servicing or filling melting tanks, ensure all pressure is released before removing lids to avoid spills.
- On large-scale projects, use mechanical or manual methods to collect excess bituminous material from the roadway after removal of markers.

Costs

- All of the above are low cost measures.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and at two-week intervals in the non-rainy season to verify continued BMP implementation.
- Keep ample supplies of drip pans or absorbent materials onsite.
- Inspect and maintain machinery regularly to minimize leaks and drips.

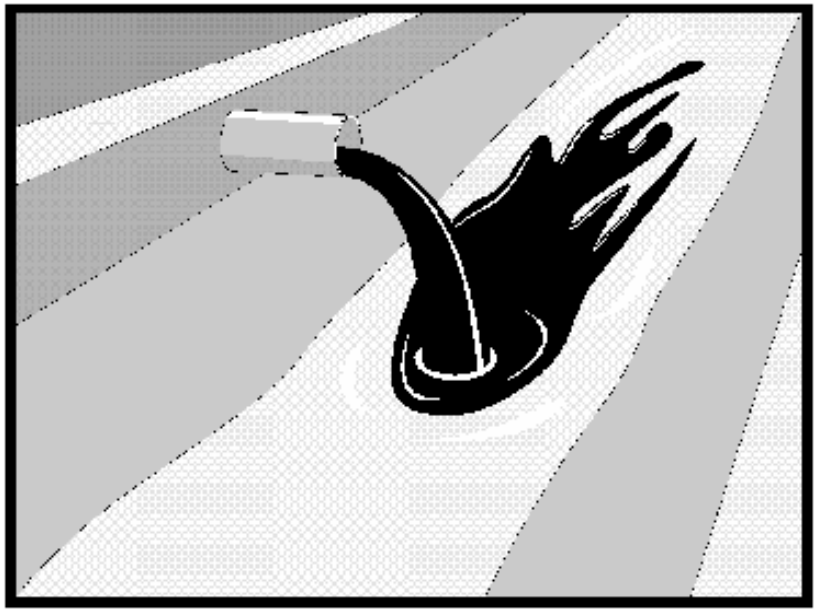
References

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Hot Mix Asphalt-Paving Handbook AC 150/5370-14, Appendix I, U.S. Army Corps of Engineers, July 1991.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Illicit Connection / Discharge NS-6



Description and Purpose

Procedures and practices designed for construction contractors to recognize illicit connections or illegally dumped or discharged materials on a construction site and report incidents.

Suitable Applications

This best management practice (BMP) applies to all construction projects. Illicit connection/discharge and reporting is applicable anytime an illicit connection or discharge is discovered or illegally dumped material is found on the construction site.

Limitations

Illicit connections and illegal discharges or dumping, for the purposes of this BMP, refer to discharges and dumping caused by parties other than the contractor. If pre-existing hazardous materials or wastes are known to exist onsite, they should be identified in the SWPPP and handled as set forth in the SWPPP.

Implementation

Planning

- Review the SWPPP. Pre-existing areas of contamination should be identified and documented in the SWPPP.
- Inspect site before beginning the job for evidence of illicit connections, illegal dumping or discharges. Document any pre-existing conditions and notify the owner.

Objectives

EC	Erosion Control	
SE	Sediment Control	
TR	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	☑
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

- Inspect site regularly during project execution for evidence of illicit connections, illegal dumping or discharges.
- Observe site perimeter for evidence for potential of illicitly discharged or illegally dumped material, which may enter the job site.

Identification of Illicit Connections and Illegal Dumping or Discharges

- **General –** unlabeled and unidentifiable material should be treated as hazardous.
- **Solids** - Look for debris, or rubbish piles. Solid waste dumping often occurs on roadways with light traffic loads or in areas not easily visible from the traveled way.
- **Liquids** - signs of illegal liquid dumping or discharge can include:
  - Visible signs of staining or unusual colors to the pavement or surrounding adjacent soils
  - Pungent odors coming from the drainage systems
  - Discoloration or oily substances in the water or stains and residues detained within ditches, channels or drain boxes
  - Abnormal water flow during the dry weather season
- **Urban Areas** - Evidence of illicit connections or illegal discharges is typically detected at storm drain outfall locations or at manholes. Signs of an illicit connection or illegal discharge can include:
  - Abnormal water flow during the dry weather season
  - Unusual flows in sub drain systems used for dewatering
  - Pungent odors coming from the drainage systems
  - Discoloration or oily substances in the water or stains and residues detained within ditches, channels or drain boxes
  - Excessive sediment deposits, particularly adjacent to or near active offsite construction projects
- **Rural Areas** - Illicit connections or illegal discharges involving irrigation drainage ditches are detected by visual inspections. Signs of an illicit discharge can include:
  - Abnormal water flow during the non-irrigation season
  - Non-standard junction structures
  - Broken concrete or other disturbances at or near junction structures

Reporting

Notify the owner of any illicit connections and illegal dumping or discharge incidents at the time of discovery. For illicit connections or discharges to the storm drain system, notify the local stormwater management agency. For illegal dumping, notify the local law enforcement agency.

Cleanup and Removal

The responsibility for cleanup and removal of illicit or illegal dumping or discharges will vary by location. Contact the local stormwater management agency for further information.

Costs

Costs to look for and report illicit connections and illegal discharges and dumping are low. The best way to avoid costs associated with illicit connections and illegal discharges and dumping is to keep the project perimeters secure to prevent access to the site, to observe the site for vehicles that should not be there, and to document any waste or hazardous materials that exist onsite before taking possession of the site.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and at two-week intervals in the non-rainy season to verify continued BMP implementation.
- Inspect the site regularly to check for any illegal dumping or discharge.
- Prohibit employees and subcontractors from disposing of non-job related debris or materials at the construction site.
- Notify the owner of any illicit connections and illegal dumping or discharge incidents at the time of discovery.

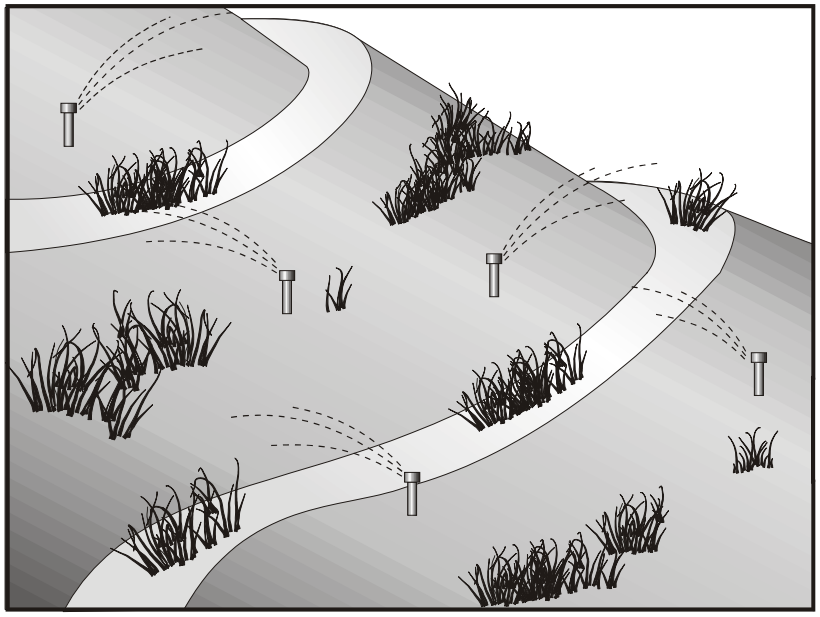
References

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices, EPA 832-R-92005; USEPA, April 1992.

Potable Water/Irrigation NS-7



Description and Purpose

Potable Water/Irrigation consists of practices and procedures to manage the discharge of potential pollutants generated during discharges from irrigation water lines, landscape irrigation, lawn or garden watering, planned and unplanned discharges from potable water sources, water line flushing, and hydrant flushing.

Suitable Applications

Implement this BMP whenever potable water or irrigation water discharges occur at or enter a construction site.

Limitations

None identified.

Implementation

- Direct water from offsite sources around or through a construction site, where feasible, in a way that minimizes contact with the construction site.
- Discharges from water line flushing should be reused for landscaping purposes where feasible.
- Shut off the water source to broken lines, sprinklers, or valves as soon as possible to prevent excess water flow.
- Protect downstream stormwater drainage systems and watercourses from water pumped or bailed from trenches excavated to repair water lines.

Objectives

EC	Erosion Control	
SE	Sediment Control	
TR	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	
Metals	☑
Bacteria	
Oil and Grease	
Organics	☑

Potential Alternatives

None

- Inspect irrigated areas within the construction limits for excess watering. Adjust watering times and schedules to ensure that the appropriate amount of water is being used and to minimize runoff. Consider factors such as soil structure, grade, time of year, and type of plant material in determining the proper amounts of water for a specific area.

Costs

Cost to manage potable water and irrigation are low and generally considered to be a normal part of related activities.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and at two-week intervals in the non-rainy season to verify continued BMP implementation.
- Inspect BMPs subject to non-stormwater discharges daily while non-stormwater discharges occur.
- Repair broken water lines as soon as possible.
- Inspect irrigated areas regularly for signs of erosion and/or discharge.

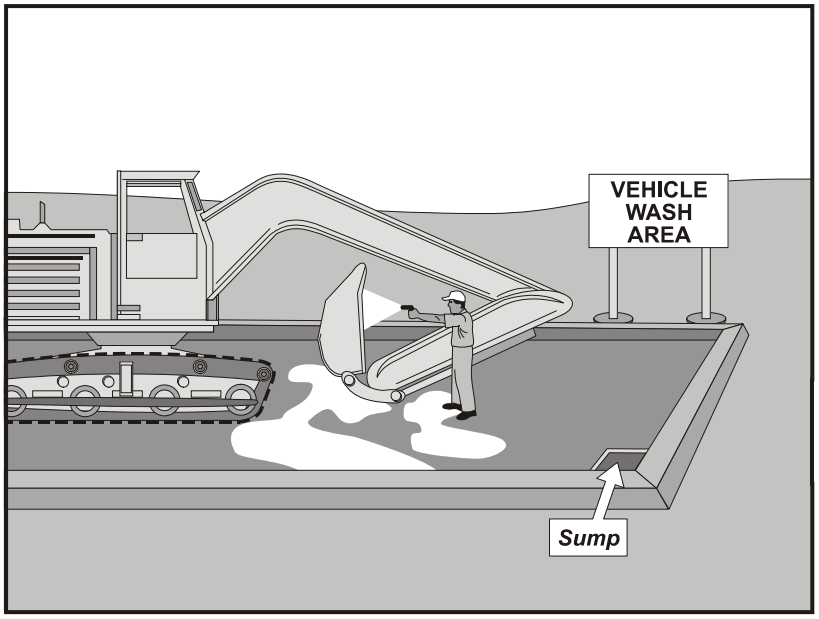
References

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices, EPA 832-R-92005; USEPA, April 1992.

Vehicle and Equipment Cleaning NS-8



Objectives

EC	Erosion Control	
SE	Sediment Control	
TR	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	
Metals	
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

Description and Purpose

Vehicle and equipment cleaning procedures and practices eliminate or reduce the discharge of pollutants to stormwater from vehicle and equipment cleaning operations. Procedures and practices include but are not limited to: using offsite facilities; washing in designated, contained areas only; eliminating discharges to the storm drain by infiltrating the wash water; and training employees and subcontractors in proper cleaning procedures.

Suitable Applications

These procedures are suitable on all construction sites where vehicle and equipment cleaning is performed.

Limitations

Even phosphate-free, biodegradable soaps have been shown to be toxic to fish before the soap degrades. Sending vehicles/equipment offsite should be done in conjunction with TR-1, Stabilized Construction Entrance/Exit.

Implementation

Other options to washing equipment onsite include contracting with either an offsite or mobile commercial washing business. These businesses may be better equipped to handle and dispose of the wash waters properly. Performing this work offsite can also be economical by eliminating the need for a separate washing operation onsite.

If washing operations are to take place onsite, then:

- Use phosphate-free, biodegradable soaps.
- Educate employees and subcontractors on pollution prevention measures.
- Do not permit steam cleaning onsite. Steam cleaning can generate significant pollutant concentrates.
- Cleaning of vehicles and equipment with soap, solvents or steam should not occur on the project site unless resulting wastes are fully contained and disposed of. Resulting wastes should not be discharged or buried, and must be captured and recycled or disposed according to the requirements of WM-10, Liquid Waste Management or WM-6, Hazardous Waste Management, depending on the waste characteristics. Minimize use of solvents. Use of diesel for vehicle and equipment cleaning is prohibited.
- All vehicles and equipment that regularly enter and leave the construction site must be cleaned offsite.
- When vehicle and equipment washing and cleaning must occur onsite, and the operation cannot be located within a structure or building equipped with appropriate disposal facilities, the outside cleaning area should have the following characteristics:
  - Located away from storm drain inlets, drainage facilities, or watercourses
  - Paved with concrete or asphalt and bermed to contain wash waters and to prevent runon and runoff
  - Configured with a sump to allow collection and disposal of wash water
  - No discharge of wash waters to storm drains or watercourses
  - Used only when necessary
- When cleaning vehicles and equipment with water:
  - Use as little water as possible. High-pressure sprayers may use less water than a hose and should be considered
  - Use positive shutoff valve to minimize water usage
  - Facility wash racks should discharge to a sanitary sewer, recycle system or other approved discharge system and must not discharge to the storm drainage system, watercourses, or to groundwater

Costs

Cleaning vehicles and equipment at an offsite facility may reduce overall costs for vehicle and equipment cleaning by eliminating the need to provide similar services onsite. When onsite cleaning is needed, the cost to establish appropriate facilities is relatively low on larger, long-duration projects, and moderate to high on small, short-duration projects.

Inspection and Maintenance

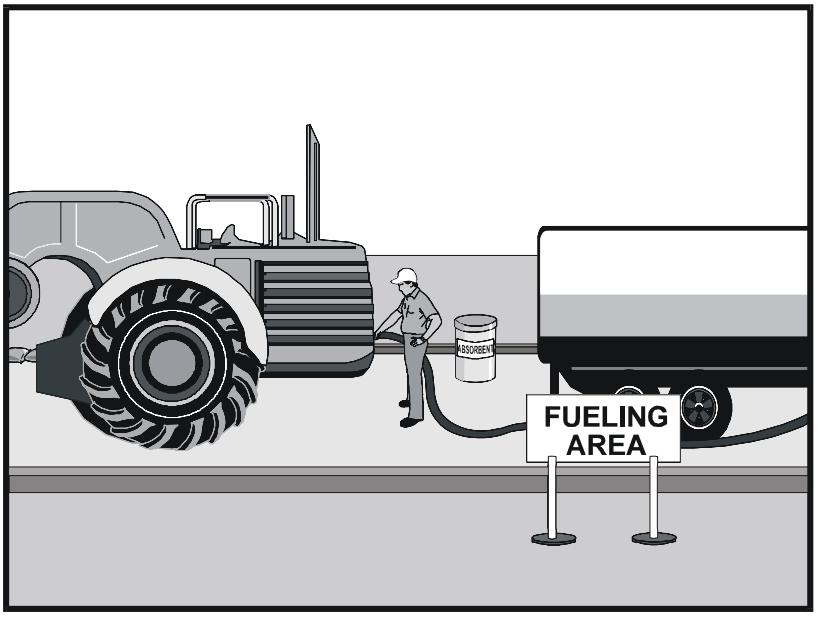
- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and at two-week intervals in the non-rainy season to verify continued BMP implementation.
- Inspect BMPs subject to non-stormwater discharges daily while non-stormwater discharges occur.
- Inspection and maintenance is minimal, although some berm repair may be necessary.
- Monitor employees and subcontractors throughout the duration of the construction project to ensure appropriate practices are being implemented.
- Inspect sump regularly and remove liquids and sediment as needed.
- Prohibit employees and subcontractors from washing personal vehicles and equipment on the construction site.

References

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Swisher, R.D. Surfactant Biodegradation, Marcel Decker Corporation, 1987.

Vehicle and Equipment Fueling NS-9



Objectives

EC	Erosion Control	
SE	Sediment Control	
TR	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	☑
Organics	

Potential Alternatives

None

Description and Purpose

Vehicle equipment fueling procedures and practices are designed to prevent fuel spills and leaks, and reduce or eliminate contamination of stormwater. This can be accomplished by using offsite facilities, fueling in designated areas only, enclosing or covering stored fuel, implementing spill controls, and training employees and subcontractors in proper fueling procedures.

Suitable Applications

These procedures are suitable on all construction sites where vehicle and equipment fueling takes place.

Limitations

Onsite vehicle and equipment fueling should only be used where it is impractical to send vehicles and equipment offsite for fueling. Sending vehicles and equipment offsite should be done in conjunction with TR-1, Stabilized Construction Entrance/ Exit.

Implementation

- Use offsite fueling stations as much as possible. These businesses are better equipped to handle fuel and spills properly. Performing this work offsite can also be economical by eliminating the need for a separate fueling area at a site.
- Discourage "topping-off" of fuel tanks.

- Absorbent spill cleanup materials and spill kits should be available in fueling areas and on fueling trucks, and should be disposed of properly after use.
- Drip pans or absorbent pads should be used during vehicle and equipment fueling, unless the fueling is performed over an impermeable surface in a dedicated fueling area.
- Use absorbent materials on small spills. Do not hose down or bury the spill. Remove the adsorbent materials promptly and dispose of properly.
- Avoid mobile fueling of mobile construction equipment around the site; rather, transport the equipment to designated fueling areas. With the exception of tracked equipment such as bulldozers and large excavators, most vehicles should be able to travel to a designated area with little lost time.
- Train employees and subcontractors in proper fueling and cleanup procedures.
- When fueling must take place onsite, designate an area away from drainage courses to be used. Fueling areas should be identified in the SWPPP.
- Dedicated fueling areas should be protected from stormwater runon and runoff, and should be located at least 50 ft away from downstream drainage facilities and watercourses. Fueling must be performed on level-grade areas.
- Protect fueling areas with berms and dikes to prevent runon, runoff, and to contain spills.
- Nozzles used in vehicle and equipment fueling should be equipped with an automatic shutoff to control drips. Fueling operations should not be left unattended.
- Use vapor recovery nozzles to help control drips as well as air pollution where required by Air Quality Management Districts (AQMD).
- Federal, state, and local requirements should be observed for any stationary above ground storage tanks.

Costs

- All of the above measures are low cost except for the capital costs of above ground tanks that meet all local environmental, zoning, and fire codes.

Inspection and Maintenance

- Vehicles and equipment should be inspected each day of use for leaks. Leaks should be repaired immediately or problem vehicles or equipment should be removed from the project site.
- Keep ample supplies of spill cleanup materials onsite.
- Immediately clean up spills and properly dispose of contaminated soil and cleanup materials.

References

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Coastal Nonpoint Pollution Control Program: Program Development and Approval Guidance, Working Group Working Paper; USEPA, April 1992.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

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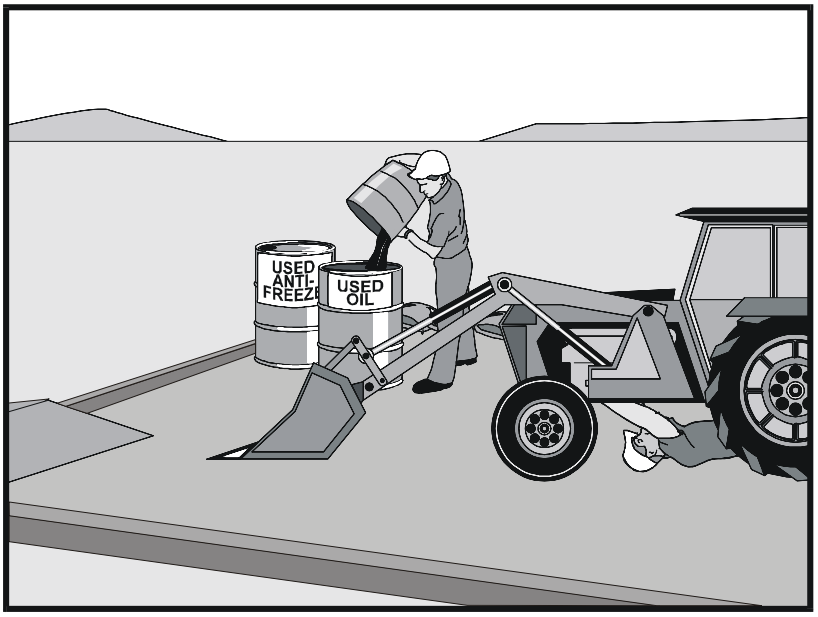
Vehicle & Equipment Maintenance NS-10



Objectives		
EC	Erosion Control	
SE	Sediment Control	
TR	Tracking Control	
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Legend:
☑ **Primary Objective**
☒ **Secondary Objective**

Targeted Constituents	
Sediment	
Nutrients	☑
Trash	☑
Metals	
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

Description and Purpose

Prevent or reduce the contamination of stormwater resulting from vehicle and equipment maintenance by running a "dry and clean site". The best option would be to perform maintenance activities at an offsite facility. If this option is not available then work should be performed in designated areas only, while providing cover for materials stored outside, checking for leaks and spills, and containing and cleaning up spills immediately. Employees and subcontractors must be trained in proper procedures.

Suitable Applications

These procedures are suitable on all construction projects where an onsite yard area is necessary for storage and maintenance of heavy equipment and vehicles.

Limitations

Onsite vehicle and equipment maintenance should only be used where it is impractical to send vehicles and equipment offsite for maintenance and repair. Sending vehicles/equipment offsite should be done in conjunction with TR-1, Stabilized Construction Entrance/Exit.

Outdoor vehicle or equipment maintenance is a potentially significant source of stormwater pollution. Activities that can contaminate stormwater include engine repair and service, changing or replacement of fluids, and outdoor equipment storage and parking (engine fluid leaks). For further information on vehicle or equipment servicing, see NS-8, Vehicle and Equipment Cleaning, and NS-9, Vehicle and Equipment Fueling.

CASQA
CALIFORNIA STORMWATER QUALITY ASSOCIATION

NS-10 Vehicle & Equipment Maintenance

Implementation

- Use offsite repair shops as much as possible. These businesses are better equipped to handle vehicle fluids and spills properly. Performing this work offsite can also be economical by eliminating the need for a separate maintenance area.
- If maintenance must occur onsite, use designated areas, located away from drainage courses. Dedicated maintenance areas should be protected from stormwater runon and runoff, and should be located at least 50 ft from downstream drainage facilities and watercourses.
- Drip pans or absorbent pads should be used during vehicle and equipment maintenance work that involves fluids, unless the maintenance work is performed over an impermeable surface in a dedicated maintenance area.
- Place a stockpile of spill cleanup materials where it will be readily accessible.
- All fueling trucks and fueling areas are required to have spill kits and/or use other spill protection devices.
- Use adsorbent materials on small spills. Remove the absorbent materials promptly and dispose of properly.
- Inspect onsite vehicles and equipment daily at startup for leaks, and repair immediately.
- Keep vehicles and equipment clean; do not allow excessive build-up of oil and grease.
- Segregate and recycle wastes, such as greases, used oil or oil filters, antifreeze, cleaning solutions, automotive batteries, hydraulic and transmission fluids. Provide secondary containment and covers for these materials if stored onsite.
- Train employees and subcontractors in proper maintenance and spill cleanup procedures.
- Drip pans or plastic sheeting should be placed under all vehicles and equipment placed on docks, barges, or other structures over water bodies when the vehicle or equipment is planned to be idle for more than 1 hour.
- For long-term projects, consider using portable tents or covers over maintenance areas if maintenance cannot be performed offsite.
- Consider use of new, alternative greases and lubricants, such as adhesive greases, for chassis lubrication and fifth-wheel lubrication.
- Properly dispose of used oils, fluids, lubricants, and spill cleanup materials.
- Do not place used oil in a dumpster or pour into a storm drain or watercourse.
- Properly dispose of or recycle used batteries.
- Do not bury used tires.
- Repair leaks of fluids and oil immediately.

Listed below is further information if you must perform vehicle or equipment maintenance onsite.

Safer Alternative Products

- Consider products that are less toxic or hazardous than regular products. These products are often sold under an "environmentally friendly" label.
- Consider use of grease substitutes for lubrication of truck fifth-wheels. Follow manufacturers label for details on specific uses.
- Consider use of plastic friction plates on truck fifth-wheels in lieu of grease. Follow manufacturers label for details on specific uses.

Waste Reduction

Parts are often cleaned using solvents such as trichloroethylene, trichloroethane, or methylene chloride. Many of these cleaners are listed in California Toxic Rule as priority pollutants. These materials are harmful and must not contaminate stormwater. They must be disposed of as a hazardous waste. Reducing the number of solvents makes recycling easier and reduces hazardous waste management costs. Often, one solvent can perform a job as well as two different solvents. Also, if possible, eliminate or reduce the amount of hazardous materials and waste by substituting non-hazardous or less hazardous materials. For example, replace chlorinated organic solvents with non-chlorinated solvents. Non-chlorinated solvents like kerosene or mineral spirits are less toxic and less expensive to dispose of properly. Check the list of active ingredients to see whether it contains chlorinated solvents. The "chlor" term indicates that the solvent is chlorinated. Also, try substituting a wire brush for solvents to clean parts.

Recycling and Disposal

Separating wastes allows for easier recycling and may reduce disposal costs. Keep hazardous wastes separate, do not mix used oil solvents, and keep chlorinated solvents (like,-trichloroethane) separate from non-chlorinated solvents (like kerosene and mineral spirits). Promptly transfer used fluids to the proper waste or recycling drums. Don't leave full drip pans or other open containers lying around. Provide cover and secondary containment until these materials can be removed from the site.

Oil filters can be recycled. Ask your oil supplier or recycler about recycling oil filters.

Do not dispose of extra paints and coatings by dumping liquid onto the ground or throwing it into dumpsters. Allow coatings to dry or harden before disposal into covered dumpsters.

Store cracked batteries in a non-leaking secondary container. Do this with all cracked batteries, even if you think all the acid has drained out. If you drop a battery, treat it as if it is cracked. Put it into the containment area until you are sure it is not leaking.

Costs

All of the above are low cost measures. Higher costs are incurred to setup and maintain onsite maintenance areas.

NS-10 Vehicle & Equipment Maintenance

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and at two-week intervals in the non-rainy season to verify continued BMP implementation.
- Inspect BMPs subject to non-stormwater discharges daily while non-stormwater discharges occur.
- Keep ample supplies of spill cleanup materials onsite.
- Maintain waste fluid containers in leak proof condition.
- Vehicles and equipment should be inspected on each day of use. Leaks should be repaired immediately or the problem vehicle(s) or equipment should be removed from the project site.
- Inspect equipment for damaged hoses and leaky gaskets routinely. Repair or replace as needed.

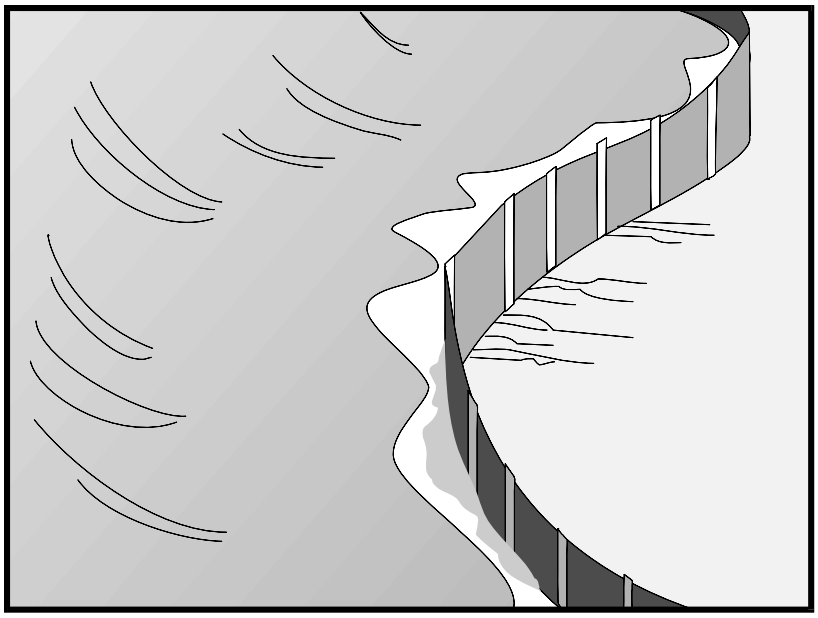
References

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Coastal Nonpoint Pollution Control Program; Program Development and Approval Guidance, Working Group, Working Paper; USEPA, April 1992.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Silt Fence SE-1



Objectives

EC	Erosion Control	
SE	Sediment Control	☑
TR	Tracking Control	
WE	Wind Erosion Control	
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WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-5 Fiber Rolls

SE-6 Gravel Bag Berm

SE-8 Sandbag Barrier

SE-9 Straw Bale Barrier

Description and Purpose

A silt fence is made of a filter fabric that has been entrenched, attached to supporting poles, and sometimes backed by a plastic or wire mesh for support. The silt fence detains sediment-laden water, promoting sedimentation behind the fence.

Suitable Applications

Silt fences are suitable for perimeter control, placed below areas where sheet flows discharge from the site. They should also be used as interior controls below disturbed areas where runoff may occur in the form of sheet and rill erosion. Silt fences are generally ineffective in locations where the flow is concentrated and are only applicable for sheet or overland flows. Silt fences are most effective when used in combination with erosion controls. Suitable applications include:

- Along the perimeter of a project.
- Below the toe or down slope of exposed and erodible slopes.
- Along streams and channels.
- Around temporary spoil areas and stockpiles.
- Below other small cleared areas.

Limitations

- Do not use in streams, channels, drain inlets, or anywhere flow is concentrated.

- Do not use in locations where ponded water may cause flooding.
- Do not place fence on a slope, or across any contour line. If not installed at the same elevation throughout, silt fences will create erosion.
- Filter fences will create a temporary sedimentation pond on the upstream side of the fence and may cause temporary flooding. Fences not constructed on a level contour will be overtopped by concentrated flow resulting in failure of the filter fence.
- Improperly installed fences are subject to failure from undercutting, overlapping, or collapsing.
  - Not effective unless trenched and keyed in.
  - Not intended for use as mid-slope protection on slopes greater than 4:1 (H:V).
  - Do not allow water depth to exceed 1.5 ft at any point.

Implementation

General

A silt fence is a temporary sediment barrier consisting of filter fabric stretched across and attached to supporting posts, entrenched, and, depending upon the strength of fabric used, supported with plastic or wire mesh fence. Silt fences trap sediment by intercepting and detaining small amounts of sediment-laden runoff from disturbed areas in order to promote sedimentation behind the fence.

Silt fences are preferable to straw bale barriers in many cases. Laboratory work at the Virginia Highway and Transportation Research Council has shown that silt fences can trap a much higher percentage of suspended sediments than can straw bales. While the failure rate of silt fences is lower than that of straw bale barriers, there are many instances where silt fences have been improperly installed. The following layout and installation guidance can improve performance and should be followed:

- Use principally in areas where sheet flow occurs.
- Don't use in streams, channels, or anywhere flow is concentrated. Don’t use silt fences to divert flow.
- Don't use below slopes subject to creep, slumping, or landslides.
- Select filter fabric that retains 85% of soil by weight, based on sieve analysis, but that is not finer than an equivalent opening size of 70.
- Install along a level contour, so water does not pond more than 1.5 ft at any point along the silt fence.
- The maximum length of slope draining to any point along the silt fence should be 200 ft or less.
- The maximum slope perpendicular to the fence line should be 1:1.

- Provide sufficient room for runoff to pond behind the fence and to allow sediment removal equipment to pass between the silt fence and toes of slopes or other obstructions. About 1200 ft^2 of ponding area should be provided for every acre draining to the fence.
- Turn the ends of the filter fence uphill to prevent stormwater from flowing around the fence.
- Leave an undisturbed or stabilized area immediately down slope from the fence where feasible.
- Silt fences should remain in place until the disturbed area is permanently stabilized.

Design and Layout

Selection of a filter fabric is based on soil conditions at the construction site (which affect the equivalent opening size (EOS) fabric specification) and characteristics of the support fence (which affect the choice of tensile strength). The designer should specify a filter fabric that retains the soil found on the construction site yet that it has openings large enough to permit drainage and prevent clogging. The following criteria is recommended for selection of the equivalent opening size:

1. If 50 percent or less of the soil, by weight, will pass the U.S. Standard Sieve No. 200, select the EOS to retain 85 % of the soil. The EOS should not be finer than EOS 70.
2. For all other soil types, the EOS should be no larger than the openings in the U.S. Standard Sieve No. 70 except where direct discharge to a stream, lake, or wetland will occur, then the EOS should be no larger than Standard Sieve No. 100.

To reduce the chance of clogging, it is preferable to specify a fabric with openings as large as allowed by the criteria. No fabric should be specified with an EOS smaller than U.S. Standard Sieve No. 100. If 85% or more of a soil, by weight, passes through the openings in a No. 200 sieve, filter fabric should not be used. Most of the particles in such a soil would not be retained if the EOS was too large and they would clog the fabric quickly if the EOS were small enough to capture the soil.

The fence should be supported by a plastic or wire mesh if the fabric selected does not have sufficient strength and bursting strength characteristics for the planned application (as recommended by the fabric manufacturer). Filter fabric material should contain ultraviolet inhibitors and stabilizers to provide a minimum of six months of expected usable construction life at a temperature range of 0 °F to 120 °F.

- Layout in accordance with attached figures.
- For slopes steeper than 2:1 (H:V) and that contain a high number of rocks or large dirt clods that tend to dislodge, it may be necessary to install additional protection immediately adjacent to the bottom of the slope, prior to installing silt fence. Additional protection may be a chain link fence or a cable fence.
- For slopes adjacent to sensitive receiving waters or Environmentally Sensitive Areas (ESAs), silt fence should be used in conjunction with erosion control BMPs.

Materials

- Silt fence fabric should be woven polypropylene with a minimum width of 36 in. and a minimum tensile strength of 100 lb force. The fabric should conform to the requirements in ASTM designation D4632 and should have an integral reinforcement layer. The reinforcement layer should be a polypropylene, or equivalent, net provided by the manufacturer. The permittivity of the fabric should be between 0.1 sec^{-1} and 0.15 sec^{-1} in conformance with the requirements in ASTM designation D4491.

- Wood stakes should be commercial quality lumber of the size and shape shown on the plans. Each stake should be free from decay, splits or cracks longer than the thickness of the stake or other defects that would weaken the stakes and cause the stakes to be structurally unsuitable.

- Staples used to fasten the fence fabric to the stakes should be not less than 1.75 in. long and should be fabricated from 15 gauge or heavier wire. The wire used to fasten the tops of the stakes together when joining two sections of fence should be 9 gauge or heavier wire. Galvanizing of the fastening wire will not be required.

- There are new products that may use prefabricated plastic holders for the silt fence and use bar reinforcement instead of wood stakes. If bar reinforcement is used in lieu of wood stakes, use number four or greater bar. Provide end protection for any exposed bar reinforcement.

Installation Guidelines

Silt fences are to be constructed on a level contour. Sufficient area should exist behind the fence for ponding to occur without flooding or overtopping the fence.

- A trench should be excavated approximately 6 in. wide and 6 in. deep along the line the proposed silt fence.

- Bottom of the silt fence should be keyed-in a minimum of 12 in.

- Posts should be spaced a maximum of 6 ft apart and driven securely into the ground a minimum of 18 in. or 12 in. below the bottom of the trench.

- When standard strength filter fabric is used, a plastic or wire mesh support fence should be fastened securely to the upslope side of posts using heavy–duty wire staples at least 1 in. long. The mesh should extend into the trench. When extra-strength filter fabric and closer post spacing are used, the mesh support fence may be eliminated. Filter fabric should be purchased in a long roll, and then cut to the length of the barrier. When joints are necessary, filter cloth should be spliced together only at a support post, with a minimum 6 in. overlap and both ends securely fastened to the post.

- The trench should be backfilled with compacted native material.

- Construct silt fences with a setback of at least 3 ft from the toe of a slope. Where a silt fence is determined to be not practicable due to specific site conditions, the silt fence may be constructed at the toe of the slope, but should be constructed as far from the toe of the slope as practicable. Silt fences close to the toe of the slope will be less effective and difficult to maintain.

- Construct the length of each reach so that the change in base elevation along the reach does not exceed 1/3 the height of the barrier; in no case should the reach exceed 500 ft.

Costs

- Average annual cost for installation and maintenance (assumes 6 month useful life): $7 per lineal foot ($850 per drainage acre). Range of cost is $3.50 - $9.10 per lineal foot.

Inspection and Maintenance

- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.
- Repair undercut silt fences.
- Repair or replace split, torn, slumping, or weathered fabric. The lifespan of silt fence fabric is generally 5 to 8 months.
- Silt fences that are damaged and become unsuitable for the intended purpose should be removed from the site of work, disposed of, and replaced with new silt fence barriers.
- Sediment that accumulates in the BMP must be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when the sediment accumulation reaches one-third of the barrier height. Sediment removed during maintenance may be incorporated into earthwork on the site or disposed at an appropriate location.
- Silt fences should be left in place until the upstream area is permanently stabilized. Until then, the silt fence must be inspected and maintained.
- Holes, depressions, or other ground disturbance caused by the removal of the silt fences should be backfilled and repaired.

References

Manual of Standards of Erosion and Sediment Control Measures, Association of Bay Area Governments, May 1995.

National Management Measures to Control Nonpoint Source Pollution from Urban Areas, United States Environmental Protection Agency, 2002.

Proposed Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters, Work Group-Working Paper, USEPA, April 1992.

Sedimentation and Erosion Control Practices, and Inventory of Current Practices (Draft), UESPA, 1990.

Southeastern Wisconsin Regional Planning Commission (SWRPC). Costs of Urban Nonpoint Source Water Pollution Control Measures. Technical Report No. 31. Southeastern Wisconsin Regional Planning Commission, Waukesha, WI. 1991

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management Manual for The Puget Sound Basin, Washington State Department of Ecology, Public Review Draft, 1991.

U.S. Environmental Protection Agency (USEPA). Stormwater Management for Industrial Activities: Developing Pollution Prevention Plans and Best Management Practices. U.S. Environmental Protection Agency, Office of Water, Washington, DC, 1992.

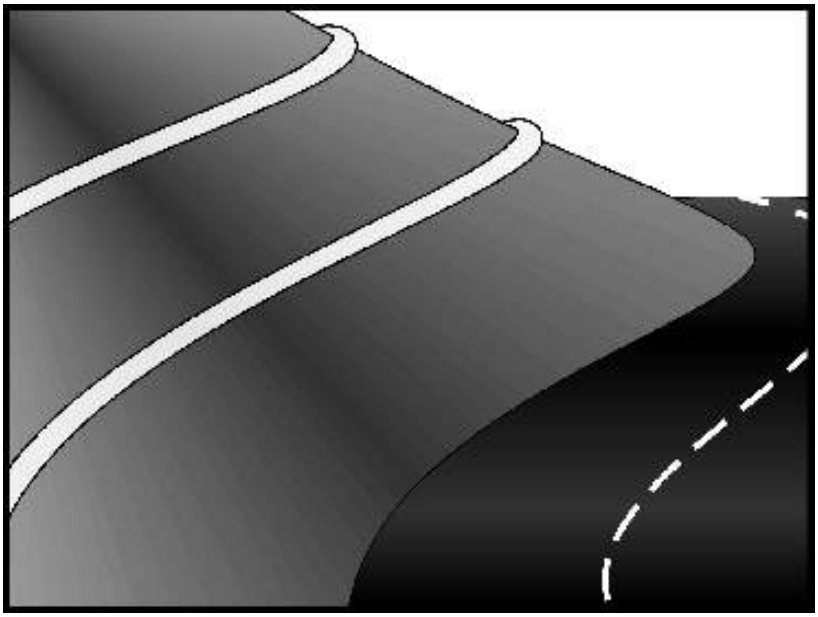
Water Quality Management Plan for the Lake Tahoe Region, Volume II, Handbook of Management Practices, Tahoe Regional Planning Agency, November 1988.

NOTES

1. Construct the length of each reach so that the change in base elevation along the reach does not exceed 1/3 the height of the linear barrier, in no case shall the reach length exceed 500'.
2. The last 8'–0" of fence shall be turned up slope.
3. Stake dimensions are nominal.
4. Dimension may vary to fit field condition.
5. Stakes shall be spaced at 8'–0" maximum and shall be positioned on downstream side of fence.
6. Stakes to overlap and fence fabric to fold around each stake one full turn. Secure fabric to stake with 4 staples.
7. Stakes shall be driven tightly together to prevent potential flow–through of sediment at joint. The tops of the stakes shall be secured with wire.
8. For end stake, fence fabric shall be folded around two stakes one full turn and secured with 4 staples.
9. Minimum 4 staples per stake. Dimensions shown are typical.
10. Cross barriers shall be a minimum of 1/3 and a maximum of 1/2 the height of the linear barrier.
11. Maintenance openings shall be constructed in a manner to ensure sediment remains behind silt fence.
12. Joining sections shall not be placed at sump locations.
13. Sandbag rows and layers shall be offset to eliminate gaps.

LEGEND
Tamped backfill
Slope direction
Direction of flow
1/2"
1"
1/2"
1/16" diameter
STAPLE DETAIL
(SEE NOTE 9)
Stake
Fabric
Toe of slope
8'
End stake
Sandbags (2-layers high)
Slope
4'
2'
8"
45°
Fabric
Stake
End stake
OPTIONAL MAINTENANCE OPENING DETAIL
(SEE NOTE 11)
Fabric section B
(See notes 6, 7 & 12)
Stake A
Stake B
Fabric section A
(See notes 6, 7 & 12)
JOINING SECTION DETAIL (TOP VIEW)
2" x 2" wood stake
(See note 3)
Fabric
(See note 8)
END STAKE DETAIL (TOP VIEW)
Silt fence
End stake
(See note 2)
END DETAIL
Setback varies
(See note 4)
2" X 2" Wood stake
(See notes 3 & 5)
See detail A
30"
18"
Fabric
6"
6"
6"
Toe of slope
Slope
SECTION A-A
2" x 2"
wood stake
Silt fence
fabric
6"
6"
DETAIL A

Fiber Rolls SE-5



Objectives

EC	Erosion Control	☒
SE	Sediment Control	☑
TR	Tracking Control	
WE	Wind Erosion Control	
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WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-1 Silt Fence

SE-6 Gravel Bag Berm

SE-8 Sandbag Barrier

SE-9 Straw Bale Barrier

Description and Purpose

A fiber roll consists of straw, flax, or other similar materials bound into a tight tubular roll. When fiber rolls are placed at the toe and on the face of slopes, they intercept runoff, reduce its flow velocity, release the runoff as sheet flow, and provide removal of sediment from the runoff. By interrupting the length of a slope, fiber rolls can also reduce erosion.

Suitable Applications

Fiber rolls may be suitable:

- Along the toe, top, face, and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow
- At the end of a downward slope where it transitions to a steeper slope
- Along the perimeter of a project
- As check dams in unlined ditches
- Down-slope of exposed soil areas
- Around temporary stockpiles

Limitations

- Fiber rolls are not effective unless trenched

- Fiber rolls at the toe of slopes greater than 5:1 (H:V) should be a minimum of 20 in. diameter or installations achieving the same protection (i.e. stacked smaller diameter fiber rolls, etc.).
- Difficult to move once saturated.
- If not properly staked and trenched in, fiber rolls could be transported by high flows.
- Fiber rolls have a very limited sediment capture zone.
- Fiber rolls should not be used on slopes subject to creep, slumping, or landslide.

Implementation

Fiber Roll Materials

- Fiber rolls should be either prefabricated rolls or rolled tubes of erosion control blanket.

Assembly of Field Rolled Fiber Roll

- Roll length of erosion control blanket into a tube of minimum 8 in. diameter.
- Bind roll at each end and every 4 ft along length of roll with jute-type twine.

Installation

- Locate fiber rolls on level contours spaced as follows:
  - Slope inclination of 4:1 (H:V) or flatter: Fiber rolls should be placed at a maximum interval of 20 ft.
  - Slope inclination between 4:1 and 2:1 (H:V): Fiber Rolls should be placed at a maximum interval of 15 ft. (a closer spacing is more effective).
  - Slope inclination 2:1 (H:V) or greater: Fiber Rolls should be placed at a maximum interval of 10 ft. (a closer spacing is more effective).
- Turn the ends of the fiber roll up slope to prevent runoff from going around the roll.
- Stake fiber rolls into a 2 to 4 in. deep trench with a width equal to the diameter of the fiber roll.
  - Drive stakes at the end of each fiber roll and spaced 4 ft maximum on center.
  - Use wood stakes with a nominal classification of 0.75 by 0.75 in. and minimum length of 24 in.
- If more than one fiber roll is placed in a row, the rolls should be overlapped, not abutted.

Removal

- Fiber rolls are typically left in place.

- If fiber rolls are removed, collect and dispose of sediment accumulation, and fill and compact holes, trenches, depressions or any other ground disturbance to blend with adjacent ground.

Costs

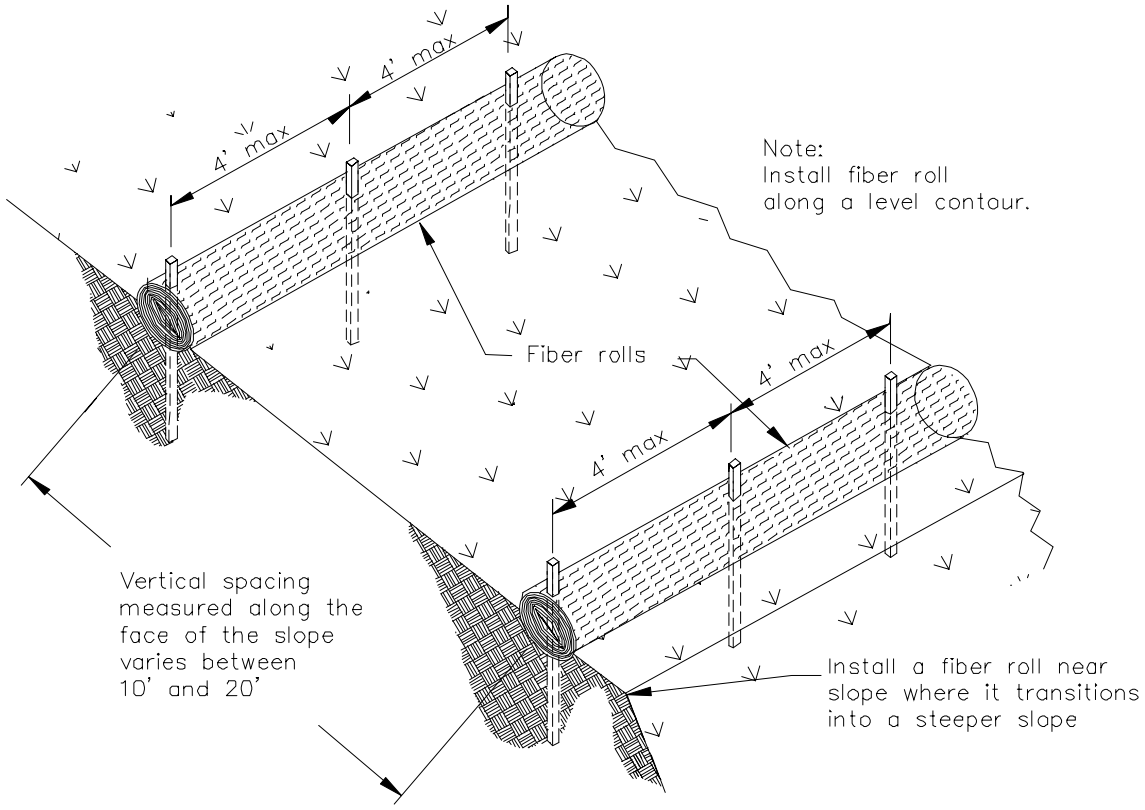
Material costs for fiber rolls range from $20 - $30 per 25 ft roll.

Inspection and Maintenance

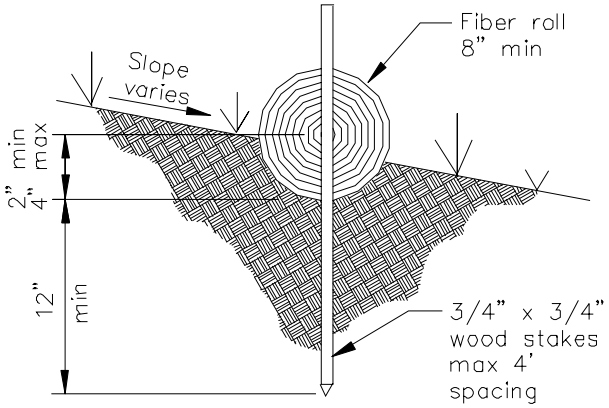
- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.
- Repair or replace split, torn, unraveling, or slumping fiber rolls.
- If the fiber roll is used as a sediment capture device, or as an erosion control device to maintain sheet flows, sediment that accumulates in the BMP must be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when sediment accumulation reaches one-half the designated sediment storage depth, usually one-half the distance between the top of the fiber roll and the adjacent ground surface. Sediment removed during maintenance may be incorporated into earthwork on the site of disposed at an appropriate location.
- If fiber rolls are used for erosion control, such as in a mini check dam, sediment removal should not be required as long as the system continues to control the grade. Sediment control BMPs will likely be required in conjunction with this type of application.

References

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

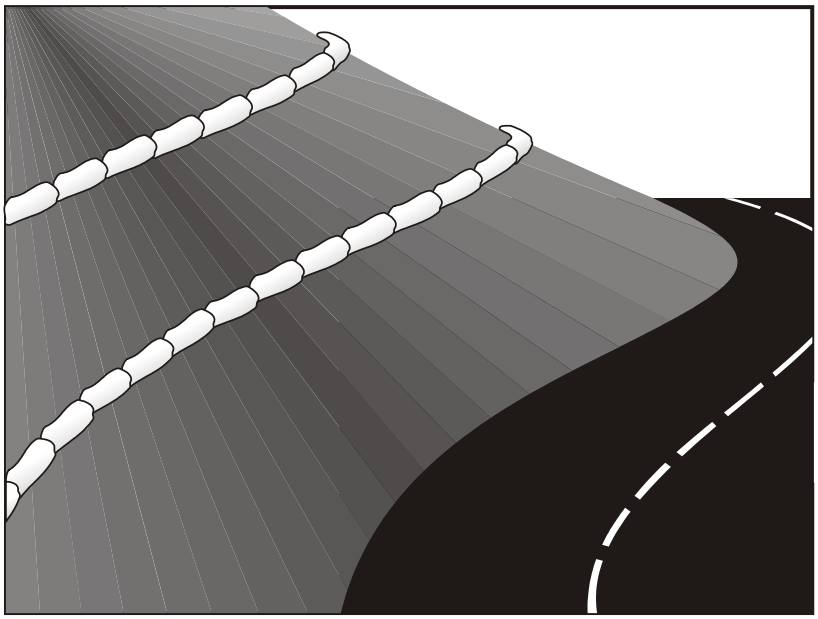


TYPICAL FIBER ROLL INSTALLATION
N.T.S.



ENTRENCHMENT DETAIL
N.T.S.

Gravel Bag Berm SE-6



Objectives

EC	Erosion Control	☒
SE	Sediment Control	☑
TR	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-1 Silt Fence

SE-5 Fiber Roll

SE-8 Sandbag Barrier

SE-9 Straw Bale Barrier

Description and Purpose

A gravel bag berm is a series of gravel-filled bags placed on a level contour to intercept sheet flows. Gravel bags pond sheet flow runoff, allowing sediment to settle out, and release runoff slowly as sheet flows, preventing erosion.

Suitable Applications

Gravel bag berms may be suitable:

- As a linear sediment control measure:
  - Below the toe of slopes and erodible slopes
  - As sediment traps at culvert/pipe outlets
  - Below other small cleared areas
  - Along the perimeter of a site
  - Down slope of exposed soil areas
  - Around temporary stockpiles and spoil areas
  - Parallel to a roadway to keep sediment off paved areas
  - Along streams and channels
- As linear erosion control measure:

- Along the face and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow
- At the top of slopes to divert runoff away from disturbed slopes
- As check dams across mildly sloped construction roads

Limitations

- Gravel berms may be difficult to remove.
- Removal problems limit their usefulness in landscaped areas.
- Gravel bag berm may not be appropriate for drainage areas greater than 5 acres.
- Runoff will pond upstream of the filter, possibly causing flooding if sufficient space does not exist.
- Degraded gravel bags may rupture when removed, spilling contents.
- Installation can be labor intensive.
- Berms may have limited durability for long-term projects.
- When used to detain concentrated flows, maintenance requirements increase.

Implementation

General

A gravel bag berm consists of a row of open graded gravel–filled bags placed on a level contour. When appropriately placed, a gravel bag berm intercepts and slows sheet flow runoff, causing temporary ponding. The temporary ponding provides quiescent conditions allowing sediment to settle. The open graded gravel in the bags is porous, which allows the ponded runoff to flow slowly through the bags, releasing the runoff as sheet flows. Gravel bag berms also interrupt the slope length and thereby reduce erosion by reducing the tendency of sheet flows to concentrate into rivulets, which erode rills, and ultimately gullies, into disturbed, sloped soils. Gravel bag berms are similar to sand bag barriers, but are more porous.

Design and Layout

- Locate gravel bag berms on level contours.
  - Slopes between 20:1 and 2:1 (H:V): Gravel bags should be placed at a maximum interval of 50 ft (a closer spacing is more effective), with the first row near the slope toe.
  - Slopes 2:1 (H:V) or steeper: Gravel bags should be placed at a maximum interval of 25 ft (a closer spacing is more effective), with the first row placed the slope toe.
- Turn the ends of the gravel bag barriers up slope to prevent runoff from going around the berm.
- Allow sufficient space up slope from the gravel bag berm to allow ponding, and to provide room for sediment storage.

- For installation near the toe of the slope, consider moving the gravel bag barriers away from the slope toe to facilitate cleaning. To prevent flows behind the barrier, bags can be placed perpendicular to a berm to serve as cross barriers.
- Drainage area should not exceed 5 acres.
- In Non-Traffic Areas:
  - Height = 18 in. maximum
  - Top width = 24 in. minimum for three or more layer construction
  - Top width = 12 in. minimum for one or two layer construction
  - Side slopes = 2:1 or flatter
- In Construction Traffic Areas:
  - Height = 12 in. maximum
  - Top width = 24 in. minimum for three or more layer construction.
  - Top width = 12 in. minimum for one or two layer construction.
  - Side slopes = 2:1 or flatter.
- Butt ends of bags tightly
- On multiple row, or multiple layer construction, overlapp butt joints of adjacent row and row beneath.
- Use a pyramid approach when stacking bags.

Materials

- ***Bag Material:*** Bags should be woven polypropylene, polyethylene or polyamide fabric or burlap, minimum unit weight of 4 ounces/yd^2, Mullen burst strength exceeding 300 lb/in^2 in conformance with the requirements in ASTM designation D3786, and ultraviolet stability exceeding 70% in conformance with the requirements in ASTM designation D4355.
- ***Bag Size:*** Each gravel-filled bag should have a length of 18 in., width of 12 in., thickness of 3 in., and mass of approximately 33 lbs. Bag dimensions are nominal, and may vary based on locally available materials.
- ***Fill Material:*** Fill material should be 0.5 to 1 in. Class 2 aggregate base, clean and free from clay, organic matter, and other deleterious material, or other suitable open graded, non-cohesive, porous gravel.

Costs

Gravel filter: Expensive, since off-site materials, hand construction, and demolition/removal are usually required. Material costs for gravel bags are average of $2.50 per empty gravel bag. Gravel costs range from $20-$35 per yd^3.

Inspection and Maintenance

- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.
- Gravel bags exposed to sunlight will need to be replaced every two to three months due to degrading of the bags.
- Reshape or replace gravel bags as needed.
- Repair washouts or other damage as needed.
- Sediment that accumulates in the BMP must be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when the sediment accumulation reaches one-third of the barrier height. Sediment removed during maintenance may be incorporated into earthwork on the site or disposed at an appropriate location.
- Remove gravel bag berms when no longer needed. Remove sediment accumulation and clean, re-grade, and stabilize the area. Removed sediment should be incorporated in the project or disposed of.

References

Handbook of Steel Drainage and Highway Construction, American Iron and Steel Institute, 1983.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Pollution Plan Handbook, First Edition, State of California, Department of Transportation Division of New Technology, Materials and Research, October 1992.

Street Sweeping and Vacuuming SE-7

Objectives		
EC	Erosion Control	
SE	Sediment Control	☒
TR	Tracking Control	☑
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:
☑ **Primary Objective**
☒ **Secondary Objective**

Targeted Constituents	
Sediment	☑
Nutrients	
Trash	☑
Metals	
Bacteria	
Oil and Grease	☑
Organics	

Potential Alternatives

None

Description and Purpose

Street sweeping and vacuuming includes use of self-propelled and walk-behind equipment to remove sediment from streets and roadways, and to clean paved surfaces in preparation for final paving. Sweeping and vacuuming prevents sediment from the project site from entering storm drains or receiving waters.

Suitable Applications

Sweeping and vacuuming are suitable anywhere sediment is tracked from the project site onto public or private paved streets and roads, typically at points of egress. Sweeping and vacuuming are also applicable during preparation of paved surfaces for final paving.

Limitations

Sweeping and vacuuming may not be effective when sediment is wet or when tracked soil is caked (caked soil may need to be scraped loose).

Implementation

- Controlling the number of points where vehicles can leave the site will allow sweeping and vacuuming efforts to be focused, and perhaps save money.
- Inspect potential sediment tracking locations daily.
- Visible sediment tracking should be swept or vacuumed on a daily basis.

- Do not use kick brooms or sweeper attachments. These tend to spread the dirt rather than remove it.
- If not mixed with debris or trash, consider incorporating the removed sediment back into the project

Costs

Rental rates for self-propelled sweepers vary depending on hopper size and duration of rental. Expect rental rates from $58/hour (3 yd^3 hopper) to $88/hour (9 yd^3 hopper), plus operator costs. Hourly production rates vary with the amount of area to be swept and amount of sediment. Match the hopper size to the area and expect sediment load to minimize time spent dumping.

Inspection and Maintenance

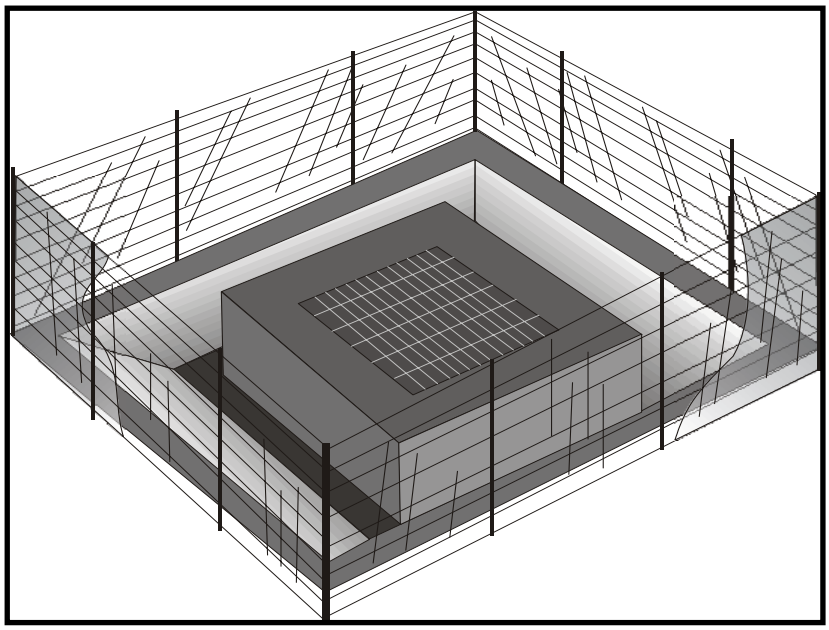
- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.
- When actively in use, points of ingress and egress must be inspected daily.
- When tracked or spilled sediment is observed outside the construction limits, it must be removed at least daily. More frequent removal, even continuous removal, may be required in some jurisdictions.
- Be careful not to sweep up any unknown substance or any object that may be potentially hazardous.
- Adjust brooms frequently; maximize efficiency of sweeping operations.
- After sweeping is finished, properly dispose of sweeper wastes at an approved dumpsite.

References

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Labor Surcharge and Equipment Rental Rates, State of California Department of Transportation (Caltrans), April 1, 2002 – March 31, 2003.

Storm Drain Inlet Protection SE-10



Objectives		
EC	Erosion Control	
SE	Sediment Control	☑
TR	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:
☑ **Primary Objective**
☒ **Secondary Objective**

Targeted Constituents	
Sediment	☑
Nutrients	
Trash	☑
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-1 Silt Fence
SE-5 Fiber Rolls
SE-6 Gravel Bag Berm
SE-8 Sandbag Barrier
SE-9 Straw Bale Barrier

Description and Purpose

Storm drain inlet protection consists of a sediment filter or an impounding area around or upstream of a storm drain, drop inlet, or curb inlet. Storm drain inlet protection measures temporarily pond runoff before it enters the storm drain, allowing sediment to settle. Some filter configurations also remove sediment by filtering, but usually the ponding action results in the greatest sediment reduction.

Suitable Applications

Every storm drain inlet receiving sediment-laden runoff should be protected.

Limitations

- Drainage area should not exceed 1 acre.
- Straw bales, while potentially effective, have not produced in practice satisfactory results, primarily due to improper installation.
- Requires an adequate area for water to pond without encroaching into portions of the roadway subject to traffic.
- Inlet protection usually requires other methods of temporary protection to prevent sediment-laden stormwater and non-stormwater discharges from entering the storm drain system.
- Sediment removal may be difficult in high flow conditions or if runoff is heavily sediment laden. If high flow conditions are

expected, use other onsite sediment trapping techniques in conjunction with inlet protection.

- Frequent maintenance is required.
- For drainage areas larger than 1 acre, runoff should be routed to a sediment-trapping device designed for larger flows. See BMPs SE-2, Sediment Basin, and SE-3, Sediment Traps.
- Excavated drop inlet sediment traps are appropriate where relatively heavy flows are expected, and overflow capability is needed.

Implementation

General

Large amounts of sediment may enter the storm drain system when storm drains are installed before the upslope drainage area is stabilized, or where construction is adjacent to an existing storm drain. In cases of extreme sediment loading, the storm drain itself may clog and lose a major portion of its capacity. To avoid these problems, it is necessary to prevent sediment from entering the system at the inlets.

Inlet control measures presented in this handbook should not be used for inlets draining more than one acre. Runoff from larger disturbed areas should be first routed through SE-2, Sediment Basin or SE-3, Sediment Trap. Different types of inlet protection are appropriate for different applications depending on site conditions and the type of inlet. Inlet protection methods not presented in this handbook should be approved by the local stormwater management agency.

Design and Layout

Identify existing and planned storm drain inlets that have the potential to receive sediment-laden surface runoff. Determine if storm drain inlet protection is needed and which method to use.

- Limit upstream drainage area to 1 acre maximum. For larger drainage areas, use SE-2, Sediment Basin, or SE-3, Sediment Trap, upstream of the inlet protection device.
- The key to successful and safe use of storm drain inlet protection devices is to know where runoff will pond or be diverted.
  - Determine the acceptable location and extent of ponding in the vicinity of the drain inlet. The acceptable location and extent of ponding will influence the type and design of the storm drain inlet protection device.
  - Determine the extent of potential runoff diversion caused by the storm drain inlet protection device. Runoff ponded by inlet protection devices may flow around the device and towards the next downstream inlet. In some cases, this is acceptable; in other cases, serious erosion or downstream property damage can be caused by these diversions. The possibility of runoff diversions will influence whether or not storm drain inlet protection is suitable; and, if suitable, the type and design of the device.
- The location and extent of ponding, and the extent of diversion, can usually be controlled through appropriate placement of the inlet protection device. In some cases, moving the

inlet protection device a short distance upstream of the actual inlet can provide more efficient sediment control, limit ponding to desired areas, and prevent or control diversions.

- Four types of inlet protection are presented below. However, it is recognized that other effective methods and proprietary devices exist and may be selected.
  - Filter Fabric Fence: Appropriate for drainage basins with less than a 5% slope, sheet flows, and flows under 0.5 cfs.
  - Excavated Drop Inlet Sediment Trap: An excavated area around the inlet to trap sediment (SE-3).
  - Gravel bag barrier: Used to create a small sediment trap upstream of inlets on sloped, paved streets. Appropriate for sheet flow or when concentrated flow may exceed 0.5 cfs, and where overtopping is required to prevent flooding.
  - Block and Gravel Filter: Appropriate for flows greater than 0.5 cfs.
- Select the appropriate type of inlet protection and design as referred to or as described in this fact sheet.
- Provide area around the inlet for water to pond without flooding structures and property.
- Grates and spaces around all inlets should be sealed to prevent seepage of sediment-laden water.
- Excavate sediment sumps (where needed) 1 to 2 ft with 2:1 side slopes around the inlet.

Installation

- ***DI Protection Type 1 - Filter Fabric Fence -*** The filter fabric fence (Type 1) protection is shown in the attached figure. Similar to constructing a silt fence; see BMP SE-1, Silt Fence. Do not place filter fabric underneath the inlet grate since the collected sediment may fall into the drain inlet when the fabric is removed or replaced.
  1. Excavate a trench approximately 6 in. wide and 6 in. deep along the line of the silt fence inlet protection device.
  2. Place 2 in. by 2 in. wooden stakes around the perimeter of the inlet a maximum of 3 ft apart and drive them at least 18 in. into the ground or 12 in. below the bottom of the trench. The stakes must be at least 48 in.
  3. Lay fabric along bottom of trench, up side of trench, and then up stakes. See SE-1, Silt Fence, for details. The maximum silt fence height around the inlet is 24 in.
  4. Staple the filter fabric (for materials and specifications, see SE-1, Silt Fence) to wooden stakes. Use heavy-duty wire staples at least 1 in. in length.
  5. Backfill the trench with gravel or compacted earth all the way around.
- ***DI Protection Type 2 - Excavated Drop Inlet Sediment Trap -*** The excavated drop inlet sediment trap (Type 2) is shown in the attached figures. Install filter fabric fence in

accordance with DI Protection Type 1. Size excavated trap to provide a minimum storage capacity calculated at the rate 67 yd^3/acre of drainage area.

- ***DI Protection Type 3 - Gravel bag -*** The gravel bag barrier (Type 3) is shown in the figures. Flow from a severe storm should not overtop the curb. In areas of high clay and silts, use filter fabric and gravel as additional filter media. Construct gravel bags in accordance with SE-6, Gravel Bag Berm. Gravel bags should be used due to their high permeability.

  1. Use sand bag made of geotextile fabric (not burlap) and fill with 0.75 in. rock or 0.25 in. pea gravel.

  2. Construct on gently sloping street.

  3. Leave room upstream of barrier for water to pond and sediment to settle.

  4. Place several layers of sand bags – overlapping the bags and packing them tightly together.

  5. Leave gap of one bag on the top row to serve as a spillway. Flow from a severe storm (e.g., 10 year storm) should not overtop the curb.

- ***DI Protection Type 4 – Block and Gravel Filter -*** The block and gravel filter (Type 4) is shown in the figures. Block and gravel filters are suitable for curb inlets commonly used in residential, commercial, and industrial construction.

  1. Place hardware cloth or comparable wire mesh with 0.5 in. openings over the drop inlet so that the wire extends a minimum of 1 ft beyond each side of the inlet structure. If more than one strip is necessary, overlap the strips. Place filter fabric over the wire mesh.

  2. Place concrete blocks lengthwise on their sides in a single row around the perimeter of the inlet, so that the open ends face outward, not upward. The ends of adjacent blocks should abut. The height of the barrier can be varied, depending on design needs, by stacking combinations of blocks that are 4 in., 8 in., and 12 in. wide. The row of blocks should be at least 12 in. but no greater than 24 in. high.

  3. Place wire mesh over the outside vertical face (open end) of the concrete blocks to prevent stone from being washed through the blocks. Use hardware cloth or comparable wire mesh with 0.5 in. opening.

  4. Pile washed stone against the wire mesh to the top of the blocks. Use 0.75 to 3 in.

Costs

- Average annual cost for installation and maintenance (one year useful life) is $200 per inlet.

Inspection and Maintenance

- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.

- Filter Fabric Fences. If the fabric becomes clogged, torn, or degrades, it should be replaced. Make sure the stakes are securely driven in the ground and are in good shape (i.e., not bent, cracked, or splintered, and are reasonably perpendicular to the ground). Replace damaged stakes.

- Gravel Filters. If the gravel becomes clogged with sediment, it must be carefully removed from the inlet and either cleaned or replaced. Since cleaning gravel at a construction site may be difficult, consider using the sediment-laden stone as fill material and put fresh stone around the inlet. Inspect bags for holes, gashes, and snags, and replace bags as needed. Check gravel bags for proper arrangement and displacement.

- Sediment that accumulates in the BMP must be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when the sediment accumulation reaches one-third of the barrier height. Sediment removed during maintenance may be incorporated into earthwork on the site ore disposed at an appropriate location.

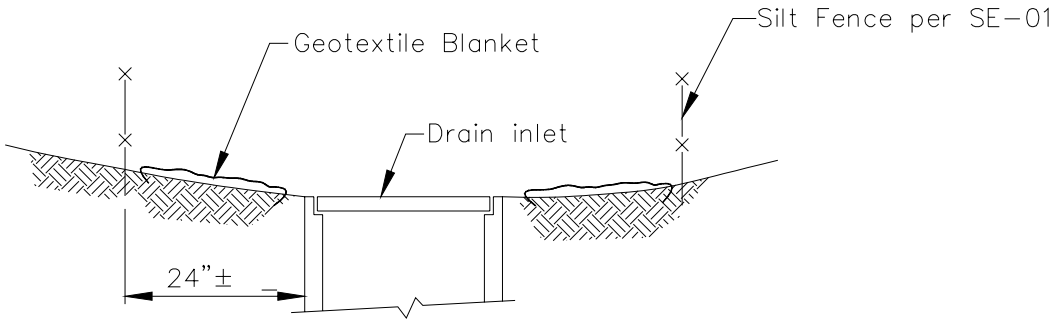
- Remove storm drain inlet protection once the drainage area is stabilized.

  - Clean and regrade area around the inlet and clean the inside of the storm drain inlet as it must be free of sediment and debris at the time of final inspection.

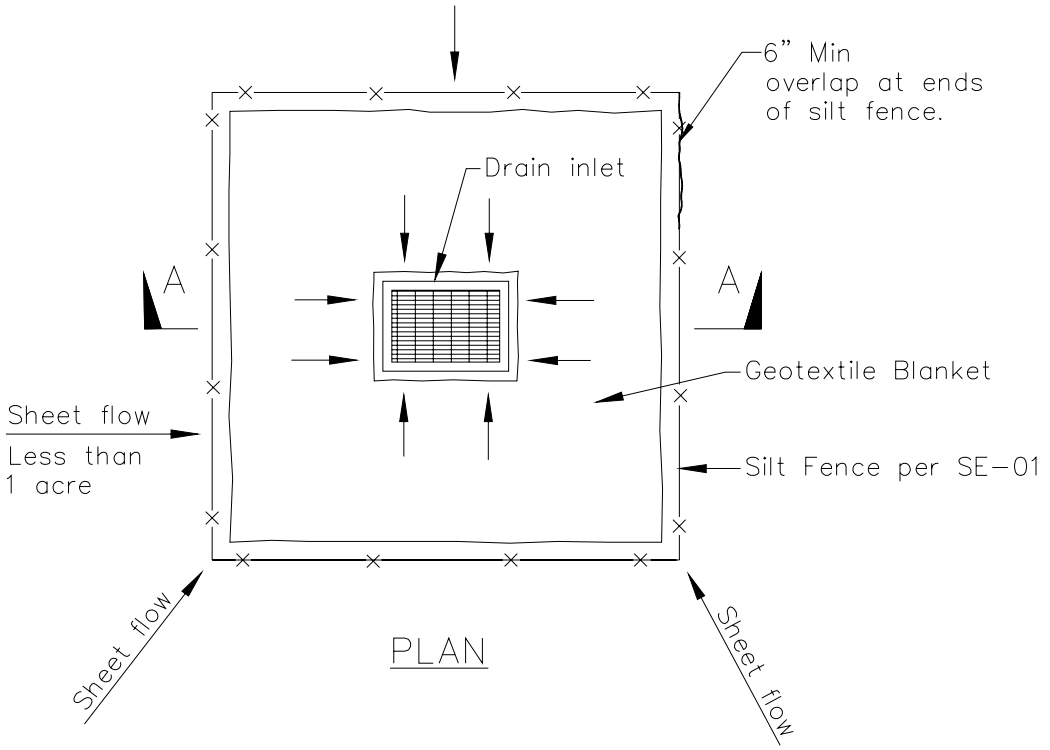
References

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management Manual for The Puget Sound Basin, Washington State Department of Ecology, Public Review Draft, 1991.



SECTION A–A

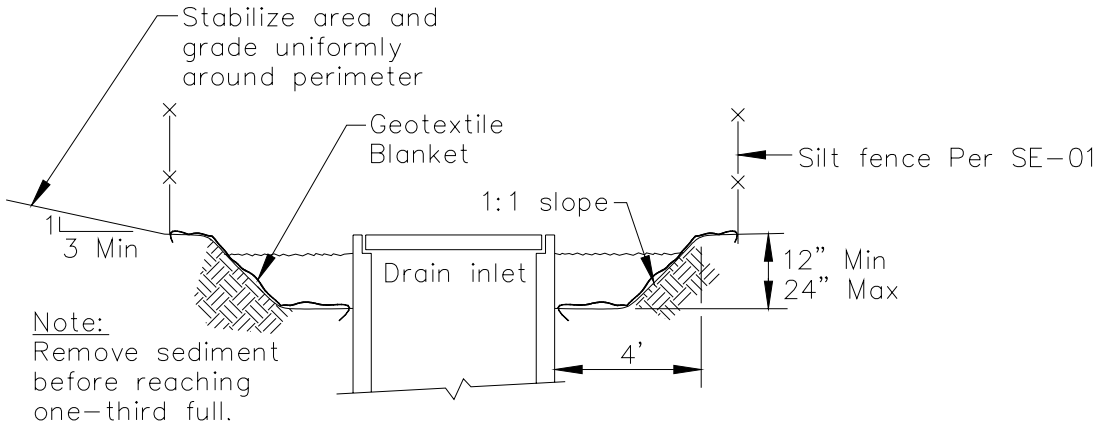


PLAN

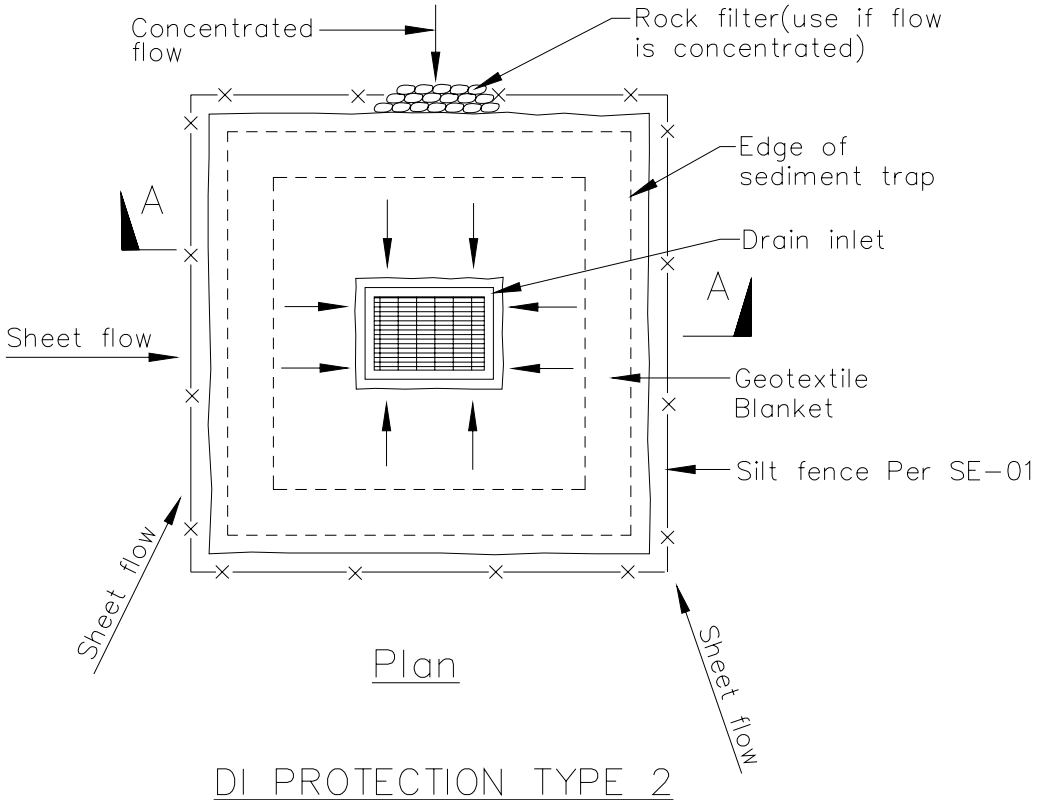
DI PROTECTION TYPE 1
NOT TO SCALE

NOTES:

1. For use in areas where grading has been completed and final soil stabilization and seeding are pending.
2. Not applicable in paved areas.
3. Not applicable with concentrated flows.



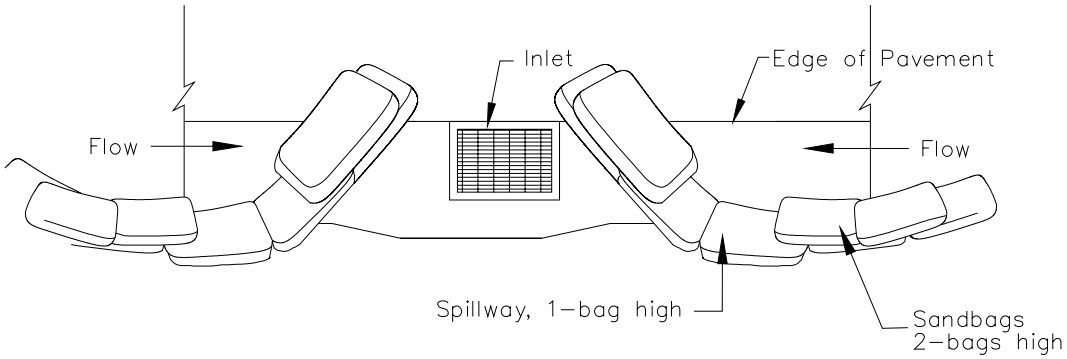
Section A–A



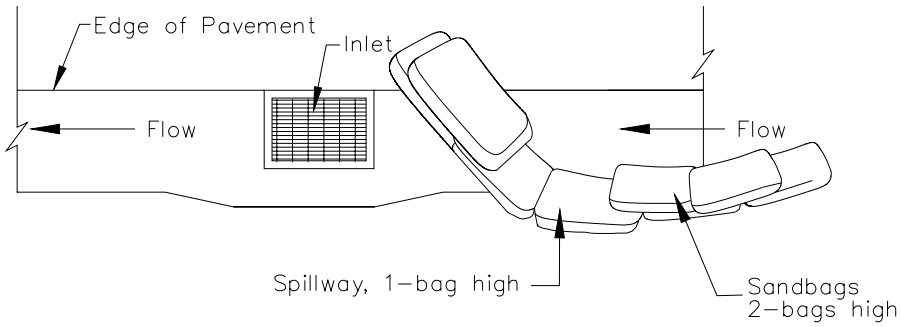
Plan

DI PROTECTION TYPE 2
NOT TO SCALE

Notes
1. For use in cleared and grubbed and in graded areas.
2. Shape basin so that longest inflow area faces longest length of trap.
3. For concentrated flows, shape basin in 2:1 ratio with length oriented towards direction of flow.



TYPICAL PROTECTION FOR INLET ON SUMP

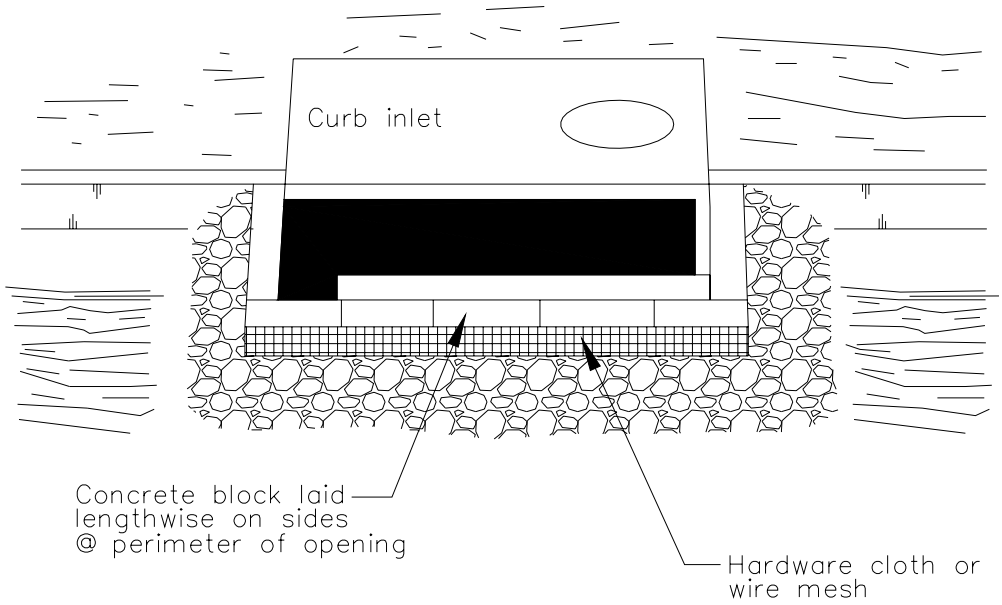


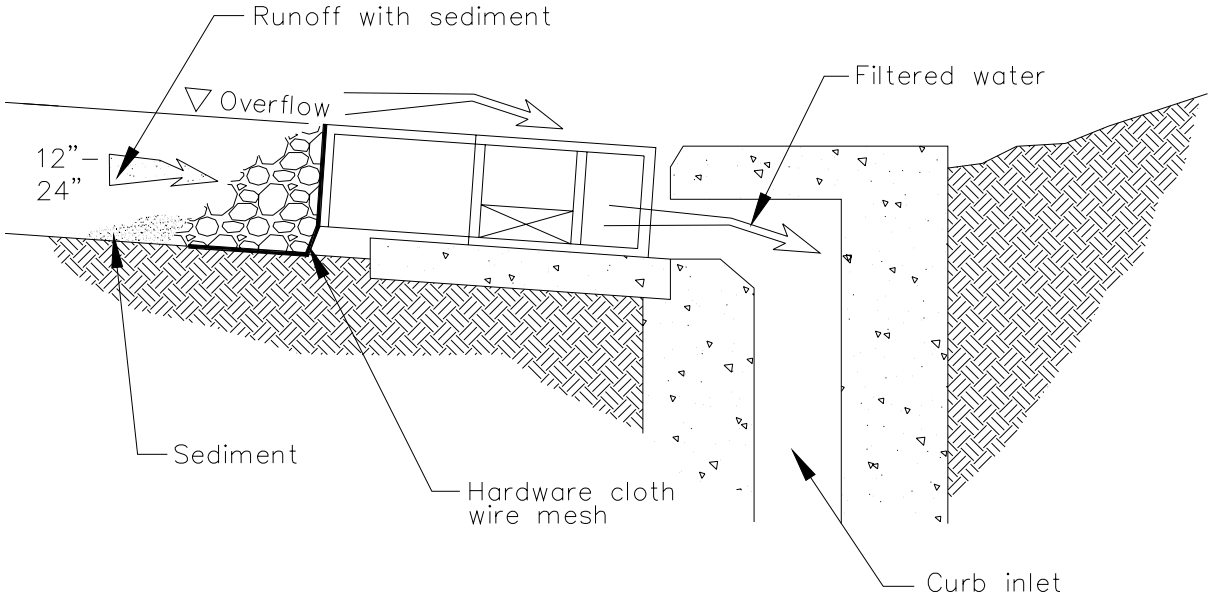
TYPICAL PROTECTION FOR INLET ON GRADE

NOTES:

1. Intended for short–term use.
2. Use to inhibit non–storm water flow.
3. Allow for proper maintenance and cleanup.
4. Bags must be removed after adjacent operation is completed
5. Not applicable in areas with high silts and clays without filter fabric.

DI PROTECTION TYPE 3
NOT TO SCALE

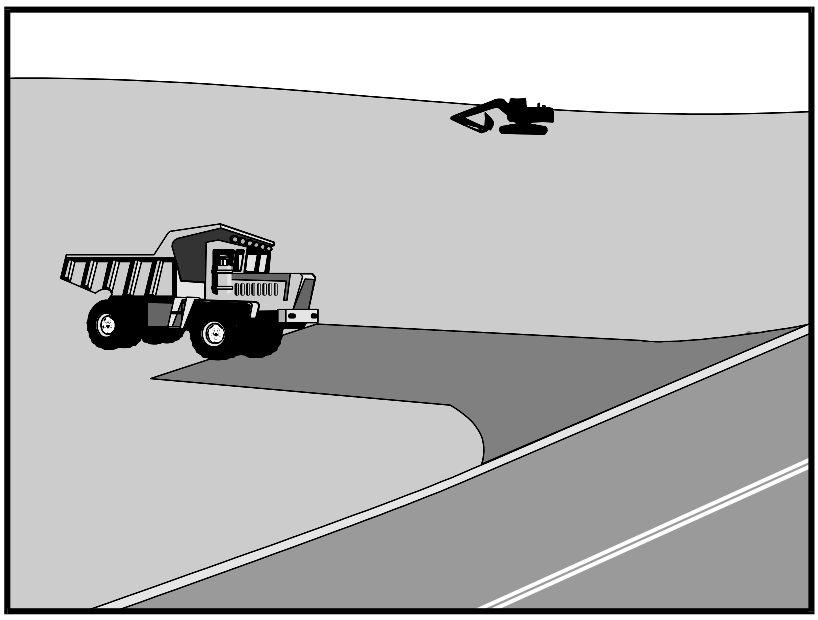




DI PROTECTION – TYPE 4

NOT TO SCALE

Stabilized Construction Entrance / Exit TC-1



Objectives		
EC	Erosion Control	☒
SE	Sediment Control	☒
TC	Tracking Control	☑
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:
☑ **Primary Objective**
☒ **Secondary Objective**

Targeted Constituents	
Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Description and Purpose

A stabilized construction access is defined by a point of entrance/exit to a construction site that is stabilized to reduce the tracking of mud and dirt onto public roads by construction vehicles.

Suitable Applications

Use at construction sites:

- Where dirt or mud can be tracked onto public roads.
- Adjacent to water bodies.
- Where poor soils are encountered.
- Where dust is a problem during dry weather conditions.

Limitations

- Entrances and exits require periodic top dressing with additional stones.
- This BMP should be used in conjunction with street sweeping on adjacent public right of way.
- Entrances and exits should be constructed on level ground only.
- Stabilized construction entrances are rather expensive to construct and when a wash rack is included, a sediment trap of some kind must also be provided to collect wash water runoff.

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Implementation

General

A stabilized construction entrance is a pad of aggregate underlain with filter cloth located at any point where traffic will be entering or leaving a construction site to or from a public right of way, street, alley, sidewalk, or parking area. The purpose of a stabilized construction entrance is to reduce or eliminate the tracking of sediment onto public rights of way or streets. Reducing tracking of sediments and other pollutants onto paved roads helps prevent deposition of sediments into local storm drains and production of airborne dust.

Where traffic will be entering or leaving the construction site, a stabilized construction entrance should be used. NPDES permits require that appropriate measures be implemented to prevent tracking of sediments onto paved roadways, where a significant source of sediments is derived from mud and dirt carried out from unpaved roads and construction sites.

Stabilized construction entrances are moderately effective in removing sediment from equipment leaving a construction site. The entrance should be built on level ground. Advantages of the Stabilized Construction Entrance/Exit is that it does remove some sediment from equipment and serves to channel construction traffic in and out of the site at specified locations. Efficiency is greatly increased when a washing rack is included as part of a stabilized construction entrance/exit.

Design and Layout

- Construct on level ground where possible.
- Select 3 to 6 in. diameter stones.
- Use minimum depth of stones of 12 in. or as recommended by soils engineer.
- Construct length of 50 ft minimum, and 30 ft minimum width.
- Rumble racks constructed of steel panels with ridges and installed in the stabilized entrance/exit will help remove additional sediment and to keep adjacent streets clean.
- Provide ample turning radii as part of the entrance.
- Limit the points of entrance/exit to the construction site.
- Limit speed of vehicles to control dust.
- Properly grade each construction entrance/exit to prevent runoff from leaving the construction site.
- Route runoff from stabilized entrances/exits through a sediment trapping device before discharge.
- Design stabilized entrance/exit to support heaviest vehicles and equipment that will use it.
- Select construction access stabilization (aggregate, asphaltic concrete, concrete) based on longevity, required performance, and site conditions. Do not use asphalt concrete (AC) grindings for stabilized construction access/roadway.

- If aggregate is selected, place crushed aggregate over geotextile fabric to at least 12 in. depth, or place aggregate to a depth recommended by a geotechnical engineer. A crushed aggregate greater than 3 in. but smaller than 6 in. should be used.
- Designate combination or single purpose entrances and exits to the construction site.
- Require that all employees, subcontractors, and suppliers utilize the stabilized construction access.
- Implement SE-7, Street Sweeping and Vacuuming, as needed.
- All exit locations intended to be used for more than a two-week period should have stabilized construction entrance/exit BMPs.

Inspection and Maintenance

- Inspect and verify that activity–based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMPs are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.
- Inspect local roads adjacent to the site daily. Sweep or vacuum to remove visible accumulated sediment.
- Remove aggregate, separate and dispose of sediment if construction entrance/exit is clogged with sediment.
- Keep all temporary roadway ditches clear.
- Check for damage and repair as needed.
- Replace gravel material when surface voids are visible.
- Remove all sediment deposited on paved roadways within 24 hours.
- Remove gravel and filter fabric at completion of construction

Costs

Average annual cost for installation and maintenance may vary from $1,200 to $4,800 each, averaging $2,400 per entrance. Costs will increase with addition of washing rack, and sediment trap. With wash rack, costs range from $1,200 - $6,000 each, averaging $3,600 per entrance.

References

Manual of Standards of Erosion and Sediment Control Measures, Association of Bay Area Governments, May 1995.

National Management Measures to Control Nonpoint Source Pollution from Urban Areas, USEPA Agency, 2002.

Proposed Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters, Work Group Working Paper, USEPA, April 1992.

Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

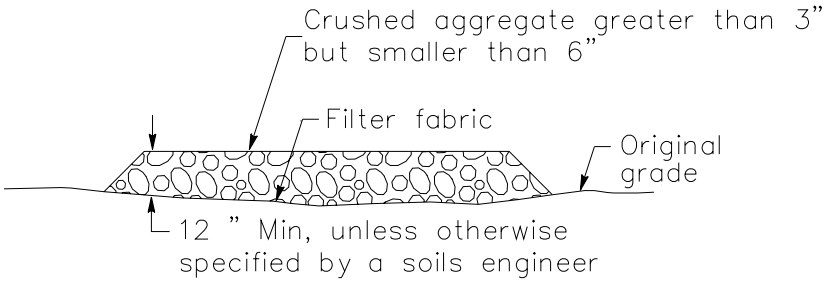
Stormwater Management of the Puget Sound Basin, Technical Manual, Publication #91-75, Washington State Department of Ecology, February 1992.

Virginia Erosion and Sedimentation Control Handbook, Virginia Department of Conservation and Recreation, Division of Soil and Water Conservation, 1991.

Guidance Specifying Management Measures for Nonpoint Pollution in Coastal Waters, EPA 840-B-9-002, USEPA, Office of Water, Washington, DC, 1993.

Water Quality Management Plan for the Lake Tahoe Region, Volume II, Handbook of Management Practices, Tahoe Regional Planning Agency, November 1988.

Stabilized Construction Entrance / Exit TC-1



SECTION B–B
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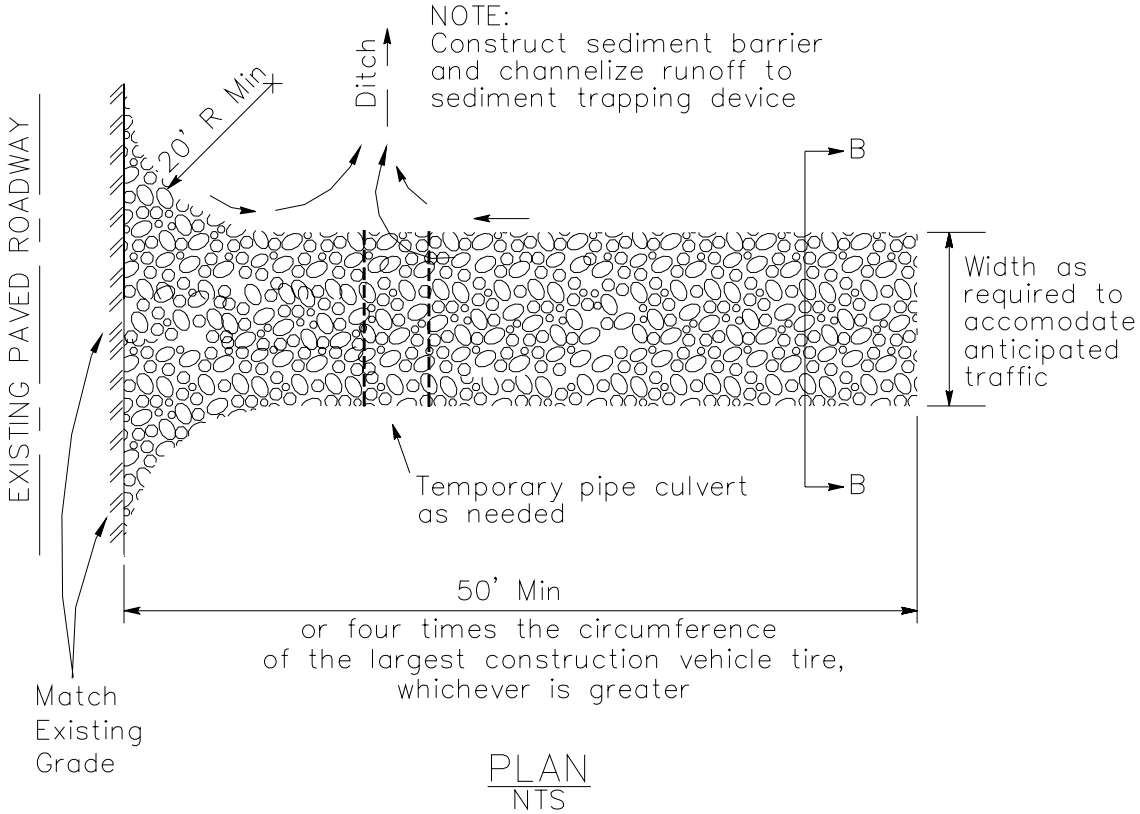
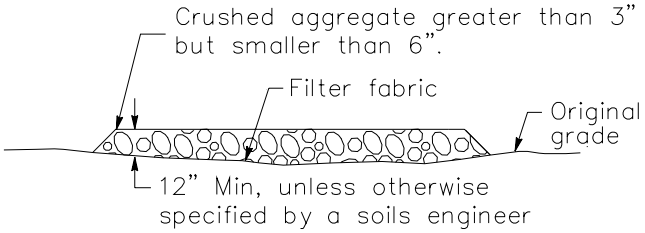


PLAN
NTS

Stabilized Construction Entrance / Exit TC-1



SECTION B–B
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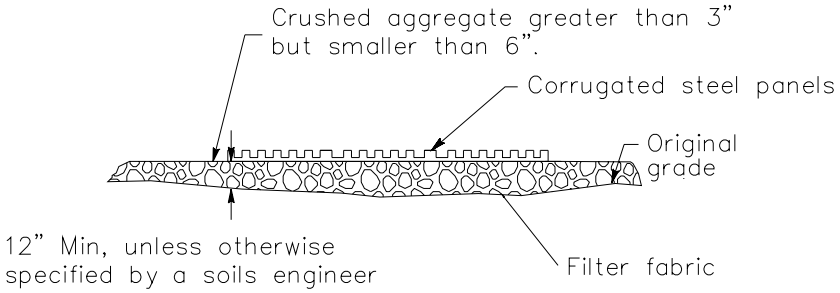
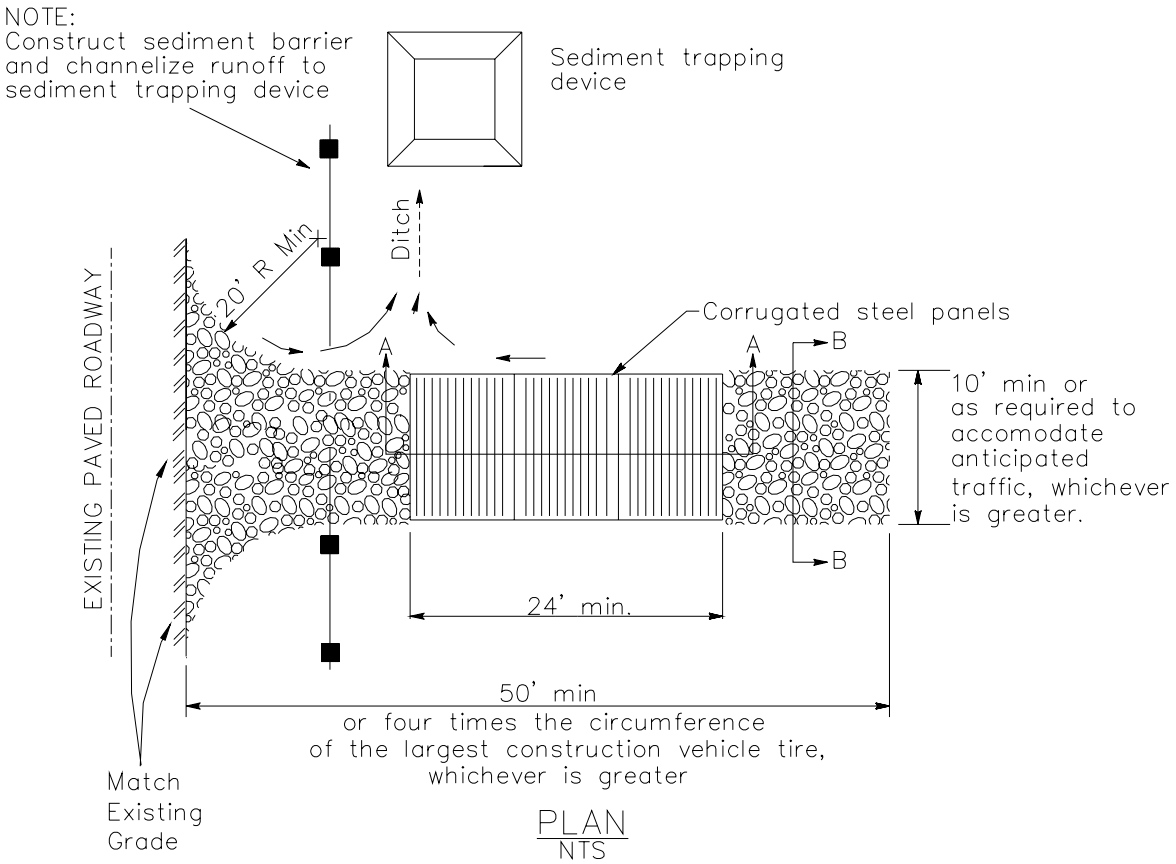
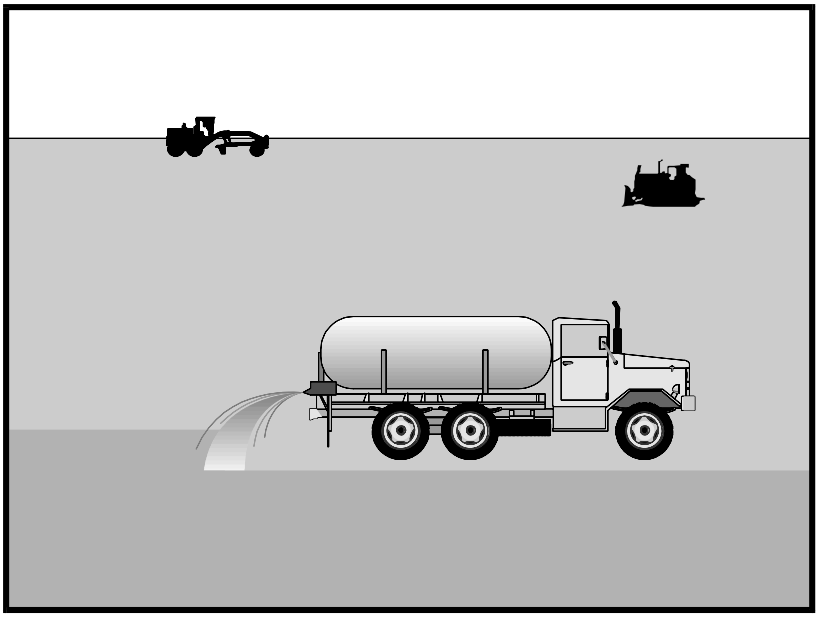


SECTION A–A
NOT TO SCALE



PLAN
NTS

Wind Erosion Control WE-1



Objectives

EC	Erosion Control	
SE	Sediment Control	☒
TC	Tracking Control	
WE	Wind Erosion Control	☑
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Description and Purpose

Wind erosion or dust control consists of applying water or other dust palliatives as necessary to prevent or alleviate dust nuisance generated by construction activities. Covering small stockpiles or areas is an alternative to applying water or other dust palliatives.

Suitable Applications

Wind erosion control BMPs are suitable during the following construction activities:

- Construction vehicle traffic on unpaved roads
- Drilling and blasting activities
- Sediment tracking onto paved roads
- Soils and debris storage piles
- Batch drop from front-end loaders
- Areas with unstabilized soil
- Final grading/site stabilization

Limitations

- Watering prevents dust only for a short period and should be applied daily (or more often) to be effective.
- Over watering may cause erosion.

- Oil or oil-treated subgrade should not be used for dust control because the oil may migrate into drainageways and/or seep into the soil.
- Effectiveness depends on soil, temperature, humidity, and wind velocity.
- Chemically treated sub grades may make the soil water repellant, interfering with long-term infiltration and the vegetation/re-vegetation of the site. Some chemical dust suppressants may be subject to freezing and may contain solvents and should be handled properly.
- Asphalt, as a mulch tack or chemical mulch, requires a 24-hour curing time to avoid adherence to equipment, worker shoes, etc. Application should be limited because asphalt surfacing may eventually migrate into the drainage system.
- In compacted areas, watering and other liquid dust control measures may wash sediment or other constituents into the drainage system.

Implementation

General

California's Mediterranean climate, with short wet seasons and long hot dry seasons, allows the soils to thoroughly dry out. During these dry seasons, construction activities are at their peak, and disturbed and exposed areas are increasingly subject to wind erosion, sediment tracking and dust generated by construction equipment.

Dust control, as a BMP, is a practice that is already in place for many construction activities. Los Angeles, the North Coast, and Sacramento, among others, have enacted dust control ordinances for construction activities that cause dust to be transported beyond the construction project property line.

Recently, the State Air Resources Control Board has, under the authority of the Clean Air Act, started to address air quality in relation to inhalable particulate matter less than 10 microns (PM-10). Approximately 90 percent of these small particles are considered to be dust. Existing dust control regulations by local agencies, municipal departments, public works department, and public health departments are in place in some regions within California.

Many local agencies require dust control in order to comply with local nuisance laws, opacity laws (visibility impairment) and the requirements of the Clean Air Act. The following are measures that local agencies may have already implemented as requirements for dust control from contractors:

- Construction and Grading Permits: Require provisions for dust control plans.
- Opacity Emission Limits: Enforce compliance with California air pollution control laws.
- Increase Overall Enforcement Activities: Priority given to cases involving citizen complaints.
- Maintain Field Application Records: Require records of dust control measures from contractor;
- Stormwater Pollution Prevention Plan: (SWPPP): Integrate dust control measures into SWPPP.

Dust Control Practices

Dust control BMPs generally stabilize exposed surfaces and minimize activities that suspend or track dust particles. The following table shows dust control practices that can be applied to site conditions that cause dust. For heavily traveled and disturbed areas, wet suppression (watering), chemical dust suppression, gravel asphalt surfacing, temporary gravel construction entrances, equipment wash-out areas, and haul truck covers can be employed as dust control applications. Permanent or temporary vegetation and mulching can be employed for areas of occasional or no construction traffic. Preventive measures would include minimizing surface areas to be disturbed, limiting onsite vehicle traffic to 15 mph, and controlling the number and activity of vehicles on a site at any given time.

SITE CONDITION	DUST CONTROL PRACTICES								
	Permanent Vegetation	Mulching	Wet Suppression (Watering)	Chemical Dust Suppression	Gravel or Asphalt	Silt Fences	Temporary Gravel Construction Entrances/Equipment Wash Down	Haul Truck Covers	Minimize Extent of Disturbed Area
Disturbed Areas not Subject to Traffic	X	X	X	X	X				X
Disturbed Areas Subject to Traffic			X	X	X		X		X
Material Stock Pile Stabilization			X	X		X			X
Demolition			X				X	X	
Clearing/ Excavation			X	X		X			X
Truck Traffic on Unpaved Roads			X	X	X		X	X	
Mud/Dirt Carry Out					X		X		

Additional preventive measures include:

- Schedule construction activities to minimize exposed area (EC-1, Scheduling).
- Quickly stabilize exposed soils using vegetation, mulching, spray-on adhesives, calcium chloride, sprinkling, and stone/gravel layering.
- Identify and stabilize key access points prior to commencement of construction.
- Minimize the impact of dust by anticipating the direction of prevailing winds.
- Direct most construction traffic to stabilized roadways within the project site.
- Water should be applied by means of pressure-type distributors or pipelines equipped with a spray system or hoses and nozzles that will ensure even distribution.
- All distribution equipment should be equipped with a positive means of shutoff.
- Unless water is applied by means of pipelines, at least one mobile unit should be available at all times to apply water or dust palliative to the project.

- If reclaimed waste water is used, the sources and discharge must meet California Department of Health Services water reclamation criteria and the Regional Water Quality Control Board requirements. Non-potable water should not be conveyed in tanks or drain pipes that will be used to convey potable water and there should be no connection between potable and non-potable supplies. Non-potable tanks, pipes, and other conveyances should be marked, "NON-POTABLE WATER - DO NOT DRINK."
- Materials applied as temporary soil stabilizers and soil binders also generally provide wind erosion control benefits.
- Pave or chemically stabilize access points where unpaved traffic surfaces adjoin paved roads.
- Provide covers for haul trucks transporting materials that contribute to dust.
- Provide for wet suppression or chemical stabilization of exposed soils.
- Provide for rapid clean up of sediments deposited on paved roads. Furnish stabilized construction road entrances and vehicle wash down areas.
- Stabilize inactive construction sites using vegetation or chemical stabilization methods.
- Limit the amount of areas disturbed by clearing and earth moving operations by scheduling these activities in phases.

For chemical stabilization, there are many products available for chemically stabilizing gravel roadways and stockpiles. If chemical stabilization is used, the chemicals should not create any adverse effects on stormwater, plant life, or groundwater.

Costs

Installation costs for water and chemical dust suppression are low, but annual costs may be quite high since these measures are effective for only a few hours to a few days.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and at two-week intervals in the non-rainy season to verify continued BMP implementation.
- Check areas protected to ensure coverage.
- Most dust control measures require frequent, often daily, or multiple times per day attention.

References

Best Management Practices and Erosion Control Manual for Construction Sites, Flood Control District of Maricopa County, Arizona, September 1992.

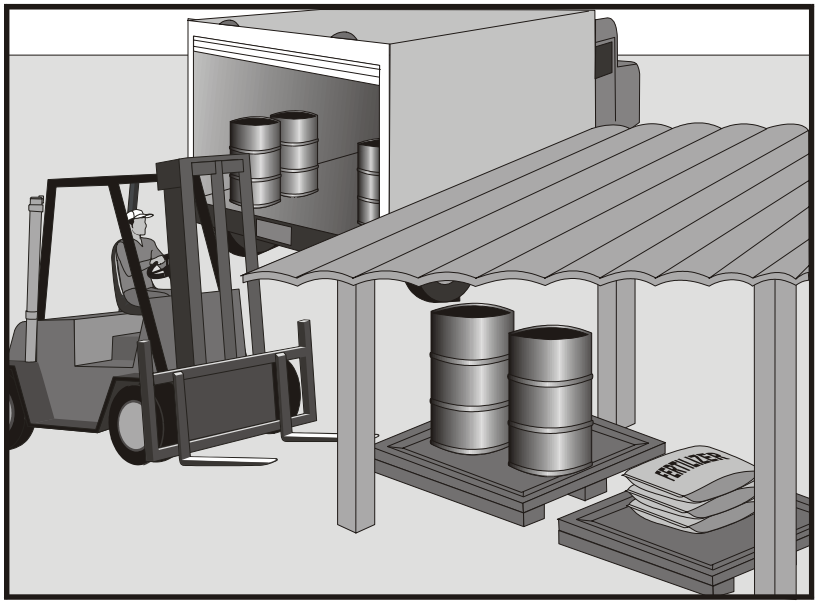
California Air Pollution Control Laws, California Air Resources Board, 1992.

Caltrans, Standard Specifications, Sections 10, “Dust Control”; Section 17, “Watering”; and Section 18, “Dust Palliative”.

Prospects for Attaining the State Ambient Air Quality Standards for Suspended Particulate Matter (PM10), Visibility Reducing Particles, Sulfates, Lead, and Hydrogen Sulfide, California Air Resources Board, April 1991.

Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Material Delivery and Storage WM-1



Objectives		
EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:
☑ **Primary Objective**
☒ **Secondary Objective**

Targeted Constituents	
Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

Description and Purpose

Prevent, reduce, or eliminate the discharge of pollutants from material delivery and storage to the stormwater system or watercourses by minimizing the storage of hazardous materials onsite, storing materials in a designated area, installing secondary containment, conducting regular inspections, and training employees and subcontractors.

This best management practice covers only material delivery and storage. For other information on materials, see WM-2, Material Use, or WM-4, Spill Prevention and Control. For information on wastes, see the waste management BMPs in this section.

Suitable Applications

These procedures are suitable for use at all construction sites with delivery and storage of the following materials:

- Soil stabilizers and binders
- Pesticides and herbicides
- Fertilizers
- Detergents
- Plaster
- Petroleum products such as fuel, oil, and grease
- Asphalt and concrete components

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- Hazardous chemicals such as acids, lime, glues, adhesives, paints, solvents, and curing compounds
- Concrete compounds
- Other materials that may be detrimental if released to the environment

Limitations

- Space limitation may preclude indoor storage.
- Storage sheds often must meet building and fire code requirements.

Implementation

The following steps should be taken to minimize risk:

- Temporary storage area should be located away from vehicular traffic.
- Material Safety Data Sheets (MSDS) should be supplied for all materials stored.
- Construction site areas should be designated for material delivery and storage.
- Material delivery and storage areas should be located near the construction entrances, away from waterways, if possible.
  - Avoid transport near drainage paths or waterways.
  - Surround with earth berms. See EC-9, Earth Dikes and Drainage Swales.
  - Place in an area which will be paved.
- Storage of reactive, ignitable, or flammable liquids must comply with the fire codes of your area. Contact the local Fire Marshal to review site materials, quantities, and proposed storage area to determine specific requirements. See the Flammable and Combustible Liquid Code, NFPA30.
- An up to date inventory of materials delivered and stored onsite should be kept.
- Hazardous materials storage onsite should be minimized.
- Hazardous materials should be handled as infrequently as possible.
- During the rainy season, consider storing materials in a covered area. Store materials in secondary containments such as earthen dike, horse trough, or even a children's wading pool for non-reactive materials such as detergents, oil, grease, and paints. Small amounts of material may be secondarily contained in "bus boy" trays or concrete mixing trays.
- Do not store chemicals, drums, or bagged materials directly on the ground. Place these items on a pallet and, when possible, in secondary containment.

- If drums must be kept uncovered, store them at a slight angle to reduce ponding of rainwater on the lids to reduce corrosion. Domed plastic covers are inexpensive and snap to the top of drums, preventing water from collecting.
- Chemicals should be kept in their original labeled containers.
- Employees and subcontractors should be trained on the proper material delivery and storage practices.
- Employees trained in emergency spill cleanup procedures must be present when dangerous materials or liquid chemicals are unloaded.
- If significant residual materials remain on the ground after construction is complete, properly remove materials and any contaminated soil. See WM-7, Contaminated Soil Management. If the area is to be paved, pave as soon as materials are removed to stabilize the soil.

Material Storage Areas and Practices

- Liquids, petroleum products, and substances listed in 40 CFR Parts 110, 117, or 302 should be stored in approved containers and drums and should not be overfilled. Containers and drums should be placed in temporary containment facilities for storage.
- A temporary containment facility should provide for a spill containment volume able to contain precipitation from a 25 year storm event, plus the greater of 10% of the aggregate volume of all containers or 100% of the capacity of the largest container within its boundary, whichever is greater.
- A temporary containment facility should be impervious to the materials stored therein for a minimum contact time of 72 hours.
- A temporary containment facility should be maintained free of accumulated rainwater and spills. In the event of spills or leaks, accumulated rainwater and spills should be collected and placed into drums. These liquids should be handled as a hazardous waste unless testing determines them to be non-hazardous. All collected liquids or non-hazardous liquids should be sent to an approved disposal site.
- Sufficient separation should be provided between stored containers to allow for spill cleanup and emergency response access.
- Incompatible materials, such as chlorine and ammonia, should not be stored in the same temporary containment facility.
- Throughout the rainy season, each temporary containment facility should be covered during non-working days, prior to, and during rain events.
- Materials should be stored in their original containers and the original product labels should be maintained in place in a legible condition. Damaged or otherwise illegible labels should be replaced immediately.

- Bagged and boxed materials should be stored on pallets and should not be allowed to accumulate on the ground. To provide protection from wind and rain throughout the rainy season, bagged and boxed materials should be covered during non-working days and prior to and during rain events.
- Stockpiles should be protected in accordance with WM-3, Stockpile Management.
- Materials should be stored indoors within existing structures or sheds when available.
- Proper storage instructions should be posted at all times in an open and conspicuous location.
- An ample supply of appropriate spill clean up material should be kept near storage areas.
- Also see WM-6, Hazardous Waste Management, for storing of hazardous materials.

Material Delivery Practices

- Keep an accurate, up-to-date inventory of material delivered and stored onsite.
- Arrange for employees trained in emergency spill cleanup procedures to be present when dangerous materials or liquid chemicals are unloaded.

Spill Cleanup

- Contain and clean up any spill immediately.
- Properly remove and dispose of any hazardous materials or contaminated soil if significant residual materials remain on the ground after construction is complete. See WM-7, Contaminated Soil Management.
- See WM-4, Spill Prevention and Control, for spills of chemicals and/or hazardous materials.

Cost

- The largest cost of implementation may be in the construction of a materials storage area that is covered and provides secondary containment.

Inspection and Maintenance

- Inspect and verify that activity–based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.
- Keep an ample supply of spill cleanup materials near the storage area.
- Keep storage areas clean, well organized, and equipped with ample cleanup supplies as appropriate for the materials being stored.
- Repair or replace perimeter controls, containment structures, covers, and liners as needed to maintain proper function.

References

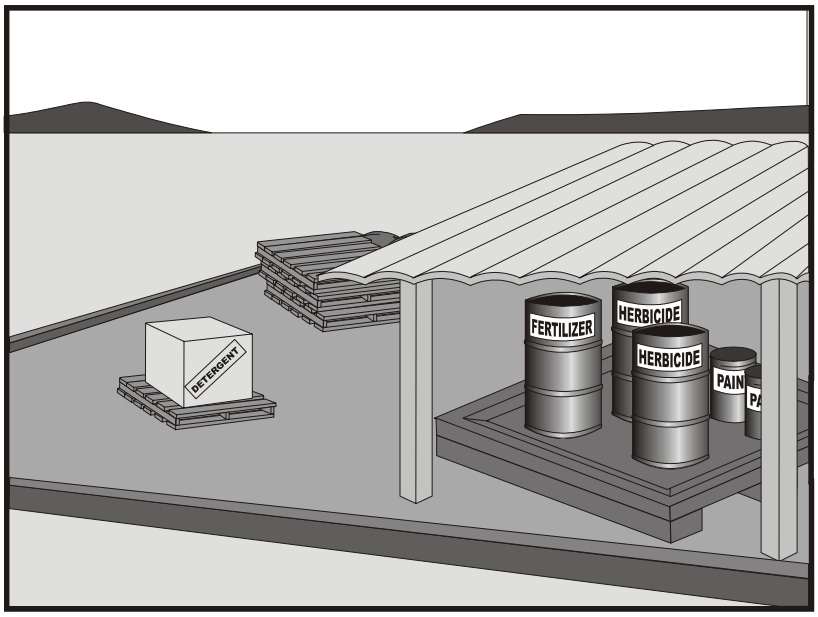
Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Coastal Nonpoint Pollution Control Program: Program Development and Approval Guidance, Working Group Working Paper; USEPA, April 1992.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.

Material Use WM-2



Objectives

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

Description and Purpose

Prevent or reduce the discharge of pollutants to the storm drain system or watercourses from material use by using alternative products, minimizing hazardous material use onsite, and training employees and subcontractors.

Suitable Applications

This BMP is suitable for use at all construction projects. These procedures apply when the following materials are used or prepared onsite:

- Pesticides and herbicides
- Fertilizers
- Detergents
- Plaster
- Petroleum products such as fuel, oil, and grease
- Asphalt and other concrete components
- Other hazardous chemicals such as acids, lime, glues, adhesives, paints, solvents, and curing compounds
- Concrete compounds
- Other materials that may be detrimental if released to the environment

Limitations

Safer alternative building and construction products may not be available or suitable in every instance.

Implementation

The following steps should be taken to minimize risk:

- Minimize use of hazardous materials onsite.
- Follow manufacturer instructions regarding uses, protective equipment, ventilation, flammability, and mixing of chemicals.
- Train personnel who use pesticides. The California Department of Pesticide Regulation and county agricultural commissioners license pesticide dealers, certify pesticide applicators, and conduct onsite inspections.
- Do not over-apply fertilizers, herbicides, and pesticides. Prepare only the amount needed. Follow the recommended usage instructions. Over-application is expensive and environmentally harmful. Unless on steep slopes, till fertilizers into the soil rather than hydro seeding. Apply surface dressings in several smaller applications, as opposed to one large application, to allow time for infiltration and to avoid excess material being carried offsite by runoff. Do not apply these chemicals just before it rains.
- Train employees and subcontractors in proper material use.
- Supply Material Safety Data Sheets (MSDS) for all materials.
- Dispose of latex paint and paint cans, used brushes, rags, absorbent materials, and drop cloths, when thoroughly dry and are no longer hazardous, with other construction debris.
- Do not remove the original product label; it contains important safety and disposal information. Use the entire product before disposing of the container.
- Mix paint indoors or in a containment area. Never clean paintbrushes or rinse paint containers into a street, gutter, storm drain, or watercourse. Dispose of any paint thinners, residue, and sludge(s) that cannot be recycled, as hazardous waste.
- For water-based paint, clean brushes to the extent practicable, and rinse to a drain leading to a sanitary sewer where permitted, or into a concrete washout pit or temporary sediment trap. For oil-based paints, clean brushes to the extent practicable, and filter and reuse thinners and solvents.
- Use recycled and less hazardous products when practical. Recycle residual paints, solvents, non-treated lumber, and other materials.
- Use materials only where and when needed to complete the construction activity. Use safer alternative materials as much as possible. Reduce or eliminate use of hazardous materials onsite when practical.

- Require contractors to complete the "Report of Chemical Spray Forms" when spraying herbicides and pesticides.
- Keep an ample supply of spill clean up material near use areas. Train employees in spill clean up procedures.
- Avoid exposing applied materials to rainfall and runoff unless sufficient time has been allowed for them to dry.

Costs

All of the above are low cost measures.

Inspection and Maintenance

- Inspect and verify that activity–based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and at two–week intervals in the non-rainy season to verify continued BMP implementation.
- Maintenance of this best management practice is minimal.
- Spot check employees and subcontractors throughout the job to ensure appropriate practices are being employed.

References

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Coastal Nonpoint Pollution Control Program: Program Development and Approval Guidance, Working Group Working Paper; USEPA, April 1992.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.

Stockpile Management WM-3

Objectives		
EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:
☑ **Primary Objective**
☒ **Secondary Objective**

Targeted Constituents	
Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

Description and Purpose

Stockpile Management procedures and practices are designed to reduce or eliminate air and stormwater pollution from stockpiles of soil, paving materials such as portland cement concrete (PCC) rubble, asphalt concrete (AC), asphalt concrete rubble, aggregate base, aggregate sub base or pre-mixed aggregate, asphalt minder (so called "cold mix" asphalt), and pressure treated wood.

Suitable Applications

Implement in all projects that stockpile soil and other materials.

Limitations

None identified.

Implementation

Protection of stockpiles is a year-round requirement. To properly manage stockpiles:

- Locate stockpiles a minimum of 50 ft away from concentrated flows of stormwater, drainage courses, and inlets.
- Protect all stockpiles from stormwater runon using a temporary perimeter sediment barrier such as berms, dikes, fiber rolls, silt fences, sandbag, gravel bags, or straw bale barriers.

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- Implement wind erosion control practices as appropriate on all stockpiled material. For specific information, see WE-1, Wind Erosion Control.
- Manage stockpiles of contaminated soil in accordance with WM-7, Contaminated Soil Management.
- Place bagged materials on pallets and under cover.

Protection of Non-Active Stockpiles

Non-active stockpiles of the identified materials should be protected further as follows:

Soil stockpiles

- During the rainy season, soil stockpiles should be covered or protected with soil stabilization measures and a temporary perimeter sediment barrier at all times.
- During the non-rainy season, soil stockpiles should be covered or protected with a temporary perimeter sediment barrier prior to the onset of precipitation.

Stockpiles of Portland cement concrete rubble, asphalt concrete, asphalt concrete rubble, aggregate base, or aggregate sub base

- During the rainy season, the stockpiles should be covered or protected with a temporary perimeter sediment barrier at all times.
- During the non-rainy season, the stockpiles should be covered or protected with a temporary perimeter sediment barrier prior to the onset of precipitation.

Stockpiles of "cold mix"

- During the rainy season, cold mix stockpiles should be placed on and covered with plastic or comparable material at all times.
- During the non-rainy season, cold mix stockpiles should be placed on and covered with plastic or comparable material prior to the onset of precipitation.

Stockpiles/Storage of pressure treated wood with copper, chromium, and arsenic or ammonical, copper, zinc, and arsenate

- During the rainy season, treated wood should be covered with plastic or comparable material at all times.
- During the non-rainy season, treated wood should be covered with plastic or comparable material at all times and cold mix stockpiles should be placed on and covered with plastic or comparable material prior to the onset of precipitation.

Protection of Active Stockpiles

Active stockpiles of the identified materials should be protected further as follows:

- All stockpiles should be protected with a temporary linear sediment barrier prior to the onset of precipitation.
- Stockpiles of "cold mix" should be placed on and covered with plastic or comparable material prior to the onset of precipitation.

Costs

All of the above are low cost measures.

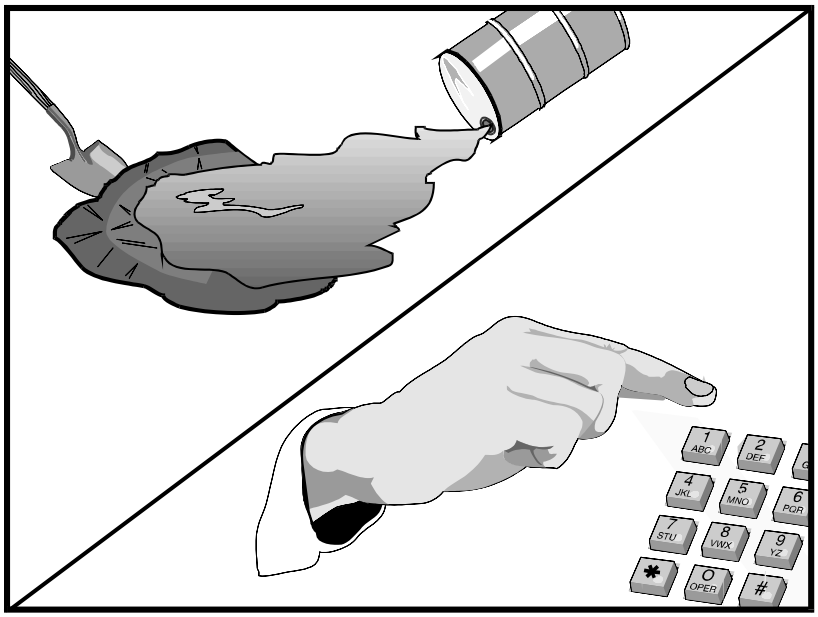
Inspection and Maintenance

- Inspect and verify that activity–based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation
- Repair and/or replace perimeter controls and covers as needed to keep them functioning properly.

References

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Spill Prevention and Control WM-4



Description and Purpose

Prevent or reduce the discharge of pollutants to drainage systems or watercourses from leaks and spills by reducing the chance for spills, stopping the source of spills, containing and cleaning up spills, properly disposing of spill materials, and training employees.

This best management practice covers only spill prevention and control. However, WM-1, Materials Delivery and Storage, and WM-2, Material Use, also contain useful information, particularly on spill prevention. For information on wastes, see the waste management BMPs in this section.

Suitable Applications

This BMP is suitable for all construction projects. Spill control procedures are implemented anytime chemicals or hazardous substances are stored on the construction site, including the following materials:

- Soil stabilizers/binders
- Dust palliatives
- Herbicides
- Growth inhibitors
- Fertilizers
- Deicing/anti-icing chemicals

Objectives

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

- Fuels
- Lubricants
- Other petroleum distillates

Limitations

- In some cases it may be necessary to use a private spill cleanup company.
- This BMP applies to spills caused by the contractor and subcontractors.
- Procedures and practices presented in this BMP are general. Contractor should identify appropriate practices for the specific materials used or stored onsite

Implementation

The following steps will help reduce the stormwater impacts of leaks and spills:

Education

- Be aware that different materials pollute in different amounts. Make sure that each employee knows what a "significant spill" is for each material they use, and what is the appropriate response for "significant" and "insignificant" spills.
- Educate employees and subcontractors on potential dangers to humans and the environment from spills and leaks.
- Hold regular meetings to discuss and reinforce appropriate disposal procedures (incorporate into regular safety meetings).
- Establish a continuing education program to indoctrinate new employees.
- Have contractor's superintendent or representative oversee and enforce proper spill prevention and control measures.

General Measures

- To the extent that the work can be accomplished safely, spills of oil, petroleum products, substances listed under 40 CFR parts 110,117, and 302, and sanitary and septic wastes should be contained and cleaned up immediately.
- Store hazardous materials and wastes in covered containers and protect from vandalism.
- Place a stockpile of spill cleanup materials where it will be readily accessible.
- Train employees in spill prevention and cleanup.
- Designate responsible individuals to oversee and enforce control measures.
- Spills should be covered and protected from stormwater runon during rainfall to the extent that it doesn't compromise clean up activities.
- Do not bury or wash spills with water.

- Store and dispose of used clean up materials, contaminated materials, and recovered spill material that is no longer suitable for the intended purpose in conformance with the provisions in applicable BMPs.
- Do not allow water used for cleaning and decontamination to enter storm drains or watercourses. Collect and dispose of contaminated water in accordance with WM-10, Liquid Waste Management.
- Contain water overflow or minor water spillage and do not allow it to discharge into drainage facilities or watercourses.
- Place proper storage, cleanup, and spill reporting instructions for hazardous materials stored or used on the project site in an open, conspicuous, and accessible location.
- Keep waste storage areas clean, well organized, and equipped with ample cleanup supplies as appropriate for the materials being stored. Perimeter controls, containment structures, covers, and liners should be repaired or replaced as needed to maintain proper function.

Cleanup

- Clean up leaks and spills immediately.
- Use a rag for small spills on paved surfaces, a damp mop for general cleanup, and absorbent material for larger spills. If the spilled material is hazardous, then the used cleanup materials are also hazardous and must be sent to either a certified laundry (rags) or disposed of as hazardous waste.
- Never hose down or bury dry material spills. Clean up as much of the material as possible and dispose of properly. See the waste management BMPs in this section for specific information.

Minor Spills

- Minor spills typically involve small quantities of oil, gasoline, paint, etc. which can be controlled by the first responder at the discovery of the spill.
- Use absorbent materials on small spills rather than hosing down or burying the spill.
- Absorbent materials should be promptly removed and disposed of properly.
- Follow the practice below for a minor spill:
  - Contain the spread of the spill.
  - Recover spilled materials.
  - Clean the contaminated area and properly dispose of contaminated materials.

Semi-Significant Spills

- Semi-significant spills still can be controlled by the first responder along with the aid of other personnel such as laborers and the foreman, etc. This response may require the cessation of all other activities.

- Spills should be cleaned up immediately:
  - Contain spread of the spill.
  - Notify the project foreman immediately.
  - If the spill occurs on paved or impermeable surfaces, clean up using "dry" methods (absorbent materials, cat litter and/or rags). Contain the spill by encircling with absorbent materials and do not let the spill spread widely.
  - If the spill occurs in dirt areas, immediately contain the spill by constructing an earthen dike. Dig up and properly dispose of contaminated soil.
  - If the spill occurs during rain, cover spill with tarps or other material to prevent contaminating runoff.

Significant/Hazardous Spills

- For significant or hazardous spills that cannot be controlled by personnel in the immediate vicinity, the following steps should be taken:
  - Notify the local emergency response by dialing 911. In addition to 911, the contractor will notify the proper county officials. It is the contractor's responsibility to have all emergency phone numbers at the construction site.
  - Notify the Governor's Office of Emergency Services Warning Center, (916) 845-8911.
  - For spills of federal reportable quantities, in conformance with the requirements in 40 CFR parts 110,119, and 302, the contractor should notify the National Response Center at (800) 424-8802.
  - Notification should first be made by telephone and followed up with a written report.
  - The services of a spills contractor or a Haz-Mat team should be obtained immediately. Construction personnel should not attempt to clean up until the appropriate and qualified staffs have arrived at the job site.
  - Other agencies which may need to be consulted include, but are not limited to, the Fire Department, the Public Works Department, the Coast Guard, the Highway Patrol, the City/County Police Department, Department of Toxic Substances, California Division of Oil and Gas, Cal/OSHA, etc.

Reporting

- Report significant spills to local agencies, such as the Fire Department; they can assist in cleanup.
- Federal regulations require that any significant oil spill into a water body or onto an adjoining shoreline be reported to the National Response Center (NRC) at 800-424-8802 (24 hours).

Use the following measures related to specific activities:

Vehicle and Equipment Maintenance

- If maintenance must occur onsite, use a designated area and a secondary containment, located away from drainage courses, to prevent the runon of stormwater and the runoff of spills.
- Regularly inspect onsite vehicles and equipment for leaks and repair immediately
- Check incoming vehicles and equipment (including delivery trucks, and employee and subcontractor vehicles) for leaking oil and fluids. Do not allow leaking vehicles or equipment onsite.
- Always use secondary containment, such as a drain pan or drop cloth, to catch spills or leaks when removing or changing fluids.
- Place drip pans or absorbent materials under paving equipment when not in use.
- Use absorbent materials on small spills rather than hosing down or burying the spill. Remove the absorbent materials promptly and dispose of properly.
- Promptly transfer used fluids to the proper waste or recycling drums. Don't leave full drip pans or other open containers lying around
- Oil filters disposed of in trashcans or dumpsters can leak oil and pollute stormwater. Place the oil filter in a funnel over a waste oil-recycling drum to drain excess oil before disposal. Oil filters can also be recycled. Ask the oil supplier or recycler about recycling oil filters.
- Store cracked batteries in a non-leaking secondary container. Do this with all cracked batteries even if you think all the acid has drained out. If you drop a battery, treat it as if it is cracked. Put it into the containment area until you are sure it is not leaking.

Vehicle and Equipment Fueling

- If fueling must occur onsite, use designate areas, located away from drainage courses, to prevent the runon of stormwater and the runoff of spills.
- Discourage "topping off" of fuel tanks.
- Always use secondary containment, such as a drain pan, when fueling to catch spills/ leaks.

Costs

Prevention of leaks and spills is inexpensive. Treatment and/ or disposal of contaminated soil or water can be quite expensive.

Inspection and Maintenance

- Inspect and verify that activity–based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.
- Inspect BMPs subject to non-stormwater discharge daily while non-stormwater discharges occur.

- Keep ample supplies of spill control and cleanup materials onsite, near storage, unloading, and maintenance areas.
- Update your spill prevention and control plan and stock cleanup materials as changes occur in the types of chemicals onsite.

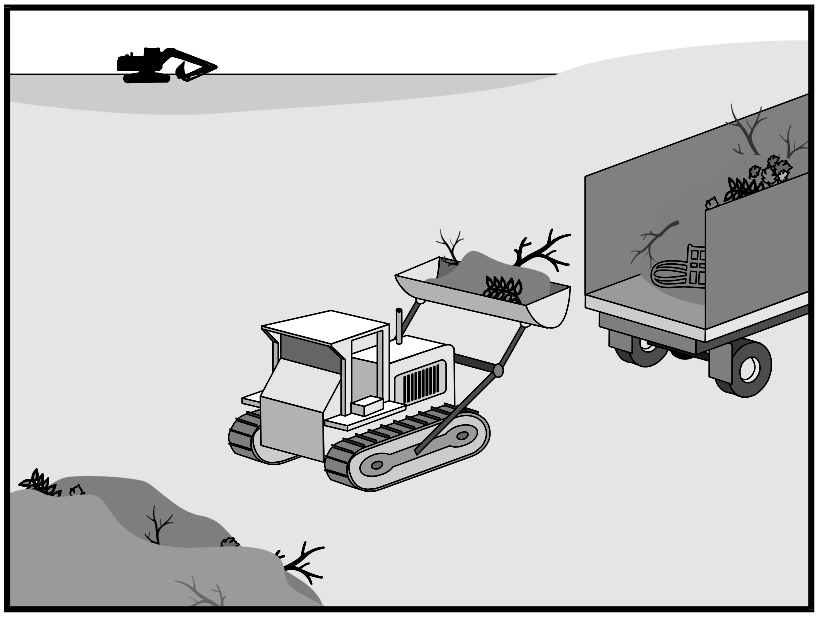
References

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.

Solid Waste Management WM-5



Objectives

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

Description and Purpose

Solid waste management procedures and practices are designed to prevent or reduce the discharge of pollutants to stormwater from solid or construction waste by providing designated waste collection areas and containers, arranging for regular disposal, and training employees and subcontractors.

Suitable Applications

This BMP is suitable for construction sites where the following wastes are generated or stored:

- Solid waste generated from trees and shrubs removed during land clearing, demolition of existing structures (rubble), and building construction
- Packaging materials including wood, paper, and plastic
- Scrap or surplus building materials including scrap metals, rubber, plastic, glass pieces and masonry products
- Domestic wastes including food containers such as beverage cans, coffee cups, paper bags, plastic wrappers, and cigarettes
- Construction wastes including brick, mortar, timber, steel and metal scraps, pipe and electrical cuttings, non-hazardous equipment parts, styrofoam and other materials used to transport and package construction materials

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- Highway planting wastes, including vegetative material, plant containers, and packaging materials

Limitations

Temporary stockpiling of certain construction wastes may not necessitate stringent drainage related controls during the non-rainy season or in desert areas with low rainfall.

Implementation

The following steps will help keep a clean site and reduce stormwater pollution:

- Select designated waste collection areas onsite.
- Inform trash-hauling contractors that you will accept only watertight dumpsters for onsite use. Inspect dumpsters for leaks and repair any dumpster that is not watertight.
- Locate containers in a covered area or in a secondary containment.
- Provide an adequate number of containers with lids or covers that can be placed over the container to keep rain out or to prevent loss of wastes when it is windy.
- Plan for additional containers and more frequent pickup during the demolition phase of construction.
- Collect site trash daily, especially during rainy and windy conditions.
- Remove this solid waste promptly since erosion and sediment control devices tend to collect litter.
- Make sure that toxic liquid wastes (used oils, solvents, and paints) and chemicals (acids, pesticides, additives, curing compounds) are not disposed of in dumpsters designated for construction debris.
- Do not hose out dumpsters on the construction site. Leave dumpster cleaning to the trash hauling contractor.
- Arrange for regular waste collection before containers overflow.
- Clean up immediately if a container does spill.
- Make sure that construction waste is collected, removed, and disposed of only at authorized disposal areas.

Education

- Have the contractor's superintendent or representative oversee and enforce proper solid waste management procedures and practices.
- Instruct employees and subcontractors on identification of solid waste and hazardous waste.
- Educate employees and subcontractors on solid waste storage and disposal procedures.

- Hold regular meetings to discuss and reinforce disposal procedures (incorporate into regular safety meetings).
- Require that employees and subcontractors follow solid waste handling and storage procedures.
- Prohibit littering by employees, subcontractors, and visitors.
- Minimize production of solid waste materials wherever possible.

Collection, Storage, and Disposal

- Littering on the project site should be prohibited.
- To prevent clogging of the storm drainage system, litter and debris removal from drainage grates, trash racks, and ditch lines should be a priority.
- Trash receptacles should be provided in the contractor's yard, field trailer areas, and at locations where workers congregate for lunch and break periods.
- Litter from work areas within the construction limits of the project site should be collected and placed in watertight dumpsters at least weekly, regardless of whether the litter was generated by the contractor, the public, or others. Collected litter and debris should not be placed in or next to drain inlets, stormwater drainage systems, or watercourses.
- Dumpsters of sufficient size and number should be provided to contain the solid waste generated by the project.
- Full dumpsters should be removed from the project site and the contents should be disposed of by the trash hauling contractor.
- Construction debris and waste should be removed from the site biweekly or more frequently as needed.
- Construction material visible to the public should be stored or stacked in an orderly manner.
- Stormwater runon should be prevented from contacting stored solid waste through the use of berms, dikes, or other temporary diversion structures or through the use of measures to elevate waste from site surfaces.
- Solid waste storage areas should be located at least 50 ft from drainage facilities and watercourses and should not be located in areas prone to flooding or ponding.
- Except during fair weather, construction and highway planting waste not stored in watertight dumpsters should be securely covered from wind and rain by covering the waste with tarps or plastic.
- Segregate potentially hazardous waste from non-hazardous construction site waste.
- Make sure that toxic liquid wastes (used oils, solvents, and paints) and chemicals (acids, pesticides, additives, curing compounds) are not disposed of in dumpsters designated for construction debris.

- For disposal of hazardous waste, see WM-6, Hazardous Waste Management. Have hazardous waste hauled to an appropriate disposal and/or recycling facility.

- Salvage or recycle useful vegetation debris, packaging and surplus building materials when practical. For example, trees and shrubs from land clearing can be used as a brush barrier, or converted into wood chips, then used as mulch on graded areas. Wood pallets, cardboard boxes, and construction scraps can also be recycled.

Costs

All of the above are low cost measures.

Inspection and Maintenance

- Inspect and verify that activity–based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.

- Inspect BMPs subject to non-stormwater discharge daily while non-stormwater discharges occur

- Inspect construction waste area regularly.

- Arrange for regular waste collection.

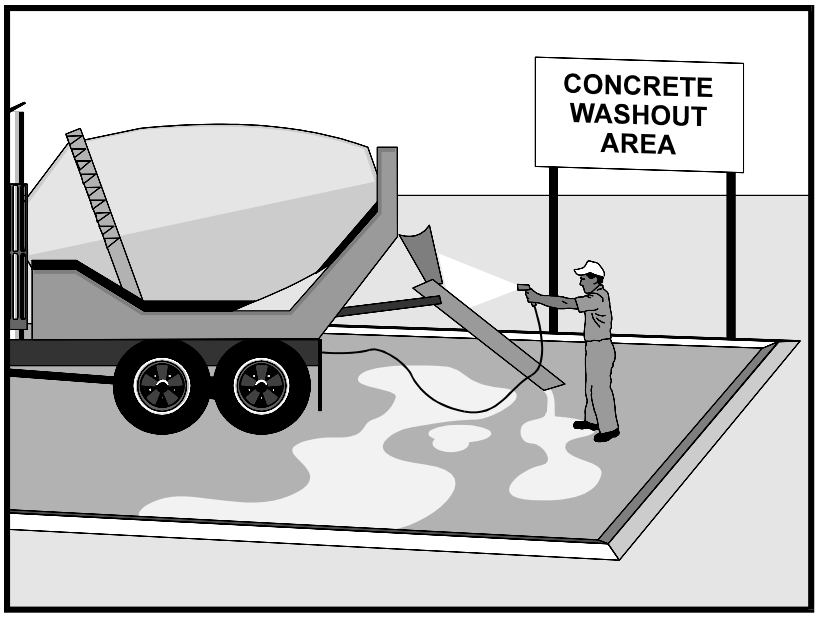
References

Processes, Procedures and Methods to Control Pollution Resulting from All Construction Activity, 430/9-73-007, USEPA, 1973.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.

Concrete Waste Management WM-8



Objectives

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	☑
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Description and Purpose

Prevent or reduce the discharge of pollutants to stormwater from concrete waste by conducting washout offsite, performing onsite washout in a designated area, and training employee and subcontractors.

Suitable Applications

Concrete waste management procedures and practices are implemented on construction projects where:

- Concrete is used as a construction material or where concrete dust and debris result form demolition activities
- Slurries containing portland cement concrete (PCC) or asphalt concrete (AC) are generated, such as from saw cutting, coring, grinding, grooving, and hydro-concrete demolition
- Concrete trucks and other concrete-coated equipment are washed onsite
- Mortar-mixing stations exist
- See also NS-8, Vehicle and Equipment Cleaning

Limitations

- Offsite washout of concrete wastes may not always be possible.

Implementation

The following steps will help reduce stormwater pollution from concrete wastes:

- Discuss the concrete management techniques described in this BMP (such as handling of concrete waste and washout) with the ready-mix concrete supplier before any deliveries are made.
- Incorporate requirements for concrete waste management into material supplier and subcontractor agreements.
- Store dry and wet materials under cover, away from drainage areas.
- Avoid mixing excess amounts of fresh concrete.
- Perform washout of concrete trucks offsite or in designated areas only.
- Do not wash out concrete trucks into storm drains, open ditches, streets, or streams.
- Do not allow excess concrete to be dumped onsite, except in designated areas.
- For onsite washout:
  - Locate washout area at least 50 feet from storm drains, open ditches, or water bodies. Do not allow runoff from this area by constructing a temporary pit or bermed area large enough for liquid and solid waste.
  - Wash out wastes into the temporary pit where the concrete can set, be broken up, and then disposed properly.
- Avoid creating runoff by draining water to a bermed or level area when washing concrete to remove fine particles and expose the aggregate.
- Do not wash sweepings from exposed aggregate concrete into the street or storm drain. Collect and return sweepings to aggregate base stockpile or dispose in the trash.

Education

- Educate employees, subcontractors, and suppliers on the concrete waste management techniques described herein.
- Arrange for contractor's superintendent or representative to oversee and enforce concrete waste management procedures.

Concrete Slurry Wastes

- PCC and AC waste should not be allowed to enter storm drains or watercourses.
- PCC and AC waste should be collected and disposed of or placed in a temporary concrete washout facility.
- A sign should be installed adjacent to each temporary concrete washout facility to inform concrete equipment operators to utilize the proper facilities.

- Below grade concrete washout facilities are typical. Above grade facilities are used if excavation is not practical.

- A foreman or construction supervisor should monitor onsite concrete working tasks, such as saw cutting, coring, grinding and grooving to ensure proper methods are implemented.

- Saw-cut PCC slurry should not be allowed to enter storm drains or watercourses. Residue from grinding operations should be picked up by means of a vacuum attachment to the grinding machine. Saw cutting residue should not be allowed to flow across the pavement and should not be left on the surface of the pavement. See also NS-3, Paving and Grinding Operations; and WM-10, Liquid Waste Management.

- Slurry residue should be vacuumed and disposed in a temporary pit (as described in OnSite Temporary Concrete Washout Facility, Concrete Transit Truck Washout Procedures, below) and allowed to dry. Dispose of dry slurry residue in accordance with WM-5, Solid Waste Management.

Onsite Temporary Concrete Washout Facility, Transit Truck Washout Procedures

- Temporary concrete washout facilities should be located a minimum of 50 ft from storm drain inlets, open drainage facilities, and watercourses. Each facility should be located away from construction traffic or access areas to prevent disturbance or tracking.

- A sign should be installed adjacent to each washout facility to inform concrete equipment operators to utilize the proper facilities.

- Temporary concrete washout facilities should be constructed above grade or below grade at the option of the contractor. Temporary concrete washout facilities should be constructed and maintained in sufficient quantity and size to contain all liquid and concrete waste generated by washout operations.

- Temporary washout facilities should have a temporary pit or bermed areas of sufficient volume to completely contain all liquid and waste concrete materials generated during washout procedures.

- Washout of concrete trucks should be performed in designated areas only.

- Only concrete from mixer truck chutes should be washed into concrete wash out.

- Concrete washout from concrete pumper bins can be washed into concrete pumper trucks and discharged into designated washout area or properly disposed of offsite.

- Once concrete wastes are washed into the designated area and allowed to harden, the concrete should be broken up, removed, and disposed of per WM-5, Solid Waste Management. Dispose of hardened concrete on a regular basis.

- Temporary Concrete Washout Facility (Type Above Grade)

  - Temporary concrete washout facility (type above grade) should be constructed as shown on the details at the end of this BMP, with a recommended minimum length and

minimum width of 10 ft, but with sufficient quantity and volume to contain all liquid and concrete waste generated by washout operations.

- Straw bales, wood stakes, and sandbag materials should conform to the provisions in SE-9, Straw Bale Barrier.

- Plastic lining material should be a minimum of 10 mil in polyethylene sheeting and should be free of holes, tears, or other defects that compromise the impermeability of the material.

- Temporary Concrete Washout Facility (Type Below Grade)

  - Temporary concrete washout facilities (type below grade) should be constructed as shown on the details at the end of this BMP, with a recommended minimum length and minimum width of 10 ft. The quantity and volume should be sufficient to contain all liquid and concrete waste generated by washout operations.

  - Lath and flagging should be commercial type.

  - Plastic lining material should be a minimum of 10 mil polyethylene sheeting and should be free of holes, tears, or other defects that compromise the impermeability of the material.

Removal of Temporary Concrete Washout Facilities

- When temporary concrete washout facilities are no longer required for the work, the hardened concrete should be removed and disposed of. Materials used to construct temporary concrete washout facilities should be removed from the site of the work and disposed of.

- Holes, depressions or other ground disturbance caused by the removal of the temporary concrete washout facilities should be backfilled and repaired.

Costs

All of the above are low cost measures.

Inspection and Maintenance

- Inspect and verify that activity–based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.

- Temporary concrete washout facilities should be maintained to provide adequate holding capacity with a minimum freeboard of 4 in. for above grade facilities and 12 in. for below grade facilities. Maintaining temporary concrete washout facilities should include removing and disposing of hardened concrete and returning the facilities to a functional condition. Hardened concrete materials should be removed and disposed of.

- Washout facilities must be cleaned, or new facilities must be constructed and ready for use once the washout is 75% full.

References

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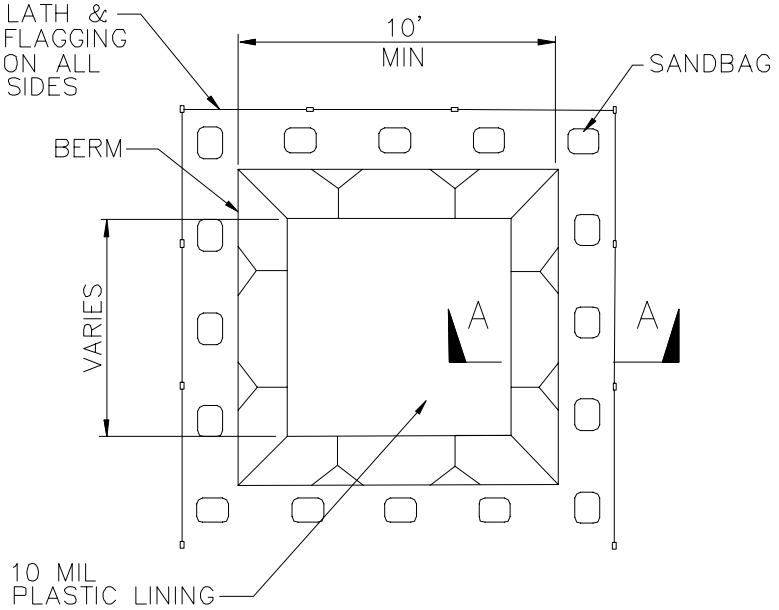

PLAN
NOT TO SCALE
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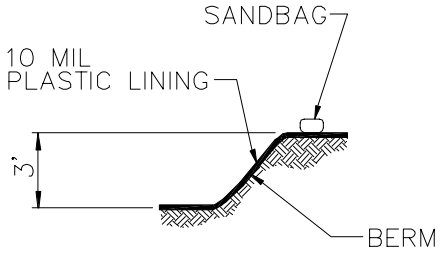
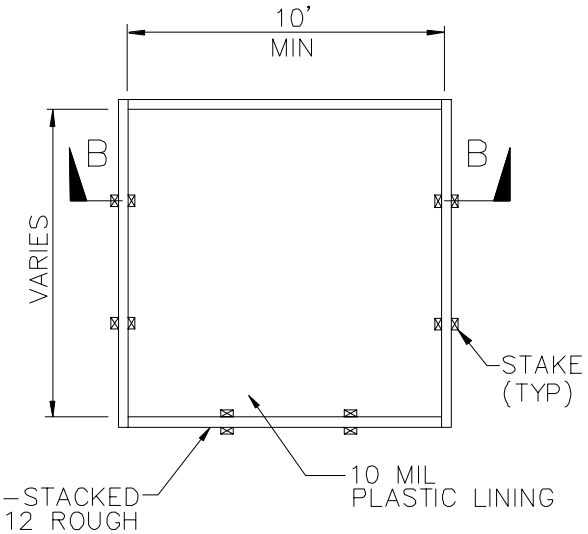
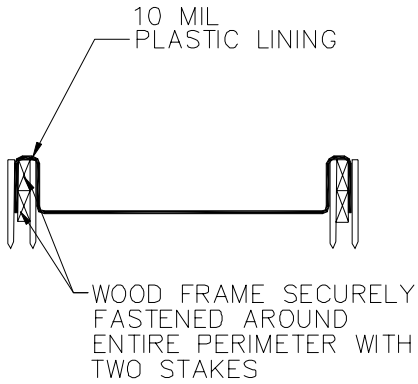


SECTION A–A
NOT TO SCALE



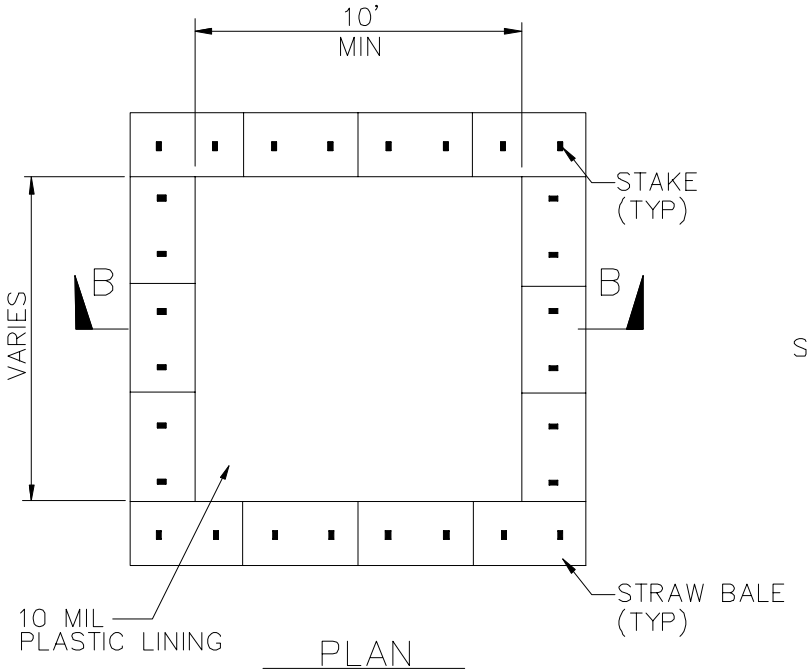
PLAN
NOT TO SCALE
TYPE "ABOVE GRADE"



SECTION B–B
NOT TO SCALE

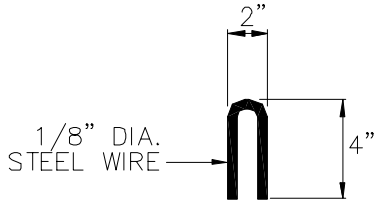
NOTES

1. ACTUAL LAYOUT DETERMINED IN FIELD.
2. THE CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30 FT. OF THE TEMPORARY CONCRETE WASHOUT FACILITY.

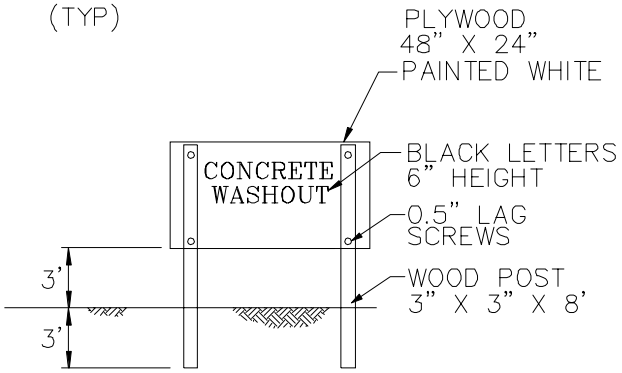


PLAN
NOT TO SCALE

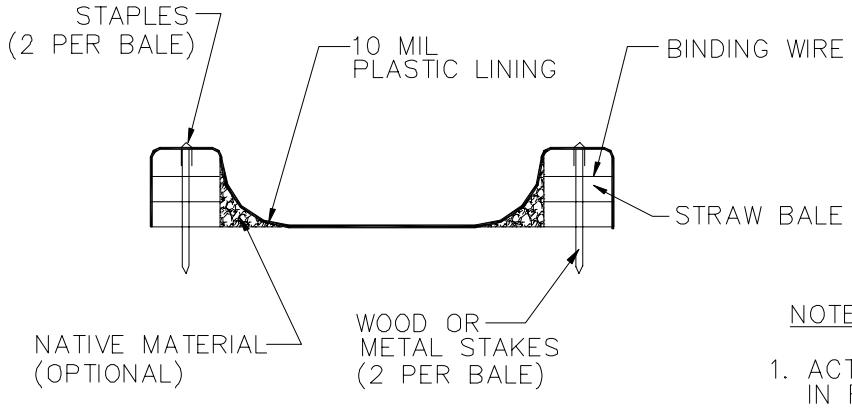
TYPE "ABOVE GRADE"
WITH STRAW BALES



STAPLE DETAIL



CONCRETE WASHOUT
SIGN DETAIL
(OR EQUIVALENT)

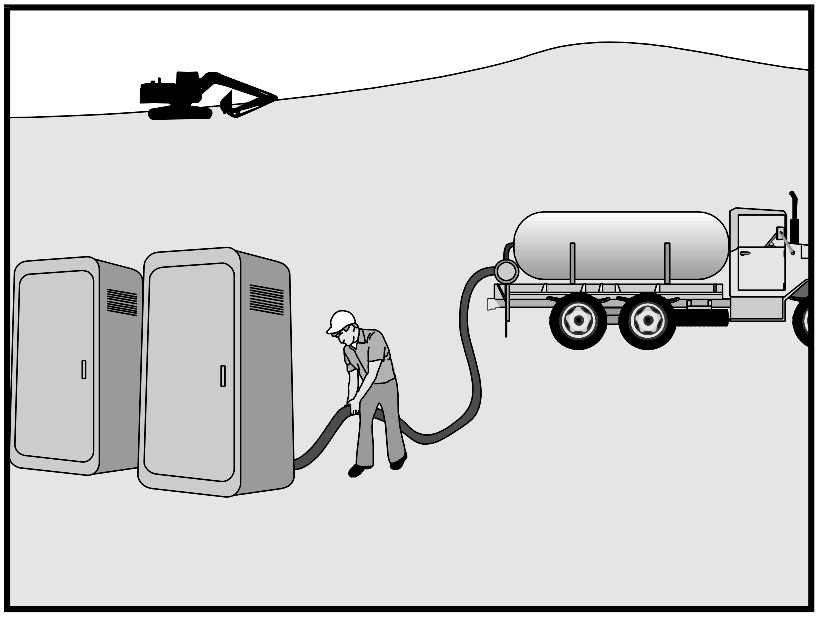


SECTION B–B
NOT TO SCALE

NOTES

1. ACTUAL LAYOUT DETERMINED IN FIELD.
2. THE CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30 FT. OF THE TEMPORARY CONCRETE WASHOUT FACILITY.

Sanitary/Septic Waste Management WM-9



Objectives

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	
Nutrients	☑
Trash	☑
Metals	
Bacteria	☑
Oil and Grease	
Organics	☑

Potential Alternatives

None

Description and Purpose

Proper sanitary and septic waste management prevent the discharge of pollutants to stormwater from sanitary and septic waste by providing convenient, well-maintained facilities, and arranging for regular service and disposal.

Suitable Applications

Sanitary septic waste management practices are suitable for use at all construction sites that use temporary or portable sanitary and septic waste systems.

Limitations

None identified.

Implementation

Sanitary or septic wastes should be treated or disposed of in accordance with state and local requirements. In many cases, one contract with a local facility supplier will be all that it takes to make sure sanitary wastes are properly disposed.

Storage and Disposal Procedures

- Temporary sanitary facilities should be located away from drainage facilities, watercourses, and from traffic circulation. When subjected to high winds or risk of high winds, temporary sanitary facilities should be secured to prevent overturning.
- Wastewater should not be discharged or buried within the project site.

- Sanitary and septic systems that discharge directly into sanitary sewer systems, where permissible, should comply with the local health agency, city, county, and sewer district requirements.
- Only reputable, licensed sanitary and septic waste haulers should be used.
- Sanitary facilities should be located in a convenient location.
- Untreated raw wastewater should never be discharged or buried.
- Temporary septic systems should treat wastes to appropriate levels before discharging.
- If using an onsite disposal system (OSDS), such as a septic system, local health agency requirements must be followed.
- Temporary sanitary facilities that discharge to the sanitary sewer system should be properly connected to avoid illicit discharges.
- Sanitary and septic facilities should be maintained in good working order by a licensed service.
- Regular waste collection by a licensed hauler should be arranged before facilities overflow.

Education

- Educate employees, subcontractors, and suppliers on sanitary and septic waste storage and disposal procedures.
- Educate employees, subcontractors, and suppliers of potential dangers to humans and the environment from sanitary and septic wastes.
- Instruct employees, subcontractors, and suppliers in identification of sanitary and septic waste.
- Hold regular meetings to discuss and reinforce disposal procedures (incorporate into regular safety meetings).
- Establish a continuing education program to indoctrinate new employees.

Costs

All of the above are low cost measures.

Inspection and Maintenance

- Inspect and verify that activity–based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.
- Arrange for regular waste collection.
- If high winds are expected, portable sanitary facilities must be secured with spikes or weighed down to prevent over turning.

References

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.

BMP INSPECTION REPORT

Date and Time of Inspection:			Date Report Written:	
Inspection Type: (Circle one)	Weekly *Complete Parts I,II,III and VII*	Pre-Storm *Complete Parts I,II,III,IV and VII*	During Rain Event *Complete Parts I, II, III, V, and VII*	Post-Storm *Complete Parts I,II,III,VI and VII*

Part I. General Information

Site Information

Construction Site Name:	
Construction stage and completed activities:	Approximate area of site that is exposed:

Photos Taken: (Circle one)	Yes	No	Photo Reference IDs:

Weather

Estimate storm beginning: (date and time)	Estimate storm duration: (hours)
Estimate time since last storm: (days or hours)	Rain gauge reading and location: (in)

Is a "Qualifying Event" predicted or did one occur (i.e., 0.5" rain with 48-hrs or greater between events)? (Y/N)
If yes, summarize forecast:

Exemption Documentation (explanation required if inspection could not be conducted).

Visual inspections are not required outside of business hours or during dangerous weather conditions such as flooding or electrical storms.

Inspector Information

Inspector Name:	Inspector Title:
Signature:	Date:

Part II. BMP Observations. Describe deficiencies in Part III.

Minimum BMPs for Risk Level _____ Sites	Failures or other short comings (yes, no, N/A)	Action Required (yes/no)	Action Implemented (Date)
Good Housekeeping for Construction Materials			
Inventory of products (excluding materials designed to be outdoors)			
Stockpiled construction materials not actively in use are covered and bermed			
All chemicals are stored in watertight containers with appropriate secondary containment, or in a completely enclosed storage shed			
Construction materials are minimally exposed to precipitation			
BMPs preventing the off-site tracking of materials are implemented and properly effective			
Good Housekeeping for Waste Management			
Wash/rinse water and materials are prevented from being disposed into the storm drain system			
Portable toilets are contained to prevent discharges of waste			
Sanitation facilities are clean and with no apparent for leaks and spills			
Equipment is in place to cover waste disposal containers at the end of business day and during rain events			
Discharges from waste disposal containers are prevented from discharging to the storm drain system / receiving water			
Stockpiled waste material is securely protected from wind and rain if not actively in use			
Procedures are in place for addressing hazardous and non-hazardous spills			
Appropriate spill response personnel are assigned and trained			
Equipment and materials for cleanup of spills is available onsite			
Washout areas (e.g., concrete) are contained appropriately to prevent discharge or infiltration into the underlying soil			
Good Housekeeping for Vehicle Storage and Maintenance			
Measures are in place to prevent oil, grease, or fuel from leaking into the ground, storm drains, or surface waters			
All equipment or vehicles are fueled, maintained, and stored in a designated area with appropriate BMPs			
Vehicle and equipment leaks are cleaned immediately and disposed of properly			

Part II. BMP Observations Continued. Describe deficiencies in Part III.			
Minimum BMPs for Risk Level _____ Sites	Adequately designed, implemented and effective (yes, no, N/A)	Action Required (yes/no)	Action Implemented (Date)

Good Housekeeping for Landscape Materials			
Stockpiled landscape materials such as mulches and topsoil are contained and covered when not actively in use			
Erodible landscape material has not been applied 2 days before a forecasted rain event or during an event			
Erodible landscape materials are applied at quantities and rates in accordance with manufacturer recommendations			
Bagged erodible landscape materials are stored on pallets and covered			
Good Housekeeping for Air Deposition of Site Materials			
Good housekeeping measures are implemented onsite to control the air deposition of site materials and from site operations			
Non-Stormwater Management			
Non-Stormwater discharges are properly controlled			
Vehicles are washed in a manner to prevent non-stormwater discharges to surface waters or drainage systems			
Streets are cleaned in a manner to prevent unauthorized non-stormwater discharges to surface waters or drainage systems.			
Erosion Controls			
Wind erosion controls are effectively implemented			
Effective soil cover is provided for disturbed areas inactive (i.e., not scheduled to be disturbed for 14 days) as well as finished slopes, open space, utility backfill, and completed lots			
The use of plastic materials is limited in cases when a more sustainable, environmentally friendly alternative exists.			
Sediment Controls			
Perimeter controls are established and effective at controlling erosion and sediment discharges from the site			
Entrances and exits are stabilized to control erosion and sediment discharges from the site			
Sediment basins are properly maintained			
Linear sediment control along toe of slope, face of slope an at grade breaks (Risk Level 2 & 3 Only)			
Limit construction activity to and from site to entrances and exits that employ effective controls to prevent offsite tracking (Risk Level 2 & 3 Only)			
Ensure all storm, drain inlets and perimeter controls, runoff control BMPs and pollutants controls at entrances and exits are maintained and protected from activities the reduce their effectiveness (Risk Level 2 & 3 Only)			
Inspect all immediate access roads daily (Risk Level 2 & 3 Only)			
Run-On and Run-Off Controls			
Run-on to the site is effectively managed and directed away from all disturbed areas.			
Other			

Are the project SWPPP and BMP plan up to date, available on-site and being properly implemented?			

Part III. Descriptions of BMP Deficiencies		
Deficiency	**Repairs Implemented:** **Note -** Repairs must begin within 72 hours of identification and, complete repairs as soon as possible.	
	Start Date	**Action**
1.		
2.		
3.		
4.		

Part IV. Additional Pre-Storm Observations. **Note the presence or absence of floating and suspended materials, sheen, discoloration, turbidity, odors, and source(s) of pollutants(s).**	
	Yes, No, N/A
Do stormwater storage and containment areas have adequate freeboard? If no, complete Part III.	
Are drainage areas free of spills, leaks, or uncontrolled pollutant sources? If no, complete Part VII and describe below.	
Notes:	
Are stormwater storage and containment areas free of leaks? If no, complete Parts III and/or VII and describe below.	
Notes:	

Part V. Additional During Storm Observations. If BMPs cannot be inspected during inclement weather, list the results of visual inspections at all relevant outfalls, discharge points, and downstream locations. Note odors or visible sheen on the surface of discharges. Complete Part VII (Corrective Actions) as needed.

Outfall, Discharge Point, or Other Downstream Location	
Location	Description
Location	Description
Location	Description
Location	Description
Location	Description
Location	Description
Location	Description
Location	Description

Part VI. Additional Post-Storm Observations. **Visually observe (inspect) stormwater discharges at all discharge locations within two business days (48 hours) after each qualifying rain event, and observe (inspect) the discharge of stored or contained stormwater that is derived from and discharged subsequent to a qualifying rain event producing precipitation of ½ inch or more at the time of discharge. Complete Part VII (Corrective Actions) as needed.**	
Discharge Location, Storage or Containment Area	**Visual Observation**

Part VII. Additional Corrective Actions Required. **Identify additional corrective actions not included with BMP Deficiencies (Part III) above. Note if SWPPP change is required.**	
Required Actions	**Implementation Date**

Date: _____20_____ WDID Number:

APPENDIX 3: REAP TEMPLATES

Rain Event Action Plan (REAP)

Grading and Land Development Phase

Preparation of land for utility installation and vertical building including clearing and grubbing, demolition, blasting or rock crushing, if necessary, and soil excavation and mass grading. This form is to be reviewed and completed by the qualified SWPPP practitioner within 48 hours prior to a rain event during the Grading and Land Development Phase.

Site Information:

_____

Site Name, City and Zip Code □ Risk Level 2 □ Risk Level 3

Site Storm Water Manager Information:

_____

Name, Company and Emergency Phone Number (24/7)

Erosion and Sediment Control Provider – Labor Force Contracted for the Site:

_____

Name, Company and Emergency Phone Number (24/7)

Storm Water Sampling Agent Information:

_____

Name, Company and Emergency Phone Number (24/7)

Activities Associated with Land Surface Development

Check ALL the boxes below that apply to your site.

❑ Demolition	❑ Vegetation Removal	❑ Vegetation Salvage-Harvest
❑ Rough Grade	❑ Finish Grade	❑ Blasting
❑ Soil Amendment(s):	❑ Over Excavation (_____ ft)	❑ Soils Testing
❑ Rock Crushing	❑ Erosion and Sediment Control	❑ Surveying
❑ Equip. Maintenance/Fueling	❑ Material Delivery and Storage	❑ Other:

Trades Active on Site During Land Surface Development

Check ALL the boxes below that apply to your site.

❑ Demolition	❑ Grading Contractor	❑ Erosion and Sediment Control
❑ Storm Drain Improvement	❑ Water, Sewer, Electric Utilities	❑ Surveyor – Soils Technician
❑ Street Improvements	❑ Rock Products	❑ Sanitary Station Provider
❑ Material Delivery	❑ Equipment Fueling/Maintenance	❑ Laborers
❑ Other:	❑ Other:	❑ Other:

Trade Contractor Information Provided

❑ Educational Material Handout	❑ Tailgate Meetings	❑ Training Workshop
❑ Contractual Language	❑ Fines and Penalties	❑ Signage
❑ Other:	❑ Other:	❑ Other:

Rain Event Action Plan (REAP)
Grading and Land Development Phase

Predicted Rain Event Triggered Actions

Below is a list of suggested actions for this project phase. Each active Trade should check all material storage areas, stockpiles, waste management areas, vehicle and equipment storage and maintenance, areas of active soil disturbance, and areas of active work to ensure the proper implementation of BMPs. Project-wide BMPs should be checked and cross-referenced to the BMP progress map.

Trade or Activity	Suggested action(s) to review before rain event
❑ Information & Scheduling	❑ Inform trade supervisors of predicted rain ❑ Check scheduled activities and rescheduled as needed ❑ Alert erosion/sediment control provider ❑ Alert sample collection contractor (if applicable) ❑ Schedule staff for extended rain inspections (including weekends & holidays) ❑ Check Erosion and Sediment Control (ESC) material stock ❑ Review BMP map ❑ Other:_____ ❑ _____ ❑ _____
❑ Material storage areas	❑ Material under cover or in sheds (ex: treated woods and metals) ❑ Perimeter control around stockpiles ❑ Other:_____ ❑ _____ ❑ _____
❑ Waste management areas	❑ Dumpsters closed ❑ Drain holes plugged ❑ Recycling bins covered ❑ Sanitary stations bermed and protected from tipping ❑ Other:_____ ❑ _____ ❑ _____
❑ Trade operations	❑ Exterior operations shut down for event (ex: no concrete pours or paving) ❑ Do not apply soil treatments (ex: fertilizer) within 24 hours of event ❑ Materials and equipment (ex: tools) properly stored and covered ❑ Waste and debris disposed in covered dumpsters or removed from site ❑ Trenches and excavations protected ❑ Perimeter controls around disturbed areas ❑ Cover and berm fueling and repair areas ❑ Other:_____ ❑ _____ ❑ _____
❑ Site ESC BMPs	❑ Adequate capacity in sediment basins and traps ❑ Site perimeter controls in place ❑ Catch basin and drop inlet protection in place ❑ Deploy temporary erosion control on inactive areas ❑ Deploy temporary perimeter control around disturbed areas or stockpiles ❑ Sweep roads; stabilize site ingress and egress points ❑ Other:_____ ❑ _____ ❑ _____
❑ Concrete rinse out area	❑ Adequate capacity for rain ❑ Cover wash-out bins ❑ Other:_____ ❑ _____ ❑ _____

❑ Spill and drips	❑ Clean up all incident spills and drips, including paint, stucco, fuel, and oil ❑ Empty drip pans ❑ Other:_____ ❑ _____ ❑ _____

❑ Other / Discussion / Diagrams	❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____

I certify under penalty of law that this Rain Event Action Plan (REAP) will be performed in accordance with the General Permit by me or under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

_____ Date: _____

Site Storm Water Manager Signature (Use ink please)

Date: _____20_____ WDID Number:

Rain Event Action Plan (REAP)

Streets and Utilities Phase

Finish grading activities and installation of electrical, gas, water, sewer, stormwater control, and communication systems; Installation of roadways, curbs, gutters and other site design features for stormwater control. This form to be reviewed and completed by the qualified SWPPP practitioner within 48 hours prior to a rain event during the Streets and Utilities Phase.

Site Information:

_____

Site Name, City and Zip Code □ Risk Level 2 □ Risk Level 3

Site Storm Water Manager Information:

_____

Name, Company and Emergency Phone Number (24/7)

Erosion and Sediment Control Provider – Labor Force Contracted for the Site:

_____

Name, Company and Emergency Phone Number (24/7)

Storm Water Sampling Agent Information:

_____

Name, Company and Emergency Phone Number (24/7)

Activities Associated with Streets and Utilities Development

Check ALL the boxes below that apply to your site.

- ❑ Rough Grade
- ❑ Finish Grade
- ❑ Soil Amendment(s):
- ❑ Equip. Maintenance/Fueling
- ❑ Utility Install: water-sewer-gas
- ❑ Storm Drain Installation
- ❑ Masonry
- ❑ Curb and Gutter/Concrete Pour
- ❑ Paving Operations
- ❑ Material Delivery & Storage
- ❑ Erosion and Sediment Control
- ❑ Other:

Trades Active on Site During Streets and Utilities Development

Check ALL the boxes below that apply to your site.

- ❑ Storm Drain Improvement
- ❑ Street Improvements
- ❑ Material Delivery
- ❑ Trenching
- ❑ Concrete Pouring
- ❑ Foundation
- ❑ Other:
- ❑ Other:
- ❑ Grading Contractor
- ❑ Water Pipe Installation
- ❑ Sewer Pipe Installation
- ❑ Gas Pipe Installation
- ❑ Electrical Installation
- ❑ Communication Installation
- ❑ Erosion and Sediment Control
- ❑ Other:
- ❑ Surveyor- Soil Technician
- ❑ Sanitary Station Provider
- ❑ Laborers
- ❑ Electrical
- ❑ Carpentry
- ❑ Plumbing
- ❑ Masonry
- ❑ Other:

Trade Contractor Information Provided

- ❑ Educational Material Handout
- ❑ Contractual Language
- ❑ Other:
- ❑ Tailgate Meetings
- ❑ Fines and Penalties
- ❑ Other:
- ❑ Training Workshop
- ❑ Signage
- ❑ Other:

Rain Event Action Plan (REAP)

Streets and Utilities Phase

Predicted Rain Event Triggered Actions

Below is a list of suggested actions for this project phase. Each active Trade should check all material storage areas, stockpiles, waste management areas, vehicle and equipment storage and maintenance, areas of active soil disturbance, and areas of active work to ensure the proper implementation of BMPs. Project-wide BMPs should be checked and cross-referenced to the BMP progress map.

Trade or Activity	Suggested action(s) to review before rain event
❑ Information & Scheduling	❑ Inform trade supervisors of predicted rain ❑ Check scheduled activities and rescheduled as needed ❑ Alert erosion/sediment control provider ❑ Alert sample collection contractor (if applicable) ❑ Schedule staff for extended rain inspections (including weekends & holidays) ❑ Check Erosion and Sediment Control (ESC) material stock ❑ Review BMP map ❑ Other:_____ ❑ _____ ❑ _____
❑ Material storage areas	❑ Material under cover or in sheds (ex: treated woods and metals) ❑ Perimeter control around stockpiles ❑ Other:_____ ❑ _____ ❑ _____
❑ Waste management areas	❑ Dumpsters closed ❑ Drain holes plugged ❑ Recycling bins covered ❑ Sanitary stations bermed and protected from tipping ❑ Other:_____ ❑ _____ ❑ _____
❑ Trade operations	❑ Exterior operations shut down for event (ex: no concrete pours or paving) ❑ Do not apply soil treatments (ex: fertilizer) within 24 hours of event ❑ Materials and equipment (ex: tools) properly stored and covered ❑ Waste and debris disposed in covered dumpsters or removed from site ❑ Trenches and excavations protected ❑ Perimeter controls around disturbed areas ❑ Cover and berm fueling and repair areas ❑ Other:_____ ❑ _____ ❑ _____
❑ Site ESC BMPs	❑ Adequate capacity in sediment basins and traps ❑ Site perimeter controls in place ❑ Catch basin and drop inlet protection in place ❑ Deploy temporary erosion control on inactive areas ❑ Deploy temporary perimeter control around disturbed areas or stockpiles ❑ Sweep roads; stabilize site ingress and egress points ❑ Other:_____ ❑ _____ ❑ _____
❑ Concrete rinse out area	❑ Adequate capacity for rain ❑ Cover wash-out bins ❑ Other:_____ ❑ _____ ❑ _____

❑ Spill and drips	❑ Clean up all incident spills and drips, including paint, stucco, fuel, and oil ❑ Empty drip pans ❑ Other:_____ ❑ _____ ❑ _____

❑ Other / Discussion / Diagrams	❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____

I certify under penalty of law that this Rain Event Action Plan (REAP) will be performed in accordance with the General Permit by me or under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

_____ Date: _____

Site Storm Water Manager Signature (Use ink please)

Date: _____20_____ WDID Number:

Rain Event Action Plan (REAP)
Vertical Construction Phase

Build out of structures from foundations to roofing, including rough landscaping. This form to be reviewed and completed by the qualified SWPPP practitioner within 48 hours prior to a rain event during the Vertical Construction Phase.

Site Information:

_____
Site Name, City and Zip Code □ Risk Level 2 □ Risk Level 3

Site Storm Water Manager Information:

_____
Name, Company and Emergency Phone Number (24/7)

Erosion and Sediment Control Provider – Labor Force Contracted for the Site:

_____
Name, Company and Emergency Phone Number (24/7)

Storm Water Sampling Agent Information:

_____
Name, Company and Emergency Phone Number (24/7)

Activities Associated with Vertical Construction

Check ALL the boxes below that apply to your site, and others that are active at your site.

❑ Framing	❑ Carpentry	❑ Concrete/Forms/Foundation
❑ Masonry	❑ Electrical	❑ Painting
❑ Drywall/Interior Walls	❑ Plumbing	❑ Stucco
❑ Equip. Maintenance/Fueling	❑ HVAC	❑ Tile
❑ Exterior Siding	❑ Insulation	❑ Landscaping & Irrigation
❑ Flooring	❑ Material Delivery & Storage	❑ Equip. Repair and Fueling
❑ Roofing	❑ Soil Amendment(s):	❑ Other:

Trades Active on Site During Vertical Construction

Check ALL the boxes below that apply to your site, and others that are active at your site.

❑ Grading Contractor	❑ Utilities, e.g., Sewer, Electric	❑ Erosion/ Sediment Control
❑ Tile Work- Flooring	❑ Foundation	❑ Surveyors
❑ Drywall	❑ Roofers	❑ Sanitary Station Provider
❑ Electricians	❑ Stucco	❑ Laborers
❑ HVAC installers	❑ Masons	❑ Painters
❑ Exterior Siding	❑ Landscapers	❑ Carpenters
❑ Insulation	❑ Riggers	❑ Plumbers
❑ Fireproofing	❑ Utility Line Testers	❑ Pest Control: termite prevent.
❑ Steel Systems	❑ Others:	❑ Other:

Trades that are storing materials and/or waste outside or conducting activities outside should be listed.

Trade Contractor Information Provided

❑ Educational Material Handout	❑ Tailgate Meetings	❑ Training Workshop
❑ Contractual Language	❑ Fines and Penalties	❑ Signage
❑ Other:	❑ Other:	❑ Other:

Rain Event Action Plan (REAP)
Vertical Construction Phase

Predicted Rain Event Triggered Actions

Below is a list of suggested actions for this project phase. Each active Trade should check all material storage areas, stockpiles, waste management areas, vehicle and equipment storage and maintenance, areas of active soil disturbance, and areas of active work to ensure the proper implementation of BMPs. Project-wide BMPs should be checked and cross-referenced to the BMP progress map.

Trade or Activity	Suggested action(s) to review before rain event
❑ Information & Scheduling	❑ Inform trade supervisors of predicted rain ❑ Check scheduled activities and rescheduled as needed ❑ Alert erosion/sediment control provider ❑ Alert sample collection contractor (if applicable) ❑ Schedule staff for extended rain inspections (including weekends & holidays) ❑ Check Erosion and Sediment Control (ESC) material stock ❑ Review BMP map ❑ Other:_____ ❑ _____ ❑ _____
❑ Material storage areas	❑ Material under cover or in sheds (ex: treated woods and metals) ❑ Perimeter control around stockpiles ❑ Other:_____ ❑ _____ ❑ _____
❑ Waste management areas	❑ Dumpsters closed ❑ Drain holes plugged ❑ Recycling bins covered ❑ Sanitary stations bermed and protected from tipping ❑ Other:_____ ❑ _____ ❑ _____
❑ Trade operations	❑ Exterior operations shut down for event (ex: no concrete pours or paving) ❑ Do not apply soil treatments (ex: fertilizer) within 24 hours of event ❑ Materials and equipment (ex: tools) properly stored and covered ❑ Waste and debris disposed in covered dumpsters or removed from site ❑ Trenches and excavations protected ❑ Perimeter controls around disturbed areas ❑ Cover and berm fueling and repair areas ❑ Other:_____ ❑ _____ ❑ _____
❑ Site ESC BMPs	❑ Adequate capacity in sediment basins and traps ❑ Site perimeter controls in place ❑ Catch basin and drop inlet protection in place ❑ Deploy temporary erosion control on inactive areas ❑ Deploy temporary perimeter control around disturbed areas or stockpiles ❑ Sweep roads; stabilize site ingress and egress points ❑ Other:_____ ❑ _____ ❑ _____
❑ Concrete rinse out area	❑ Adequate capacity for rain ❑ Cover wash-out bins ❑ Other:_____ ❑ _____ ❑ _____

❑ Spill and drips	❑ Clean up all incident spills and drips, including paint, stucco, fuel, and oil ❑ Empty drip pans ❑ Other:_____ ❑ _____ ❑ _____

❑ Other / Discussion / Diagrams	❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____

I certify under penalty of law that this Rain Event Action Plan (REAP) will be performed in accordance with the General Permit by me or under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

_____ Date: _____

Site Storm Water Manager Signature (Use ink please)

Date: _____20_____ WDID Number:

Rain Event Action Plan (REAP)

Post – Construction Phase

Final landscaping and site stabilization, material removal, and post construction obligation installation such as storm drain inlet stenciling. This form to be reviewed and completed by the qualified SWPPP practitioner within 48 hours prior to a rain event during the Post-Construction Phase.

Site Information:

_____

Site Name, City and Zip Code □ Risk Level 2 □ Risk Level 3

Site Storm Water Manager Information:

_____

Name, Company and Emergency Phone Number (24/7)

Erosion and Sediment Control Provider – Labor Force Contracted for the Site:

_____

Name, Company and Emergency Phone Number (24/7)

Storm Water Sampling Agent Information:

_____

Name, Company and Emergency Phone Number (24/7)

Activities Associated with Site Post Construction

Check ALL the boxes below that apply to your site.

❑ Stabilization	❑ Vegetation Establishment	❑ E&S Control BMP Removal
❑ Finish Grade	❑ Storage Yard/ Material Removal	❑ Landscape Installation
❑ Painting and Touch-Up	❑ Irrigation System Testing	❑ Other:

Installation of Post-Construction BMPs:

❑ Drainage Inlet Stencils	❑ Inlet Filtration	❑ Perm. Water Quality Ponds
❑ Other:	❑ Other:	❑ Other:

Trades Active on During Site Post Construction

Check ALL the boxes below that apply to your site.

❑ Material Delivery	❑ Landscape Installation	❑ Erosion and Sediment Control
❑ Irrigation System Installation	❑ BMP Installation	❑ Sanitary Station Provider
❑ Pool Installation	❑ Water Feature Installation	❑ Laborers
❑ Painting	❑ Equipment Fueling	❑ Other:

Home Owner and HOA Information Provided

❑ Educational Material Handout	❑ Door Hangers	❑ Educational Workshop
❑ Educational Material Mailings	❑ Fines and Penalties	❑ Signage
❑ Community Postings	❑ Other:	❑ Other:

Rain Event Action Plan (REAP)

Post – Construction Phase

Predicted Rain Event Triggered Actions

Below is a list of suggested actions for this project phase. Each active Trade should check all material storage areas, stockpiles, waste management areas, vehicle and equipment storage and maintenance, areas of active soil disturbance, and areas of active work to ensure the proper implementation of BMPs. Project-wide BMPs should be checked and cross-referenced to the BMP progress map.

Trade or Activity	Suggested action(s) to review before rain event
❑ Information & Scheduling	❑ Inform trade supervisors of predicted rain ❑ Check scheduled activities and rescheduled as needed ❑ Alert erosion/sediment control provider ❑ Alert sample collection contractor (if applicable) ❑ Schedule staff for extended rain inspections (including weekends & holidays) ❑ Check Erosion and Sediment Control (ESC) material stock ❑ Review BMP map ❑ Other:_____ ❑ _____ ❑ _____
❑ Material storage areas	❑ Material under cover or in sheds (ex: treated woods and metals) ❑ Perimeter control around stockpiles ❑ Other:_____ ❑ _____ ❑ _____
❑ Waste management areas	❑ Dumpsters closed ❑ Drain holes plugged ❑ Recycling bins covered ❑ Sanitary stations bermed and protected from tipping ❑ Other:_____ ❑ _____ ❑ _____
❑ Trade operations	❑ Exterior operations shut down for event (ex: no concrete pours or paving) ❑ Do not apply soil treatments (ex: fertilizer) within 24 hours of event ❑ Materials and equipment (ex: tools) properly stored and covered ❑ Waste and debris disposed in covered dumpsters or removed from site ❑ Trenches and excavations protected ❑ Perimeter controls around disturbed areas ❑ Cover and berm fueling and repair areas ❑ Other:_____ ❑ _____ ❑ _____
❑ Site ESC BMPs	❑ Adequate capacity in sediment basins and traps ❑ Site perimeter controls in place ❑ Catch basin and drop inlet protection in place ❑ Deploy temporary erosion control on inactive areas ❑ Deploy temporary perimeter control around disturbed areas or stockpiles ❑ Sweep roads; stabilize site ingress and egress points ❑ Other:_____ ❑ _____ ❑ _____
❑ Concrete rinse out area	❑ Adequate capacity for rain ❑ Cover wash-out bins ❑ Other:_____ ❑ _____ ❑ _____

❑ Spill and drips	❑ Clean up all incident spills and drips, including paint, stucco, fuel, and oil ❑ Empty drip pans ❑ Other:_____ ❑ _____ ❑ _____

❑ Other / Discussion / Diagrams	❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____

I certify under penalty of law that this Rain Event Action Plan (REAP) will be performed in accordance with the General Permit by me or under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

_____ Date: _____

Site Storm Water Manager Signature (Use ink please)

Date: _____20_____ WDID Number:

Rain Event Action Plan (REAP)
Inactive Construction Sites

Halted, or postponed construction activities. This form to be reviewed and completed by the qualified SWPPP practitioner within 48 hours prior to a rain event during the time period a site is designated inactive.

Site Information:

_____
Site Name, City and Zip Code □ Risk Level 2 □ Risk Level 3

Site Storm Water Manager Information:

_____
Name, Company and Emergency Phone Number (24/7)

Erosion and Sediment Control Provider – Labor Force Contracted for the Site:

_____
Name, Company and Emergency Phone Number (24/7)

Storm Water Sampling Agent Information:

_____
Name, Company and Emergency Phone Number (24/7)

Trades Active on Site During Inactive Construction

Check ALL the boxes below that apply to your site.

❑ E&S Control Device Installation	❑ Routine Site inspections	❑ Trash Removal
❑ E&S Control Device Maintenance	❑ Street Sweeping	❑ Other:
❑ Other:	❑ Other:	❑ Other:

Trade Contractor Information Provided

❑ Educational Material Handout	❑ Tailgate Meetings	❑ Training Workshop
❑ Contractual Language	❑ Fines and Penalties	❑ Signage
❑ Other:	❑ Other:	❑ Other:

Rain Event Action Plan (REAP)
Inactive Construction Sites

Predicted Rain Event Triggered Actions

Below is a list of suggested actions for this project phase. Each active Trade should check all material storage areas, stockpiles, waste management areas, vehicle and equipment storage and maintenance, areas of active soil disturbance, and areas of active work to ensure the proper implementation of BMPs. Project-wide BMPs should be checked and cross-referenced to the BMP progress map.

Trade or Activity	Suggested action(s) to review before rain event
❑ Information & Scheduling	❑ Inform trade supervisors of predicted rain ❑ Check scheduled activities and rescheduled as needed ❑ Alert erosion/sediment control provider ❑ Alert sample collection contractor (if applicable) ❑ Schedule staff for extended rain inspections (including weekends & holidays) ❑ Check Erosion and Sediment Control (ESC) material stock ❑ Review BMP map ❑ Other:_____ ❑ _____ ❑ _____
❑ Material storage areas	❑ Material under cover or in sheds (ex: treated woods and metals) ❑ Perimeter control around stockpiles ❑ Other:_____ ❑ _____ ❑ _____
❑ Waste management areas	❑ Dumpsters closed ❑ Drain holes plugged ❑ Recycling bins covered ❑ Sanitary stations bermed and protected from tipping ❑ Other:_____ ❑ _____ ❑ _____
❑ Trade operations	❑ Exterior operations shut down for event (ex: no concrete pours or paving) ❑ Do not apply soil treatments (ex: fertilizer) within 24 hours of event ❑ Materials and equipment (ex: tools) properly stored and covered ❑ Waste and debris disposed in covered dumpsters or removed from site ❑ Trenches and excavations protected ❑ Perimeter controls around disturbed areas ❑ Cover and berm fueling and repair areas ❑ Other:_____ ❑ _____ ❑ _____
❑ Site ESC BMPs	❑ Adequate capacity in sediment basins and traps ❑ Site perimeter controls in place ❑ Catch basin and drop inlet protection in place ❑ Deploy temporary erosion control on inactive areas ❑ Deploy temporary perimeter control around disturbed areas or stockpiles ❑ Sweep roads; stabilize site ingress and egress points ❑ Other:_____ ❑ _____ ❑ _____

❑ Other / Discussion / Diagrams	❑ _____ ❑ _____ ❑ _____

	❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ _____

I certify under penalty of law that this Rain Event Action Plan (REAP) will be performed in accordance with the General Permit by me or under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

_____ Date: _____

Site Storm Water Manager Signature (Use ink please)

Appendix K: Training Reporting Form

CERTIFICATE OF TRAINING

CALIFORNIA CONSTRUCTION GENERAL PERMIT

QUALIFIED SWPPP DEVELOPER (QSD)
AND
QUALIFIED SWPPP PRACTITIONER (QSP)

Michael Mulgrew

Jun 18, 2015 - Aug 14, 2017

Certificate # 24526

CASQA
CALIFORNIA STORMWATER QUALITY ASSOCIATION

California Stormwater Quality Association and
California Construction General Permit Training Team

Trained Contractor Personnel Log

Stormwater Management Training Log and Documentation

Project Name: _____
WDID #: _____

Stormwater Management Topic: (check as appropriate)

☐ Erosion Control
☐ Sediment Control
☐ Wind Erosion Control
☐ Tracking Control
☐ Non-Stormwater Management
☐ Waste Management and Materials Pollution Control
☐ Stormwater Sampling

Specific Training Objective: _____

Location: _____ Date: _____

Instructor:_____ Telephone: _____

Course Length (hours): _____

Attendee Roster (Attach additional forms if necessary)

Name	Company	Phone

As needed, add proof of external training (e.g., course completion certificates, credentials for QSP, QSD).

Appendix L: Responsible Parties

Authorization of Approved Signatories

Project Name: South Campus West Parcel

WDID #: _____

Name of Personnel	Project Role	Company	Signature	Date
Rebecca Mitchel	Manager, Facility Support Services	Mt. SAC		

_____ _____

LRP's Signature Date

_____ (909) 274-5176

Gary Nellesen, Telephone
Director of Facilities, Planning and Management

Identification of QSP

Project Name: South Campus West Parcel

WDID #: _____

The following are QSPs associated with this project

Name of Personnel(1)	Company	Date
Michael P. Mulgrew	PSOMAS	October, 2016

(1) If additional QSPs are required on the job site add additional lines and include information here

Authorization of Data Submitters

Project Name: South Campus West Parcel

WDID #: _____

Name of Personnel	Project Role	Company	Signature	Date
Michael P. Mulgrew	QSP/QSD	Psomas		

_____ _____

Approved Signatory's Signature Date

_____ (909) 274-5176

Gary Nellesen, Telephone
Director of Facilities, Planning and Management

Appendix M: Contractors and Subcontractors

Contractor

Name: Matt Breyer

Title: Senior Project Manager

Company: Tilden-Coil Contractors

Address: 3612 Mission Inn Ave, Riverside, CA 92501

Phone Number: (909) 274-5070

Number (24/7): (951) 377-5531

Appendix N: Construction General Permit

State Water Resources Control Board
Division of Water Quality
1001 I Street • Sacramento, California 95814 • (916) 341-5455
Mailing Address: P.O. Box 100 • Sacramento, California • 95812-0100
Fax (916) 341-5463 • http://www.waterboards.ca.gov

Linda S. Adams
Secretary for
Environmental Protection

Arnold Schwarzenegger
Governor

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I. BACKGROUND

A. History

In 1972, the Federal Water Pollution Control Act (also referred to as the Clean Water Act [CWA]) was amended to provide that the discharge of pollutants to waters of the United States from any point source is unlawful unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) permit. The 1987 amendments to the CWA added Section 402(p), which establishes a framework for regulating municipal and industrial storm water discharges under the NPDES Program. On November 16, 1990, the U.S. Environmental Protection Agency (USEPA) published final regulations that established storm water permit application requirements for specified categories of industries. The regulations provide that discharges of storm water to waters of the United States from construction projects that encompass five or more acres of soil disturbance are effectively prohibited unless the discharge is in compliance with an NPDES Permit. Regulations (Phase II Rule) that became final on December 8, 1999 lowered the permitting threshold from five acres to one acre.

While federal regulations allow two permitting options for storm water discharges (Individual Permits and General Permits), the State Water Board has elected to adopt only one statewide General Permit at this time that will apply to most storm water discharges associated with construction activity.

On August 19, 1999, the State Water Board reissued the General Construction Storm Water Permit (Water Quality Order 99-08-DWQ). On December 8, 1999 the State Water Board amended Order 99-08-DWQ to apply to sites as small as one acre.

The General Permit accompanying this fact sheet regulates storm water runoff from construction sites. Regulating many storm water discharges under one permit will greatly reduce the administrative burden associated with permitting individual storm water discharges. To obtain coverage under this General Permit, dischargers shall electronically file the Permit Registration Documents (PRDs), which includes a Notice of Intent (NOI), Storm Water Pollution Prevention Plan (SWPPP), and other compliance related documents required by this General Permit and mail the appropriate permit fee to the State Water Board. It is expected that as the storm water program develops, the Regional Water Quality Control Boards (Regional Water Boards) may issue General Permits or Individual Permits containing more specific permit provisions. When this occurs, this General Permit will no longer regulate those dischargers.

B. Legal Challenges and Court Decisions

1. Early Court Decisions

Shortly after the passage of the CWA, the USEPA promulgated regulations exempting most storm water discharges from the NPDES permit requirements. (See 40 C.F.R. § 125.4 (1975); see also *Natural Resources Defense Council v. Costle* (D.C. Cir. 1977) 568 F.2d 1369, 1372 (*Costle*); *Defenders of Wildlife v. Browner* (9th Cir. 1999) 191 F.3d 1159, 1163 (*Defenders of Wildlife*).) When environmental groups challenged this exemption in federal court, the District of Columbia Court of Appeals invalidated the regulation, holding that the USEPA "does not have authority to exempt categories of point sources from the permit requirements of [CWA] § 402." (*Costle*, 568 F.2d at 1377.) The *Costle* court rejected the USEPA's argument that effluent-based storm sewer regulation was administratively infeasible because of the variable nature of storm water pollution and the number of affected storm sewers throughout the country. (*Id.* at 1377-82.) Although the court acknowledged the practical problems relating to storm sewer regulation, the court found the USEPA had the flexibility under the CWA to design regulations that would overcome these problems. (*Id.* at 1379-83.) In particular, the court pointed to general permits and permits based on requiring best management practices (BMPs).

During the next 15 years, the USEPA made numerous attempts to reconcile the statutory requirement of point source regulation with the practical problem of regulating possibly millions of diverse point source discharges of storm water. (See *Defenders of Wildlife*, 191 F.3d at 1163; see also Gallagher, Clean Water Act in Environmental Law Handbook (Sullivan, edit., 2003)
p. 300 (Environmental Law Handbook); Eisen, *Toward a Sustainable Urbanism: Lessons from Federal Regulation of Urban Storm Water Runoff* (1995) 48 Wash. U.J. Urb. & Contemp. L.1, 40-41 [Regulation of Urban Storm Water Runoff].)

In 1987, Congress amended the CWA to require NPDES permits for storm water discharges. (See CWA § 402(p), 33 U.S.C. § 1342(p); *Defenders of Wildlife,* 191 F.3d at 1163; *Natural Resources Defense Council v. USEPA* (9th Cir. 1992) 966 F.2d 1292, 1296.) In these amendments, enacted as part of the Water Quality Act of 1987, Congress distinguished between industrial and municipal storm water discharges. With respect to industrial storm water discharges, Congress provided that NPDES permits "shall meet all applicable provisions of this section and section 1311 [requiring the USEPA to establish effluent limitations under specific timetables]." (CWA § 402(p)(3)(A), 33 U.S.C. § 1342(p)(3)(A); see also *Defenders of Wildlife,* 191 F.3d at 1163-64.)

In 1990, USEPA adopted regulations specifying what activities were considered “industrial” and thus required discharges of storm water associated with those activities to obtain coverage under NPDES permits. (55 Fed. Reg. 47,990 (1990); 40 C.F.R. § 122.26(b)(14).) Construction activities, deemed a subset of the industrial activities category, must also be regulated by an NPDES permit. (40 C.F.R. § 122.26(b)(14)(x)). In 1999, USEPA issued regulations for “Phase II” of storm water regulation, which required most small construction sites (1-5 acres) to be regulated under the NPDES program. (64 Fed. Reg. 68,722; 40 C.F.R. § 122.26(b)(15)(i).)

2. Court Decisions on Public Participation

Two recent federal court opinions have vacated USEPA rules that denied meaningful public review of NPDES permit conditions. On January 14, 2003, the Ninth Circuit Court of Appeals held that certain aspects of USEPA’s Phase II regulations governing MS4s were invalid primarily because the general permit did not contain express requirements for public participation. (*Environmental Defense Center v. USEPA* (9th Cir. 2003) 344 F.3d 832.) Specifically, the court determined that applications for general permit coverage (including the Notice of Intent (NOI) and Storm Water Management Program (SWMP)) must be made available to the public, the applications must be reviewed and determined to meet the applicable standard by the permitting authority before coverage commences, and there must be a process to accommodate public hearings. (*Id.* at 852-54.) Similarly, on February 28, 2005, the Second Circuit Court of Appeals held that the USEPA's confined animal feeding operation (CAFO) rule violated the CWA because it allowed dischargers to write their own nutrient management plans without public review. (*Waterkeeper Alliance v. USEPA* (2d Cir. 2005) 399 F.3d 486.) Although neither decision involved the issuance of construction storm water permits, the State Water Board’s Office of Chief Counsel has recommended that the new General Permit address the courts’ rulings where feasible[1].

[1] In *Texas Independent Producers and Royalty Owners Assn. v. USEPA* (7th Cir. 2005) 410 F.3d 964, the Seventh Circuit Court of Appeals held that the USEPA’s construction general permit was not required to provide the public with the opportunity for a public hearing on the Notice of Intent or Storm Water Pollution Prevention Plan. The Seventh Circuit briefly discussed why it agreed with the Ninth Circuit’s dissent in *Environmental Defense Center*, but

The CWA and the USEPA's regulations provide states with the discretion to formulate permit terms, including specifying best management practices (BMPs), to achieve strict compliance with federal technology-based and water quality-based standards. (*Natural Resources Defense Council v. USEPA* (9th Cir. 1992) 966 F.2d 1292, 1308.) Accordingly, this General Permit has developed specific BMPs as well as numeric action levels (NALs) in order to achieve these minimum federal standards. In addition, the General Permit requires a SWPPP and REAP (another dynamic, site-specific plan) to be developed but has removed all language requiring the discharger to implement these plans – instead, the discharger is required to comply with specific requirements. By requiring the dischargers to implement these specific BMPs and NALs, this General Permit ensures that the dischargers do not "write their own permits." As a result this General Permit does not require each discharger's SWPPP and REAP to be reviewed and approved by the Regional Water Boards.

This General Permit also requires dischargers to electronically file all permit-related compliance documents. These documents include, but are not limited to, NOIs, SWPPPs, annual reports, Notice of Terminations (NOTs), and numeric action level (NAL) exceedance reports. Electronically submitted compliance information is immediately available to the public, as well as the Regional Water Quality Control Board (Regional Water Board) offices, via the Internet. In addition, this General Permit enables public review and hearings on permit applications when appropriate. Under this General Permit, the public clearly has a meaningful opportunity to participate in the permitting process.

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generally did not discuss the substantive holdings in *Environmental Defense Center* and *Waterkeeper Alliance*, because neither court addressed the initial question of whether the plaintiffs had standing to challenge the permits at issue. However, notwithstanding the Seventh Circuit's decision, it is not binding or controlling on the State Water Board because California is located within the Ninth Circuit.

C. Blue Ribbon Panel of Experts and Feasibility of Numeric Effluent Limitations

In 2005 and 2006, the State Water Board convened an expert panel (panel) to address the feasibility of numeric effluent limitations (NELs) in California's storm water permits. Specifically, the panel was asked to address:

"Is it technically feasible to establish numeric effluent limitations, or some other quantifiable limit, for inclusion in storm water permits? How would such limitations or criteria be established, and what information and data would be required?"

"The answers should address industrial general permits, construction general permits, and area-wide municipal permits. The answers should also address both technology-based limitations or criteria and water quality-based limitations or criteria. In evaluating establishment of any objective criteria, the panel should address all of the following:

The ability of the State Water Board to establish appropriate objective limitations or criteria;

How compliance determinations would be made;

The ability of dischargers and inspectors to monitor for compliance; and

The technical and financial ability of dischargers to comply with the limitations or criteria."

Through a series of public participation processes (State Water Board meetings, State Water Board workshops, and the solicitation of written comments), a number of water quality, public process and overall program effectiveness problems were identified. Some of these problems are addressed through this General Permit.

D. Summary of Panel Findings on Construction Activities

The panel's final report can be downloaded and viewed through links at www.waterboards.ca.gov or by clicking here[2].

The panel made the following observations:

"Limited field studies indicate that traditional erosion and sediment controls are highly variable in performance, resulting in highly variable turbidity levels in the site discharge."

"Site-to-site variability in runoff turbidity from undeveloped sites can also be quite large in many areas of California, particularly in more arid regions with less natural vegetative cover and steep slopes."

[2] http://www.waterboards.ca.gov/stormwtr/docs/numeric/swpanel_final_report.pdf

"Active treatment technologies involving the use of polymers with relatively large storage systems now exist that can provide much more consistent and very low discharge turbidity. However, these technologies have as yet only been applied to larger construction sites, generally five acres or greater. Furthermore, toxicity has been observed at some locations, although at the vast majority of sites, toxicity has not occurred. There is also the potential for an accidental large release of such chemicals with their use."

"To date most of the construction permits have focused on TSS and turbidity, but have not addressed other, potentially significant pollutants such as phosphorus and an assortment of chemicals used at construction sites."

"Currently, there is no required training or certification program for contractors, preparers of soil erosion and sediment control Storm Water Pollution Prevention Plans, or field inspectors."

"The quality of storm water discharges from construction sites that effectively employ BMPs likely varies due to site conditions such as climate, soil, and topography."

"The States of Oregon and Washington have recently adopted similar concepts to the Action Levels described earlier."

In addition, the panel made the following conclusions:

"It is the consensus of the Panel that active treatment technologies make Numeric Limits technically feasible for pollutants commonly associated with storm water discharges from construction sites (e.g. TSS and turbidity) for larger construction sites. Technical practicalities and cost-effectiveness may make these technologies less feasible for smaller sites, including small drainages within a larger site, as these technologies have seen limited use at small construction sites. If chemical addition is not permitted, then Numeric Limits are not likely feasible."

"The Board should consider Numeric Limits or Action Levels for other pollutants of relevance to construction sites, but in particular pH. It is of particular concern where fresh concrete or wash water from cement mixers/equipment is exposed to storm water."

"The Board should consider the phased implementation of Numeric Limits and Action Levels, commensurate with the capacity of the dischargers and support industry to respond."

E. How the Panel's Findings are Used in this General Permit

The State Water Board carefully considered the findings of the panel and related public comments. The State Water Board also reviewed and considered the comments regarding statewide storm water policy and the reissuance of the Industrial General Permit. From the input received the State Water Board identified some permit and program performance gaps that are addressed in this General Permit. The Summary of Significant Changes (below) in this General Permit are a direct result of this process.

F. Summary of Significant Changes in This General Permit

The State Water Board has significant changes to Order 99-08-DWQ. This General Permit differs from Order 99-08-DWQ in the following significant ways:

Rainfall Erosivity Waiver: this General Permit includes the option allowing a small construction site (>1 and <5 acres) to self-certify if the rainfall erosivity value (R value) for their site's given location and time frame compute to be less than or equal to 5.

Technology-Based Numeric Action Levels: this General Permit includes NALs for pH and turbidity.

Risk-Based Permitting Approach: this General Permit establishes three levels of risk possible for a construction site. Risk is calculated in two parts: 1) Project Sediment Risk, and 2) Receiving Water Risk.

Minimum Requirements Specified: this General Permit imposes more minimum BMPs and requirements that were previously only required as elements of the SWPPP or were suggested by guidance.

Project Site Soil Characteristics Monitoring and Reporting: this General Permit provides the option for dischargers to monitor and report the soil characteristics at their project location. The primary purpose of this requirement is to provide better risk determination and eventually better program evaluation.

Effluent Monitoring and Reporting: this General Permit requires effluent monitoring and reporting for pH and turbidity in storm water discharges. The purpose of this monitoring is to evaluate whether NALs and NELs for Active Treatment Systems included in this General Permit are exceeded.

Receiving Water Monitoring and Reporting: this General Permit requires some Risk Level 3 and LUP Type 3 dischargers to monitor receiving waters and conduct bioassessments.

Post-Construction Storm Water Performance Standards: this General Permit specifies runoff reduction requirements for all sites not covered by a Phase I or Phase II MS4 NPDES permit, to avoid, minimize and/or mitigate post-construction storm water runoff impacts.

Rain Event Action Plan: this General Permit requires certain sites to develop and implement a Rain Event Action Plan (REAP) that must be designed to protect all exposed portions of the site within 48 hours prior to any likely precipitation event.

Annual Reporting: this General Permit requires all projects that are enrolled for more than one continuous three-month period to submit information and annually certify that their site is in compliance with these requirements. The primary purpose of this requirement is to provide information needed for overall program evaluation and pubic information.

Certification/Training Requirements for Key Project Personnel: this General Permit requires that key personnel (e.g., SWPPP preparers, inspectors, etc.) have specific training or certifications to ensure their level of knowledge and skills are adequate to ensure their ability to design and evaluate project specifications that will comply with General Permit requirements.

Linear Underground/Overhead Projects: this General Permit includes requirements for all Linear Underground/Overhead Projects (LUPs).

II. RATIONALE

A. General Permit Approach

A general permit for construction activities is an appropriate permitting approach for the following reasons:

1. A general permit is an efficient method to establish the essential regulatory requirements for a broad range of construction activities under differing site conditions;

2. A general permit is the most efficient method to handle the large number of construction storm water permit applications;

3. The application process for coverage under a general permit is far less onerous than that for individual permit and hence more cost effective;

4. A general permit is consistent with USEPA's four-tier permitting strategy, the purpose of which is to use the flexibility provided by the CWA in designing a workable and efficient permitting system; and

5. A general permit is designed to provide coverage for a group of related facilities or operations of a specific industry type or group of industries. It is appropriate when the discharge characteristics are sufficiently similar, and a standard set of permit requirements can effectively provide environmental protection and comply with water quality standards for discharges. In most cases, the general permit will provide sufficient and appropriate management requirements to protect the quality of receiving waters from discharges of storm water from construction sites.

There may be instances where a general permit is not appropriate for a specific construction project. A Regional Water Board may require any discharger otherwise covered under the General Permit to apply for and obtain an Individual Permit or apply for coverage under a more specific General Permit. The Regional Water Board must determine that this General Permit does not provide adequate assurance that water quality will be protected, or that there is a site-specific reason why an individual permit should be required.

B. Construction Activities Covered

1. **Construction activity subject to this General Permit:**

Any construction or demolition activity, including, but not limited to, clearing, grading, grubbing, or excavation, or any other activity that results in a land disturbance of equal to or greater than one acre.

Construction activity that results in land surface disturbances of less than one acre if the construction activity is part of a larger common plan of development or sale of one or more acres of disturbed land surface.

Construction activity related to residential, commercial, or industrial development on lands currently used for agriculture including, but not limited to, the construction of buildings related to agriculture that are considered industrial pursuant to USEPA regulations, such as dairy barns or food processing facilities.

Construction activity associated with LUPs including, but not limited to, those activities necessary for the installation of underground and overhead linear facilities (e.g., conduits, substructures, pipelines, towers, poles, cables, wires, connectors, switching, regulating and transforming equipment and associated ancillary facilities) and include, but are not limited to, underground utility mark-out, potholing, concrete

and asphalt cutting and removal, trenching, excavation, boring and drilling, access road and pole/tower pad and cable/wire pull station, substation construction, substructure installation, construction of tower footings and/or foundations, pole and tower installations, pipeline installations, welding, concrete and/or pavement repair or replacement, and stockpile/borrow locations.

Discharges of sediment from construction activities associated with oil and gas exploration, production, processing, or treatment operations or transmission facilities.[3]

Storm water discharges from dredge spoil placement that occur outside of U.S. Army Corps of Engineers jurisdiction[4] (upland sites) and that disturb one or more acres of land surface from construction activity are covered by this General Permit. Construction projects that intend to disturb one or more acres of land within the jurisdictional boundaries of a CWA § 404 permit should contact the appropriate Regional Water Board to determine whether this permit applies to the project.

2. Linear Underground/Overhead Projects (LUPs) subject to this General Permit:

Underground/overhead facilities typically constructed as LUPs include, but are not limited to, any conveyance, pipe, or pipeline for the transportation of any gaseous, liquid (including water, wastewater for domestic municipal services), liquescent, or slurry substance; any cable line or wire for the transmission of electrical energy; any cable line or wire for communications (e.g., telephone, telegraph, radio or television messages); and associated ancillary facilities. Construction activities associated with LUPs include, but are not limited to, those activities necessary for the installation of underground and overhead linear facilities (e.g., conduits, substructures, pipelines, towers, poles, cables, wires, connectors, switching, regulating and transforming equipment and associated ancillary facilities) and include, but are not limited to, underground utility mark-out, potholing, concrete and asphalt cutting and removal, trenching, excavation, boring and drilling, access road and pole/tower pad and cable/wire pull station, substation construction, substructure installation, construction of tower footings and/or foundations, pole and tower installations, pipeline installations, welding, concrete and/or pavement repair or replacement, and stockpile/borrow locations.

Water Quality Order 2003-0007-DWQ regulated construction activities associated with small LUPs that resulted in land disturbances greater than one acre, but less than five acres. These projects were considered non-traditional construction projects. Attachment A of this Order now regulates all construction activities from LUPs resulting in land disturbances greater than one acre.

3. Common Plan of Development or Sale

USEPA regulations include the term “common plan of development or sale” to ensure that acreage within a common project does not artificially escape the permit requirements because construction activities are phased, split among smaller parcels, or completed by different owners/developers. In the absence of an

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[3] Pursuant to the Ninth Circuit Court of Appeals’ decision in *NRDC v. EPA* (9th Cir. 2008) 526 F.3d 591, and subsequent denial of the USEPA’s petition for reconsideration in November 2008, oil and gas construction activities discharging storm water contaminated only with sediment are no longer exempt from the NPDES program.

[4] A construction site that includes a dredge and/or fill discharge to any water of the United States (e.g., wetland, channel, pond, or marine water) requires a CWA Section 404 permit from the U.S. Army Corps of Engineers and a CWA Section 401 Water Quality Certification from the Regional Water Board or State Water Board.

exact definition of “common plan of development or sale,” the State Water Board is required to exercise its regulatory discretion in providing a common sense interpretation of the term as it applies to construction projects and permit coverage. An overbroad interpretation of the term would render meaningless the clear “one acre” federal permitting threshold and would potentially trigger permitting of almost any construction activity that occurs within an area that had previously received area-wide utility or road improvements.

Construction projects generally receive grading and/or building permits (Local Permits) from local authorities prior to initiating construction activity. These Local Permits spell out the scope of the project, the parcels involved, the type of construction approved, etc. Referring to the Local Permit helps define “common plan of development or sale.” In cases such as tract home development, a Local Permit will include all phases of the construction project including rough grading, utility and road installation, and vertical construction. All construction activities approved in the Local Permit are part of the common plan and must remain under the General Permit until construction is completed. For custom home construction, Local Permits typically only approve vertical construction as the rough grading, utilities, and road improvements were already independently completed under the a previous Local Permit. In the case of a custom home site, the homeowner must submit plans and obtain a distinct and separate Local Permit from the local authority in order to proceed. It is not the intent of the State Water Board to require permitting for an individual homeowner building a custom home on a private lot of less than one acre if it is subject to a separate Local Permit. Similarly, the installation of a swimming pool, deck, or landscaping that disturbs less than one acre that was not part of any previous Local Permit are not required to be permitted.

The following are several examples of construction activity of less than one acre that would require permit coverage:

a. A landowner receives a building permit(s) to build tract homes on a 100-acre site split into 200 one-third acre parcels, (the remaining acreage consists of streets and parkways) which are sold to individual homeowners as they are completed. The landowner completes and sells all the parcels except for two. Although the remaining two parcels combined are less than one acre, the landowner must continue permit coverage for the two parcels.

b. One of the parcels discussed above is sold to another owner who intends to complete the construction as already approved in the Local Permit. The new landowner must file Permit Registration Documents (PRDs) to complete the construction even if the new landowner is required to obtain a separate Local Permit.

c. Landowner in (1) above purchases 50 additional one half-acre parcels adjacent to the original 200-acre project. The landowner seeks a Local Permit (or amendment to existing Local permit) to build on 20 parcels while leaving the remaining 30 parcels for future development. The landowner must amend PRDs to include the 20 parcels 14 days prior to commencement of construction activity on those parcels.

C. Construction Activities Not Covered

1. Traditional Construction Projects Not Covered

This General Permit does not apply to the following construction activity:

a. Routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of the facility.

b. Disturbances to land surfaces solely related to agricultural operations such as disking, harrowing, terracing and leveling, and soil preparation.

c. Discharges of storm water from areas on tribal lands; construction on tribal lands is regulated by a federal permit.

d. Discharges of storm water within the Lake Tahoe Hydrologic Unit. The Lahontan Regional Water Board has adopted its own permit to regulate storm water discharges from construction activity in the Lake Tahoe Hydrologic Unit (Regional Water Board 6SLT). Owners of construction projects in this watershed must apply for the Lahontan Regional Water Board permit rather than the statewide Construction General Permit. Construction projects within the Lahontan region must also comply with the Lahontan Region Project Guideline for Erosion Control (R6T-2005-0007 Section), which can be found at **http://www.waterboards.ca.gov/lahontan/Adopted_Orders/2005/r6t_2005_0007.pdf**

e. Construction activity that disturbs less than one acre of land surface, unless part of a larger common plan of development or the sale of one or more acres of disturbed land surface.

f. Construction activity covered by an individual NPDES Permit for storm water discharges.

g. Landfill construction activity that is subject to the Industrial General Permit.

h. Construction activity that discharges to Combined Sewer Systems.

i. Conveyances that discharge storm water runoff combined with municipal sewage.

j. Discharges of storm water identified in CWA § 402(*l*)(2), 33 U.S.C. § 1342(*l*)(2).

2. **Linear Projects Not Covered**

a. LUP construction activity does not include linear routine maintenance projects. Routine maintenance projects are projects associated with operations and maintenance activities that are conducted on existing lines and facilities and within existing right-of-way, easements, franchise agreements, or other legally binding agreements of the discharger. Routine maintenance projects include, but are not limited to projects that are conducted to:

i. Maintain the original purpose of the facility or hydraulic capacity.

ii. Update existing lines[5] and facilities to comply with applicable codes, standards, and regulations regardless if such projects result in increased capacity.

iii. Repairing leaks.

[5]Update existing lines includes replacing existing lines with new materials or pipes.

Routine maintenance does not include construction of new[6] lines or facilities resulting from compliance with applicable codes, standards, and regulations.

Routine maintenance projects do not include those areas of maintenance projects that are outside of an existing right-of-way, franchise, easements, or agreements. When a project must secure new areas, those areas may be subject to this General Permit based on the area of disturbed land outside the original right-of-way, easement, or agreement.

b. LUP construction activity does not include field activities associated with the planning and design of a project (e.g., activities associated with route selection).

c. Tie-ins conducted immediately adjacent to "energized" or "pressurized" facilities by the discharger are not considered construction activities where all other LUP construction activities associated with the tie-in are covered by an NOI and SWPPP of a third party or municipal agency.

3. **EPA's Small Construction Rainfall Erosivity Waiver**

EPA's Storm Water Phase II Final Rule provides the option for a Small Construction Rainfall Erosivity Waiver. This waiver applies to small construction sites between 1 and 5 acres, and allows permitting authorities to waive those sites that do not have adverse water quality impacts.

Dischargers eligible for this waiver are exempt from Construction General Permit Coverage. In order to obtain the waiver, the discharger must certify to the State Water Board that small construction activity will occur only when the rainfall erosivity factor is less than 5 ("R" in the Revised Universal Soil Loss Equation). The period of construction activity begins at initial earth disturbance and ends with final stabilization. Where vegetation will be used for final stabilization, the date of installation of a practice that provides interim non-vegetative stabilization can be used for the end of the construction period. The operator must agree (as a condition waiver eligibility) to periodically inspect and properly maintain the area until the criteria for final stabilization as defined in the General Permit have been met. If use of this interim stabilization eligibility condition was relied on to qualify for the waiver, signature on the waiver with a certification statement constitutes acceptance of and commitment to complete the final stabilization process. The discharger must submit a waiver certification to the State Board prior to commencing construction activities.

USEPA funded a cooperative agreement with Texas A&M University to develop an online rainfall erosivity calculator. Dischargers can access the calculator from EPA's website at: www.epa.gov/npdes/stormwater/cgp. Use of the calculator allows the discharger to determine potential eligibility for the rainfall erosivity waiver. It may also be useful in determining the time periods during which construction activity could be waived from permit coverage.

[6]New lines are those that are not associated with existing facilities and are not part of a project to update or replace existing lines.

D. Obtaining and Terminating Permit Coverage

The appropriate Legally Responsible Person (LRP) must obtain coverage under this General Permit. To obtain coverage, the LRP or the LRP's Approved Signatory must file Permit Registration Documents (PRDs) prior to the commencement of construction activity. Failure to obtain coverage under this General Permit for storm water discharges to waters of the United States is a violation of the CWA and the California Water Code.

To obtain coverage under this General Permit, LRPs must electronically file the PRDs, which include a Notice of Intent (NOI), Storm Water Pollution Prevention Plan (SWPPP), and other documents required by this General Permit, and mail the appropriate permit fee to the State Water Board. It is expected that as the storm water program develops, the Regional Water Boards may issue General Permits or Individual Permits that contain more specific permit provisions. When this occurs, this General Permit will no longer regulate those dischargers that obtain coverage under Individual Permits.

Any information provided to the Regional Water Board shall comply with the Homeland Security Act and any other federal law that concerns security in the United States; any information that does not comply should not be submitted.

The application requirements of the General Permit establish a mechanism to clearly identify the responsible parties, locations, and scope of operations of dischargers covered by the General Permit and to document the discharger's knowledge of the General Permit's requirements.

This General Permit provides a grandfathering exception to existing dischargers subject to Water Quality Order No. 99-08-DWQ. Construction projects covered under Water Quality Order No. 99-08-DWQ shall obtain permit coverage at Risk Level 1. LUP projects covered under Water Quality Order No. 2003-0007-DWQ shall obtain permit coverage at LUP Type 1. The Regional Water Boards have the authority to require Risk Determination to be performed on projects currently covered under Water Quality Order No. 99-08-DWQ and 2003-0007-DWQ where they deem necessary.

LRPs must file a Notice of Termination (NOT) with the Regional Water Board when construction is complete and final stabilization has been reached or ownership has been transferred. The discharger must certify that all State and local requirements have been met in accordance with this General Permit. In order for construction to be found complete, the discharger must install post-construction storm water management measures and establish a long-term maintenance plan. This requirement is intended to ensure that the post-construction conditions at the project site do not cause or contribute to direct or indirect water quality impacts (i.e., pollution and/or hydromodification) upstream and downstream. Specifically, the discharger must demonstrate compliance with the post-construction standards set forth in this General Permit (Section XIII). The discharger is responsible for all compliance issues including all annual fees until the NOT has been filed and approved by the local Regional Water Board.

E. Discharge Prohibitions

This General Permit authorizes the discharge of storm water to surface waters from construction activities that result in the disturbance of one or more acres of land, provided that the discharger satisfies all permit conditions set forth in the Order. This General Permit prohibits the discharge of pollutants other than storm water and non-storm water discharges authorized by this General Permit or another NPDES permit. This General Permit also prohibits all discharges which contain a hazardous substance in excess of reportable quantities established in 40 C.F.R. §§ 117.3 and 302.4, unless a separate NPDES Permit has been issued to regulate those discharges. In addition, this General Permit incorporates discharge prohibitions contained in water quality control plans, as implemented by the nine Regional Water Boards. Discharges to Areas of Special Biological Significance (ASBS) are prohibited unless covered by an exception that the State Water Board has approved.

Non-storm water discharges include a wide variety of sources, including improper dumping, spills, or leakage from storage tanks or transfer areas. Non-storm water discharges may contribute significant pollutant loads to receiving waters. Measures to control spills, leakage, and dumping, and to prevent illicit connections during construction must be addressed through structural as well as non-structural BMPs. The State Water Board recognizes, however, that certain non-storm water discharges may be necessary for the completion of construction projects. Authorized non-storm water discharges may include those from de-chlorinated potable water sources such as: fire hydrant flushing, irrigation of vegetative erosion control measures, pipe flushing and testing, water to control dust, uncontaminated ground water dewatering, and other discharges not subject to a separate general NPDES permit adopted by a region. Therefore this General Permit authorizes such discharges provided they meet the following conditions.

These authorized non-storm water discharges must:

1. be infeasible to eliminate;
2. comply with BMPs as described in the SWPPP;
3. filter or treat, using appropriate technology, all dewatering discharges from sedimentation basins;
4. meet the NALs for pH and turbidity; and
5. not cause or contribute to a violation of water quality standards.

Additionally, authorized non-storm water discharges must not be used to clean up failed or inadequate construction or post-construction BMPs designed to keep materials onsite. Authorized non-storm water dewatering discharges may require a permit because some Regional Water Boards have adopted General Permits for dewatering discharges.

This General Permit prohibits the discharge of storm water that causes or threatens to cause pollution, contamination, or nuisance.

F. Effluent Standards for All Types of Discharges

1. Technology-Based Effluent Limitations

Permits for storm water discharges associated with construction activity must meet all applicable provisions of Sections 301 and 402 of the CWA. These provisions require controls of pollutant discharges that utilize best available technology economically achievable (BAT) for toxic pollutants and non conventional pollutants and best conventional pollutant control technology (BCT) for conventional pollutants. Additionally, these provisions require controls of pollutant discharges to reduce pollutants and any more stringent controls necessary to meet water quality standards. The USEPA has already established such limitations, known as effluent limitation guidelines (ELGs), for some industrial categories. This is not the case with construction discharges. In instances where there are no ELGs the permit writer is to use best professional judgment (BPJ) to establish requirements that the discharger must meet using BAT/BCT technology. This General Permit contains only narrative effluent limitations and does not contain numeric effluent limitations, except for Active Treatment Systems (ATS).

Order No. 2009-0009-DWQ, as originally adopted by the State Water Board on September 2, 2009, contained numeric effluent limitations for pH (within the range of 6.0 and 9.0 pH units) and turbidity (500 NTU) that applied only to Risk Level 3 and LUP Type 3 construction sites. The State Water Board adopted the numeric effluent limitations as technology-based effluent limitations based upon its best professional judgment. The California Building Industry Association, the Building Industry Legal Defense

Foundation, and the California Business Properties Association (petitioners) challenged Order No. 2009-0009-DWQ in *California Building Industry Association et al. v. State Water Resources Control Board*. On December 27, 2011, the Superior Court issued a judgment and writ of mandamus. The Superior Court ruled in favor of the State Water Board on almost all of the issues the petitioners raised, but the Superior Court invalidated the numeric effluent limitations for pH and turbidity for Risk Level 3 and LUP Type 3 sites because it determined that the State Water Board did not have sufficient BMP performance data to support those numeric effluent limitations. Therefore, the Superior Court concluded that the State Water Board did not comply with the federal regulations that apply to the use of best professional judgment. In invalidating the numeric effluent limitations, the Superior Court also suspended two ancillary requirements (a compliance storm event provision and receiving water monitoring at Risk Level 3 and LUP Type 3 sites that violated the numeric effluent limitations) that related solely to the invalidated numeric effluent limitations.

As a result of the Superior Court's writ of mandamus, this Order no longer contains numeric effluent limitations for pH and turbidity, except for ATS. In addition, as a result of the Superior Court's writ of mandamus, the receiving water monitoring requirements for Risk Level 3 and LUP Type 3 sites were suspended until the State Water Board amended this Order to restore the receiving water monitoring requirements. As amended, this Order now requires Risk Level 3 and LUP Type 3 Dischargers with direct discharges to surface waters to conduct receiving water monitoring whenever their effluent exceeds specified receiving water monitoring triggers. The receiving water monitoring triggers were established at the same levels as the previous numeric effluent limitations (effluent pH outside the range of 6.0 and 9.0 pH units or turbidity exceeding 500 NTU). In restoring the receiving water monitoring requirements, the State Water Board determined that it was appropriate to require receiving water monitoring for these types of sites with direct discharges to surface waters that exceeded the receiving water monitoring triggers under any storm event scenarios, because these sites represent the highest threat to receiving water quality. An exceedance of a receiving water monitoring trigger does not constitute a violation of this General Permit. These receiving water monitoring requirements take effect on the effective date of the amendment to this Order.

BAT/BCT technologies not only include passive systems such as conventional runoff and sediment control, but also treatment systems such as coagulation/flocculation using sand filtration, when appropriate. Such technologies allow for effective treatment of soil particles less 0.02 mm (medium silt) in diameter. The discharger must install structural controls, as necessary, such as erosion and sediment controls that meet BAT and BCT to achieve compliance with water quality standards. The narrative effluent limitations constitute compliance with the requirements of the CWA.

Because the permit is an NPDES permit, there is no legal requirement to address the factors set forth in Water Code sections 13241 and 13263, unless the permit is more stringent than what federal law requires. (See *City of Burbank v. State Water Resources Control Bd.* (2005) 35 Cal.4th 613, 618, 627.) None of the requirements in this permit are more stringent than the minimum federal requirements, which include technology-based requirements achieving BAT/BCT and strict compliance with water quality standards. The inclusion of numeric effluent limitations (NELs) in the permit for Active Treatment Systems does not cause the permit to be more stringent than current federal law. NELs and best management practices are simply two different methods of achieving the same federal requirement: strict compliance with state water quality standards. Federal law authorizes both narrative and numeric effluent limitations to meet state water quality standards. The use of NELs to achieve compliance with water quality standards is not a more stringent requirement than the use of BMPs. (State Water Board Order No. WQ 2006-0012 (*Boeing*).) Accordingly, the State Water Board does not need to take into account the factors in Water Code sections 13241 and 13263.

The State Water Board has concluded that the establishment of BAT/BCT will not create or aggravate other environmental problems through increases in air pollution, solid waste generation, or energy consumption. While there may be a slight increase in non-water quality impacts due to the implementation of additional monitoring or the construction of additional BMPs, these impacts will be negligible in comparison with the construction activities taking place on site and would be justified by the water quality benefits associated with compliance.

pH Receiving Water Monitoring Trigger

Given the potential contaminants, the minimum standard method for control of pH in runoff requires the use of preventive measures such as avoiding concrete pours during rainy weather, covering concrete and directing flow away from fresh concrete if a pour occurs during rain, covering scrap drywall and stucco materials when stored outside and potentially exposed to rain, and other housekeeping measures. If necessary, pH-impaired storm water from construction sites can be treated in a filter or settling pond or basin, with additional natural or chemical treatment required to meet pH limits set forth in this permit. The basin or pond acts as a collection point and holds storm water for a sufficient period for the contaminants to be settled out, either naturally or artificially, and allows any additional treatment to take place. The State Water Board considers these techniques to be equivalent to BCT. In determining the pH concentration trigger for discharges, the State Water Board used BPJ to set these limitations.

The chosen trigger was established by calculating three standard deviations above and below the mean pH of runoff from highway construction sites[7] in California. Proper implementation of BMPs should result in discharges that are within the range of 6.0 to 9.0 pH Units.

Turbidity Receiving Water Monitoring Trigger

The Turbidity receiving water monitoring trigger of 500 NTU is a technology-based trigger and was developed using three different analyses aimed at finding the appropriate threshold to set the technology-based limit to ensure environmental protection, effluent quality and cost-effectiveness. The analyses fell into three, main types: (1) an ecoregion-specific dataset developed by Simon et. al. (2004) [8]; (2) Statewide Regional Water Quality Control Board enforcement data; and (3) published, peer-reviewed studies and reports on in-situ performance of best management practices in terms of erosion and sediment control on active construction sites.

A 1:3 relationship between turbidity (expressed as NTU) and suspended sediment concentration (expressed as mg/L) is assumed based on a review of suspended sediment and turbidity data from three gages used in the USGS National Water Quality Assessment Program:

USGS 11074000 SANTA ANA R BL PRADO DAM CA
USGS 11447650 SACRAMENTO R A FREEPORT CA
USGS 11303500 SAN JOAQUIN R NR VERNALIS CA

The receiving water monitoring trigger represents staff determination that the trigger value is the most practicable based on available data. The turbidity receiving water monitoring trigger represents a bridge between the narrative effluent limitations and receiving water limitations. To support this receiving water monitoring trigger, State Water Board staff analyzed construction site discharge information (monitoring data, estimates) and receiving water monitoring information.

Since the turbidity receiving water monitoring trigger represents an appropriate threshold level expected at a site, compliance with this value does not necessarily represent compliance with either the narrative effluent limitations (as enforced through the BAT/BCT standard) or the receiving water limitations. In the San Diego region, some inland surface waters have a receiving water objective for turbidity equal to 20 NTU. Obviously a discharge up to, but not exceeding, the turbidity receiving water monitoring trigger of

[7] Caltrans Construction Sites Runoff Characterization Study, 2002. Available at: http://www.dot.ca.gov/hq/env/stormwater/pdf/CTSW-RT-02-055.pdf.

500 NTU may still cause or contribute to the exceedance of the 20 NTU standard. Most of the waters of the State are protected by turbidity objectives based on background conditions**.**

Table 1 - Regional Water Board Basin Plans, Water Quality Objectives for Turbidity

REGIONAL WATER BOARD	WQ Objective	Background/Natural Turbidity	Maximum Increase
1	Based on background	All levels	20%
2	Based on background	> 50 NTU	10%
3	Based on background	0-50 JTU 50-100 JTU > 100 JTU	20% 10 NTU 10%
4	Based on background	0-50 NTU > 50 NTU	20% 10%
5	Based on background	0-5 NTU 5-50 NTU 50-100 NTU >100 NTU	1 NTU 20% 10 NTU 10%
6	Based on background	All levels	10%
7	Based on background	N/A	N/A
8	Based on background	0-50 NTU 50-100 NTU >100 NTU	20% 10 NTU 10%
9	Inland Surface Waters, 20 NTU All others, based on background	 0-50 NTU 50-100 NTU >100 NTU	 20% 10 NTU 10%

Table 2 shows the suspended sediment concentrations at the 1.5 year flow recurrence interval for the 12 ecoregions in California from Simon et. al (2004).

Table 2 - Results of Ecoregion Analysis

Ecoregion	Percent of California Land Area	Median Suspended Sediment Concentration (mg/L)
1	9.1	874
4	0.2	120
5	8.8	35.6
6	20.7	1530
7	7.7	122
8	3.0	47.4
9	9.4	284
13	5.2	143
14	21.7	5150
78	8.1	581
80	2.4	199
81	3.7	503
Area-weighted average		1633

If a 1:3 relationship between turbidity and suspended sediment is assumed, the median turbidity is 544 NTU.

The following table is composed of turbidity readings measured in NTUs from administrative civil liability (ACL) actions for construction sites from 2003 - 2009. This data was derived from the complete listing of construction-related ACLs for the six year period. All ACLs were reviewed and those that included turbidimeter readings at the point of storm water discharge were selected for this dataset.

Table 3 – ACL Sampling Data taken by Regional Water Board Staff

WDID#	Region	Discharger	Turbidity (NTU)
5S34C331884	5S	Bradshaw Interceptor Section 6B	1800
5S05C325110	5S	Bridalwood Subdivision	1670
5S48C336297	5S	Cheyenne at Browns Valley	1629
5R32C314271	5R	Grizzly Ranch Construction	1400
6A090406008	6T	El Dorado County Department of Transportation, Angora Creek	97.4
5S03C346861	5S	TML Development, LLC	1600
6A31C325917	6T	Northstar Village	See Subdata Set

Subdata Set - Turbidity for point of storm water runoff discharge at Northstar Village

Date	Turbidity (NTU)	Location
10/5/2006	900	Middle Martis Creek
11/2/2006	190	Middle Martis Creek
01/04/2007	36	West Fork, West Martis Creek
02/08/2007	180	Middle Martis Creek
02/09/2007	130	Middle Martis Creek
02/09/2007	290	Middle Martis Creek
02/09/2007	100	West Fork, West Martis Creek
02/10/2007	28	Middle Martis Creek
02/10/2007	23	Middle Martis Creek
02/10/2007	32	Middle Martis Creek
02/10/2007	12	Middle Martis Creek
02/10/2007	60	West Fork, West Martis Creek
02/10/2007	34	West Fork, West Martis Creek

A 95% confidence interval for mean turbidity in an ACL order was constructed. The data set used was a small sample size, so the 500 NTU (the value derived as the receiving water monitoring trigger for this General Permit) needed to be verified as a possible population mean. In this case, the population refers to a hypothetical population of turbidity measurements of which our sample of 20 represents. A t-distribution was assumed due to the small sample size:

Mean: 512.23 NTU
Standard Deviation: 686.85
Margin of Error: 321.45
Confidence Interval: 190.78 NTU (Low)
833.68 NTU (High)

Based on a constructed 95% confidence interval, an ACL order turbidity measurement will be between 190.78 – 833.68 NTU. 500 NTU falls within this range. Using the same data set, a small-sample hypothesis test was also performed to test if the ACL turbidity data set contains enough information to cast doubt on choosing a 500 NTU as a mean. 500 NTU was again chosen due to its proposed use as an acceptable value. The test was carried out using a 95% confidence interval. Results indicated that the ACL turbidity data set *does not* contain significant sample evidence to reject the claim of 500 NTU as an acceptable mean for the ACL turbidity population.

There are not many published, peer-reviewed studies and reports on in-situ performance of best management practices in terms of erosion and sediment control on active construction sites. The most often cited study is a report titled, "Improving the Cost Effectiveness of Highway Construction Site Erosion and Pollution Control" (Horner, Guedry, and Kortenhof 1990, http://www.wsdot.wa.gov/Research/Reports/200/200.1.htm). In a comment letter summarizing this report sent to the State Water Board, the primary author, Dr. Horner, states:

"The most effective erosion control product was wood fiber mulch applied at two different rates along with a bonding agent and grass seed in sufficient time before the tests to achieve germination. Plots treated in this way reduced influent turbidity by more than 97 percent and discharged effluent exhibiting mean and maximum turbidity values of 21 and 73 NTU, respectively. Some other mulch and blanket materials performed nearly as well. These tests demonstrated the control ability of widely available BMPs over a very broad range of erosion potential."

Other technologies studied in this report produced effluent quality at or near 100 NTU. It is the BPJ of the State Water Board staff that erosion control, while preferred, is not always an option on construction sites and that technology performance in a controlled study showing effluent quality directly leaving a BMP is always easier and cheaper to control than effluent being discharged from the project (edge of property, etc.). As a result, it is the BPJ of the State Water Board staff that it is not cost effective or feasible, at this time, for all risk level and type 3 sites in California to achieve effluent discharges with turbidity values that are less than 100 NTU.

To summarize, the analysis showed that: (1) results of the Simon et. al dataset reveals turbidity values in background receiving water in California's ecoregions range from 16 NTU to 1716 NTU (with a mean of 544 NTU); (2) based on a constructed 95% confidence interval, construction sites will be subject to administrative civil liability (ACL) when their turbidity measurement falls between 190.78 – 833.68 NTU; and (3) sites with highly controlled discharges employing and maintaining good erosion control practices can discharge effluent from the BMP with turbidity values less than 100 NTU. State Water Board staff has determined, using its BPJ, that it is most cost effective to set the receiving water monitoring trigger for turbidity at 500 NTU.

i. ***Compliance Storm Event***

While this General Permit no longer contains "compliance storm event" exceptions from technology-based NELs, the "compliance storm event" exception from the ATS NELs remain in effect. See Section K of this Fact Sheet, and Attachment F of this General Permit for more information.

a. **TMDLs and Waste Load Allocations**

Dischargers located within the watershed of a CWA § 303(d) impaired water body, for which a TMDL for sediment has been adopted by the Regional Water Board or USEPA, must comply with the approved TMDL if it identifies "construction activity" or land disturbance as a source of sediment. If it does, the

TMDL should include a specific waste load allocation for this activity/source. The discharger, in this case, may be required by a separate Regional Water Board order to implement additional BMPs, conduct additional monitoring activities, and/or comply with an applicable waste load allocation and implementation schedule. If a specific waste load allocation has been established that would apply to a specific discharge, the Regional Water Board may adopt an order requiring specific implementation actions necessary to meet that allocation. In the instance where an approved TMDL has specified a general waste load allocation to construction storm water discharges, but no specific requirements for construction sites have been identified in the TMDL, dischargers must consult with the state TMDL authority[9] to confirm that adherence to a SWPPP that meets the requirements of the General Permit will be consistent with the approved TMDL.

2. Determining Compliance with Effluent Standards

a. Technology-Based Numeric Action Levels (NALs)

This General Permit contains technology-based NALs for pH and turbidity, and requirements for effluent monitoring at all Risk level 2 & 3, and LUP Type 2 & 3 sites. Numeric action levels are essentially numeric benchmark values for certain parameters that, if exceeded in effluent sampling, trigger the discharger to take actions. Exceedance of an NAL does not itself constitute a violation of the General Permit. If the discharger fails to take the corrective action required by the General Permit, though, that may consititute a violation.

The primary purpose of NALs is to assist dischargers in evaluating the effectiveness of their on-site measures. Construction sites need to employ many different systems that must work together to achieve compliance with the permit's requirements. The NALs chosen should indicate whether the systems are working as intended.

Another purpose of NALs is to provide information regarding construction activities and water quality impacts. This data will provide the State and Regional Water Boards and the rest of the storm water community with more information about levels and types of pollutants present in runoff and how effective the dischargers BMPs are at reducing pollutants in effluent. The State Water Board also hopes to learn more about the linkage between effluent and receiving water quality. In addition, these requirements will provide information on the mechanics needed to establish compliance monitoring programs at construction sites in future permit deliberations.

i. *pH*

The chosen limits were established by calculating one standard deviation above and below the mean pH of runoff from highway construction sites[10] in California. Proper implementation of BMPs should result in discharges that are within the range of 6.5 to 8.5 pH Units.

[9] http://www.waterboards.ca.gov/tmdl/tmdl.html.
[10] Caltrans Construction Sites Runoff Characterization Study, 2002. Available at: http://www.dot.ca.gov/hq/env/stormwater/pdf/CTSW-RT-02-055.pdf.

The Caltrans study included 33 highway construction sites throughout California over a period of four years, which included 120 storm events. All of these sites had BMPs in place that would be generally implemented at all types of construction sites in California.

ii. ***Turbidity***

BPJ was used to develop an NAL that can be used as a learning tool to help dischargers improve their site controls, and to provide meaningful information on the effectiveness of storm water controls. A statewide turbidity NAL has been set at 250 NTU.

G. Receiving Water Limitations

Construction-related activities that cause or contribute to an exceedance of water quality standards must be addressed. The dynamic nature of construction activity gives the discharger the ability to quickly identify and monitor the source of the exceedances. This is because when storm water mobilizes sediment, it provides visual cues as to where corrective actions should take place and how effective they are once implemented.

This General Permit requires that storm water discharges and authorized non-storm water discharges must not contain pollutants that cause or contribute to an exceedance of any applicable water quality objective or water quality standards. The monitoring requirements in this General Permit for sampling and analysis procedures will help determine whether BMPs installed and maintained are preventing pollutants in discharges from the construction site that may cause or contribute to an exceedance of water quality standards.

Water quality standards consist of designated beneficial uses of surface waters and the adoption of ambient criteria necessary to protect those uses. When adopted by the State Water Board or a Regional Water Board, the ambient criteria are termed "water quality objectives." If storm water runoff from construction sites contains pollutants, there is a risk that those pollutants could enter surface waters and cause or contribute to an exceedance of water quality standards. For that reason, dischargers should be aware of the applicable water quality standards in their receiving waters. (The best method to ensure compliance with receiving water limitations is to implement BMPs that prevent pollutants from contact with storm water or from leaving the construction site in runoff.)

In California, water quality standards are published in the Basin Plans adopted by each Regional Water Board, the California Toxics Rule (CTR), the National Toxics Rule (NTR), and the Ocean Plan.

Dischargers can determine the applicable water quality standards by contacting Regional Water Board staff or by consulting one of the following sources. The actual Basin Plans that contain the water quality standards can be viewed at the website of the appropriate Regional Water Board. (http://www.waterboards.ca.gov/regions.html), the State Water Board site for statewide plans (http://www.waterboards.ca.gov/plnspols/index.html), or the USEPA regulations for the NTR and CTR (40 C.F.R. §§ 131.36-38). Basin Plans and statewide plans are also available by mail from the appropriate Regional Water Board or the State Water Board. The USEPA regulations are available at http://www.epa.gov/. Additional information concerning water quality standards can be accessed through http://www.waterboards.ca.gov/stormwtr/gen_const.html.

H. Training Qualifications and Requirements

The Blue Ribbon Panel (BRP) made the following observation about the lack of industry-specific training requirements:

"Currently, there is no required training or certification program for contractors, preparers of soil erosion and sediment control Storm Water Pollution Prevention Plans, or field inspectors."

Order 99-08-DWQ required that all dischargers train their employees on how to comply with the permit, but it did not specificy a curriculum or certification program. This has resulted in inconsistent implementation by all affected parties - the dischargers, the local governments where the construction activity occurs, and the regulators required to enforce 99-08-DWQ. This General Permit requires Qualified SWPPP Developers and practitioners to obtain appropriate training, and makes this curriculum mandatory two years after adoption, to allow time for course completion. The State and Regional Water Board are working with many stakeholders to develop the curriculum and mechanisms needed to develop and deliver the courses.

To ensure that the preparation, implementation, and oversight of the SWPPP is sufficient for effective pollution prevention, the Qualified SWPPP Developer and Qualified SWPPP Practitioners responsible for creating, revising, overseeing, and implementing the SWPPP must attend a State Water Board-sponsored or approved Qualified SWPPP Developer and Qualified SWPPP Practitioner training course.

I. Sampling, Monitoring, Reporting and Record Keeping

1. Traditional Construction Monitoring Requirements

This General Permit requires visual monitoring at all sites, and effluent water quality at all Risk Level 2 & 3 sites. It requires receiving water monitoring at some Risk Level 3 sites. All sites are required to submit annual reports, which contain various types of information, depending on the site characteristics and events. A summary of the monitoring and reporting requirements is found in Table 4.

Table 4 - Required Monitoring Elements for Risk Levels

	Visual	Non-visible Pollutant	Effluent	Receiving Water
Risk Level 1	three types required for all Risk Levels: non-storm water, pre-rain and post-rain	As needed for all Risk Levels (see below)	where applicable	not required
Risk Level 2			pH, turbidity	not required
Risk Level 3			pH, turbidity	(if Receiving Water Monitoring Trigger exceeded) pH, turbidity and SSC. Bioassessment for sites 30 acres or larger.

a. Visual

All dischargers are required to conduct quarterly, non-storm water visual inspections. For these inspections, the discharger must visually observe each drainage area for the presence of (or indications of prior) unauthorized and authorized non-storm water discharges and their sources. For storm-related inspections, dischargers must visually observe storm water discharges at all discharge locations within two business days after a qualifying event. For this requirement, a qualifying rain event is one producing precipitation of ½ inch or more of discharge. Dischargers must conduct a post-storm event inspection to (1) identify whether BMPs were adequately designed, implemented, and effective, and (2) identify any additional BMPs necessary and revise the SWPPP accordingly. Dischargers must maintain on-site records of all visual observations, personnel performing the observations, observation dates, weather conditions, locations observed, and corrective actions taken in response to the observations.

b. Non-Visible Pollutant Monitoring

This General Permit requires that all dischargers develop a sampling and analysis strategy for monitoring pollutants that are not visually detectable in storm water. Monitoring for non-visible pollutants must be required at any construction site when the exposure of construction materials occurs and where a discharge can cause or contribute to an exceedance of a water quality objective.

Of significant concern for construction discharges are the pollutants found in materials used in large quantities at construction sites throughout California and exposed throughout the rainy season, such as cement, flyash, and other recycled materials or by-products of combustion. The water quality standards that apply to these materials will depend on their composition. Some of the more common storm water pollutants from construction activity are not CTR pollutants. Examples of non-visible pollutants include glyphosate (herbicides), diazinon and chlorpyrifos (pesticides), nutrients (fertilizers), and molybdenum (lubricants). The use of diazinon and chlorpyrifos is a common practice among landscaping professionals and may trigger sampling and analysis requirements if these materials come into contact with storm water. High pH values from cement and gypsum, high pH and SSC from wash waters, and chemical/fecal contamination from portable toilets, also are not CTR pollutants. Although some of these constituents do have numeric water quality objectives in individual Basin Plans, many do not and are subject only to narrative water quality standards (i.e. not causing toxicity). Dischargers are encouraged to discuss these issues with Regional Water Board staff and other storm water quality professionals.

The most effective way to avoid the sampling and analysis requirements, and to ensure permit compliance, is to avoid the exposure of construction materials to precipitation and storm water runoff. Materials that are not exposed do not have the potential to enter storm water runoff, and therefore receiving waters sampling is not required. Preventing contact between storm water and construction materials is one of the most important BMPs at any construction site.

Preventing or eliminating the exposure of pollutants at construction sites is not always possible. Some materials, such as soil amendments, are designed to be used in a manner that will result in exposure to storm water. In these cases, it is important to make sure that these materials are applied according to the manufacturer's instructions and at a time when they are unlikely to be washed away. Other construction materials can be exposed when storage, waste disposal or the application of the material is done in a manner not protective of water quality. For these situations, sampling is required unless there is capture and containment of all storm water that has been exposed. In cases where construction materials may be exposed to storm water, but the storm water is contained and is not allowed to run off the site, sampling will only be required when inspections show that the containment failed or is breached, resulting in potential exposure or discharge to receiving waters.

The discharger must develop a list of potential pollutants based on a review of potential sources, which will include construction materials soil amendments, soil treatments, and historic contamination at the site. The discharger must review existing environmental and real estate documentation to determine the potential for pollutants that could be present on the construction site as a result of past land use activities.

Good sources of information on previously existing pollution and past land uses include:

i. Environmental Assessments;

ii. Initial Studies;

iii. Phase 1 Assessments prepared for property transfers; and

iv. Environmental Impact Reports or Environmental Impact Statements prepared under the requirements of the National Environmental Policy Act or the California Environmental Quality Act.

In some instances, the results of soil chemical analyses may be available and can provide additional information on potential contamination.

The potential pollutant list must include all non-visible pollutants that are known or should be known to occur on the construction site including, but not limited to, materials that:

i. are being used in construction activities;

ii. are stored on the construction site;

iii. were spilled during construction operations and not cleaned up;

iv. were stored (or used) in a manner that created the potential for a release of the materials during past land use activities;

v. were spilled during previous land use activities and not cleaned up; or

vi. were applied to the soil as part of past land use activities.

C. Effluent Monitoring

Federal regulations[11] require effluent monitoring for discharges subject to NALs. Subsequently, all Risk Level 2 and 3 dischargers must perform sampling and analysis of effluent discharges to characterize discharges associated with construction activity from the entire area disturbed by the project. Dischargers must collect samples of stored or contained storm water that is discharged subsequent to a storm event producing precipitation of ½ inch or more at the time of discharge.

Table 5 - Storm Water Effluent Monitoring Requirements by Risk Level

	Frequency	Effluent Monitoring (Section E, below)
Risk Level 1	when applicable	non-visible pollutant parameters (if applicable)
Risk Level 2	Minimum of 3 samples per day during qualifying rain event characterizing discharges associated with construction activity from the entire project disturbed area.	pH, turbidity, and non-visible pollutant parameters (if applicable)
Risk Level 3	Minimum of 3 samples per day during qualifying rain event characterizing discharges associated with construction activity from the entire project disturbed area.	pH, turbidity, and non-visible pollutant parameters if applicable

Risk Level 1 dischargers must analyze samples for:

i. any parameters indicating the presence of pollutants identified in the pollutant source assessment required in Attachment C contained in the General Permit.

[11] 40 C.F.R. § 122.44.

Risk Level 2 dischargers must analyze samples for:

i. pH and turbidity;

ii. any parameters indicating the presence of pollutants identified in the pollutant source assessment required in Attachment D contained in the General Permit, and

iii. any additional parameters for which monitoring is required by the Regional Water Board.

Risk Level 3 dischargers must analyze samples for:

i. pH, turbidity;

ii. any parameters indicating the presence of pollutants identified in the pollutant source assessment required in Attachment E contained in the General Permit, and

iii. any additional parameters for which monitoring is required by the Regional Water Board.

2. Linear Monitoring and Sampling Requirements

Attachment A, establishes minimum monitoring and reporting requirements for all LUPs. It establishes different monitoring requirements depending on project complexity and risk to water quality. The monitoring requirements for Type 1 LUPs are less than Type 2 & 3 projects because Type 1 projects have a lower potential to impact water quality.

A discharger shall prepare a monitoring program prior to the start of construction and immediately implement the program at the start of construction for LUPs. The monitoring program must be implemented at the appropriate level to protect water quality at all times throughout the life of the project.

a. Type 1 LUP Monitoring Requirements

A discharger must conduct daily visual inspections of Type 1 LUPs during working hours while construction activities are occurring. Inspections are to be conducted by qualified personnel and can be conducted in conjunction with other daily activities. Inspections will be conducted to ensure the BMPs are adequate, maintained, and in place at the end of the construction day. The discharger will revise the SWPPP, as appropriate, based on the results of the daily inspections. Inspections can be discontinued in non-active construction areas where soil disturbing activities have been completed and final stabilization has been achieved (e.g., trench has been paved, substructures have been installed, and successful final vegetative cover or other stabilization criteria have been met).

A discharger shall implement the monitoring program for inspecting Type 1 LUPs. This program requires temporary and permanent stabilization BMPs after active construction is completed. Inspection activities will continue until adequate permanent stabilization has been established and will continue in areas where re-vegetation is chosen until minimum vegetative coverage has been established. Photographs shall be taken during site inspections and submitted to the State Water Board.

b. Type 2 & 3 LUP Monitoring Requirements

A discharger must conduct daily visual inspections of Type 2 & 3 LUPs during working hours while construction activities are occurring. Inspections are to be conducted by qualified personnel and can be in conjunction with other daily activities.

All dischargers of Type 2 & 3 LUPs are required to conduct inspections by qualified personnel of the construction site during normal working hours prior to all anticipated storm events and after actual storm events. During extended storm events, the discharger shall conduct inspections during normal working hours for each 24-hour period. Inspections can be discontinued in non-active construction areas where soil disturbing activities have been completed and final stabilization has been achieved (e.g., trench has been paved, substructures installed, and successful vegetative cover or other stabilization criteria have been met).

The goals of these inspections are (1) to identify areas contributing to a storm water discharge; (2) to evaluate whether measures to reduce pollutant loadings identified in the SWPPP are adequate and properly installed and functioning in accordance with the terms of the General Permit; and (3) to determine whether additional control practices or corrective maintenance activities are needed. Equipment, materials, and workers must be available for rapid response to failures and emergencies. All corrective maintenance to BMPs shall be performed as soon as possible, depending upon worker safety.

All dischargers shall develop and implement a monitoring program for inspecting Type 2 & 3 LUPs that require temporary and permanent stabilization BMPs after active construction is completed. Inspections will be conducted to ensure the BMPs are adequate and maintained. Inspection activities will continue until adequate permanent stabilization has been established and will continue in areas where revegetation is chosen until minimum vegetative coverage has been established.

A log of inspections conducted before, during, and after the storm events must be maintained in the SWPPP. The log will provide the date and time of the inspection and who conducted the inspection. Photographs must be taken during site inspections and submitted to the State Water Board.

C. Sampling Requirements for all LUP Project Types

LUPs are also subject to sampling and analysis requirements for visible pollutants (i.e., sedimentation/siltation, turbidity) and for non-visible pollutants.

Sampling for visible pollutants is required for Type 2 & 3 LUPs.

Non-visible pollutant monitoring is required for pollutants associated with construction sites and activities that (1) are not visually detectable in storm water discharges, and (2) are known or should be known to occur on the construction site, and (3) could cause or contribute to an exceedance of water quality objectives in the receiving waters. Sample collection for non-visible pollutants must only be required (1) during a storm event when pollutants associated with construction activities may be discharged with storm water runoff due to a spill, or in the event there was a breach, malfunction, failure, and/or leak of any BMP, and (2) when the discharger has failed to adequately clean the area of material and pollutants. Failure to implement appropriate BMPs will trigger the same sampling requirements as those required for a breach, malfunction and/or leak, or when the discharger has failed to implement appropriate BMPs prior to the next storm event.

Additional monitoring parameters may be required by the Regional Water Boards.

It is not anticipated that many LUPs will be required to collect samples for pollutants not visually detected in runoff due to the nature and character of the construction site and activities as previously described in this fact sheet. Most LUPs are constructed in urban areas with public access (e.g., existing roadways, road shoulders, parking areas, etc.). This raises a concern regarding the potential contribution of pollutants from vehicle use and/or from normal activities of the public (e.g., vehicle washing, landscape fertilization, pest spraying, etc.) in runoff from the project site. Since the dischargers are not the land owners of the project area and are not able to control the presence of these pollutants in the storm water that runs through their projects, it is not the intent of this General Permit to require dischargers to sample for these pollutants. This General Permit does not require the discharger to sample for these types of pollutants except where the discharger has brought materials onsite that contain these pollutants and when a condition (e.g., breach, failure, etc.) described above occurs.

3. Receiving Water Monitoring

In order to ensure that receiving water limitations are met, discharges subject to receiving water monitoring triggers (i.e., Risk Level 3 and LUP Type 3 sites) or numeric effluent limitations (i.e., Risk Level 3 and LUP Type 3 sites utilizing ATS with direct discharges into receiving waters) must also monitor the downstream receiving water(s) for turbidity, SSC, and pH (if applicable) when a receiving water monitoring trigger or NEL is exceeded.

a. Bioassessment Monitoring

This General Permit requires a bioassessment of receiving waters for dischargers of Risk Level 3 or LUP Type 3 construction projects equal to or larger than 30 acres with direct discharges into receiving waters. Benthic macroinvertebrate samples will be taken upstream and downstream of the site's discharge point in the receiving water. Bioassessments measure the quality of the stream by analyzing the aquatic life present. Higher levels of appropriate aquatic species tend to indicate a healthy stream; whereas low levels of organisms can indicate stream degradation. Active construction sites have the potential to discharge large amounts of sediment and pollutants into receiving waters. Requiring a bioassessment for large project sites, with the most potential to impact water quality, provides a snapshot of the health of the receiving water prior to initiation of construction activities. This snapshot can be used in comparison to the health of the receiving water after construction has commenced.

Each ecoregion (biologically and geographically related area) in the State has a specific yearly peak time where stream biota is in a stable and abundant state. This time of year is called an Index Period. The bioassessment requirements in this General Permit, requires benthic macroinvertebrate sampling within a sites index period. The State Water Board has developed a map designating index periods for the ecoregions in the State (see State Water Board Website).

This General Permit requires the bioassessment methods to be in accordance with the Surface Water Ambient Monitoring Program (SWAMP) in order to provide data consistency within the state as well as generate useable biological stream data.

Table 6 - Receiving Water Monitoring Requirements

	Receiving Water Monitoring Parameters
Risk Level 1 /LUP Type 1	not required
Risk Level 2 / LUP Type 2	not required
Risk Level 3 / LUP Type 3	If Receiving Water Monitoring Trigger exceeded: pH (if applicable), turbidity, and SSC. Bioassessment for sites 30 acres or larger.

4. Reporting Requirements

a. NAL Exceedance Report

All Risk Level 3 and LUP Type 3 dischargers must electronically submit all storm event sampling results to the State And Regional Boards, via the electronic data system, no later than 10 days after the conclusion of the storm event.

b. Annual Report

All dischargers must prepare and electronically submit an annual report no later than September 1 of each year using the Storm water Multi-Application Reporting and Tracking System (SMARTS). The

Annual Report must include a summary and evaluation of all sampling and analysis results, original laboratory reports, chain of custody forms, a summary of all corrective actions taken during the compliance year, and identification of any compliance activities or corrective actions that were not implemented.

5. Record Keeping

According to 40 C.F.R. Parts 122.21(p) and 122.41(j), the discharger is required to retain paper or electronic copies of all records required by this General Permit for a period of at least three years from the date generated or the date submitted to the State Water Board or Regional Water Boards. A discharger must retain records for a period beyond three years as directed by Regional Water Board.

J. Risk Determination

1. Traditional Projects

a. Overall Risk Determination

There are two major requirements related to site planning and risk determination in this General Permit. The project's overall risk is broken up into two elements – (1) project sediment risk (the relative amount of sediment that can be discharged, given the project and location details) and (2) receiving water risk (the risk sediment discharges pose to the receiving waters).

Project Sediment Risk:
Project Sediment Risk is determined by multiplying the R, K, and LS factors from the Revised Universal Soil Loss Equation (RUSLE) to obtain an estimate of project-related bare ground soil loss expressed in tons/acre. The RUSLE equation is as follows:

A = (R)(K)(LS)(C)(P)

Where: A = the rate of sheet and rill erosion
R = rainfall-runoff erosivity factor
K = soil erodibility factor
LS = length-slope factor
C = cover factor (erosion controls)
P = management operations and support practices (sediment controls)

The C and P factors are given values of 1.0 to simulate bare ground conditions.

There is a map option and a manual calculation option for determining soil loss. For the map option, the R factor for the project is calculated using the online calculator at http://cfpub.epa.gov/npdes/stormwater/LEW/lewCalculator.cfm. The product of K and LS are shown on Figure 1. To determine soil loss in tons per acre, the discharger multiplies the R factor times the value for K times LS from the map.

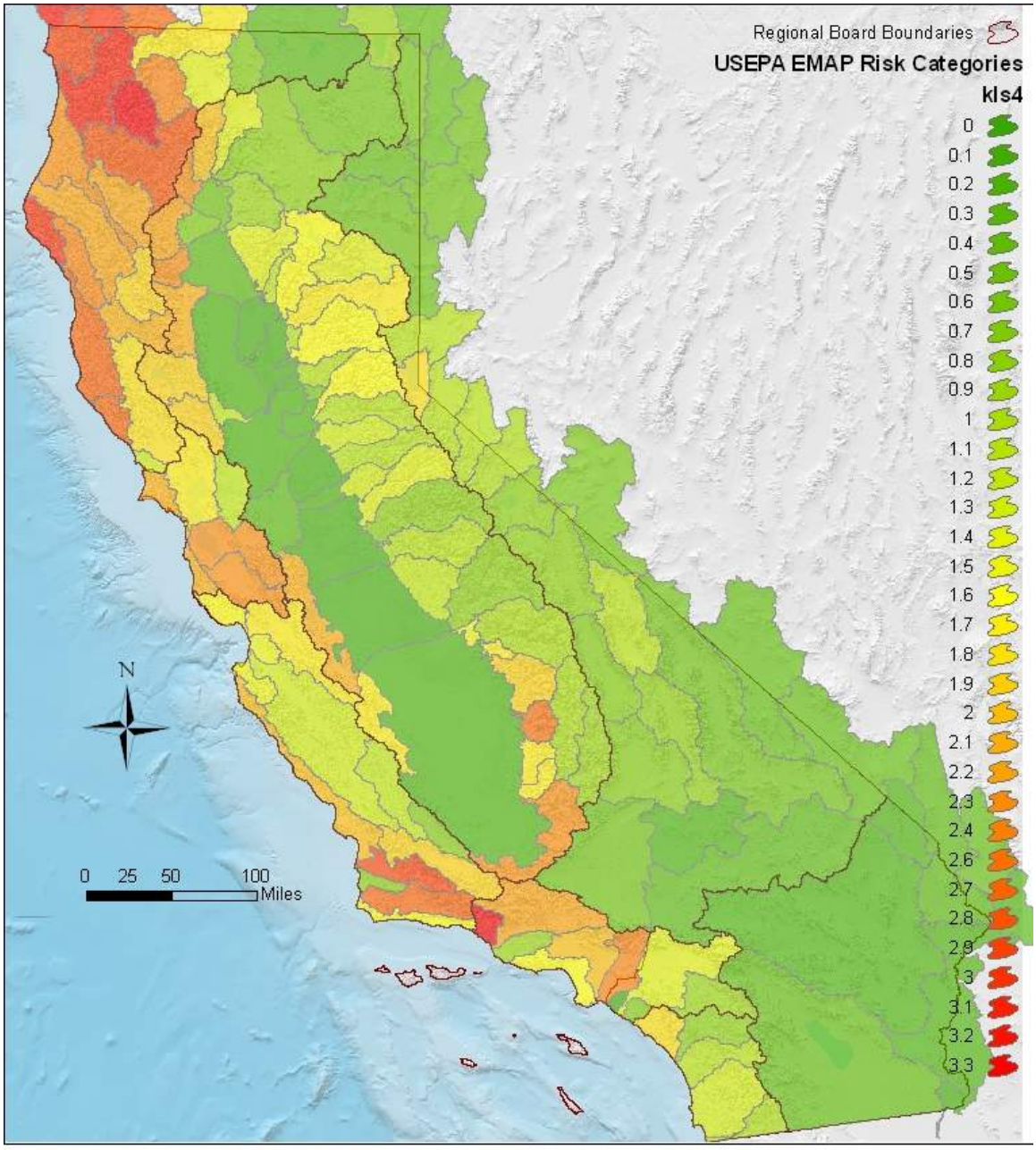

Figure 1 -Statewide Map of K * LS

For the manual calculation option, the R factor for the project is calculated using the online calculator at http://cfpub.epa.gov/npdes/stormwater/LEW/lewCalculator.cfm. The K and LS factors are determined using Appendix 1.

Soil loss of less than 15 tons/acre is considered **low** sediment risk.
Soil loss between 15 and 75 tons/acre is **medium** sediment risk.
Soil loss over 75 tons/acre is considered **high** sediment risk.

The soil loss values and risk categories were obtained from mean and standard deviation RKLS values from the USEPA EMAP program. High risk is the mean RKLS value plus two standard deviations. Low risk is the mean RKLS value minus two standard deviations.

Receiving Water Risk:
Receiving water risk is based on whether a project drains to a sediment-sensitive waterbody. A sediment-sensitive waterbody is either

on the most recent 303d list for waterbodies impaired for sediment;
has a USEPA-approved Total Maximum Daily Load implementation plan for sediment; **or**
has the beneficial uses of COLD, SPAWN, and MIGRATORY.

A project that meets at least one of the three criteria has a high receiving water risk. A list of sediment-sensitive waterbodies will be posted on the State Water Board's website. It is anticipated that an interactive map of sediment sensitive water bodies in California will be available in the future.

The Risk Levels have been altered by eliminating the possibility of a Risk Level 4, and expanding the constraints for Risk Levels 1, 2, and 3. Therefore, projects with high receiving water risk and high sediment risk will be considered a Risk Level 3 risk to water quality.

In response to public comments, the Risk Level requirements have also been changed such that Risk Level 1 projects will be subject to minimum BMP and visual monitoring requirements, Risk Level 2 projects will be subject to NALs and some additional monitoring requirements, and Risk Level 3 projects will be subject to NALs, and more rigorous monitoring requirements such as receiving water monitoring and in some cases bioassessment.

Table 7 - Combined Risk Level Matrix

Combined Risk Level Matrix				
Receiving Water Risk		Sediment Risk		
		Low	Medium	High
	Low	Level 1	Level 2	
	High	Level 2		Level 3

b. Effluent Standards

All dischargers are subject to the narrative effluent limitations specified in the General Permit. The narrative effluent limitations require storm water discharges associated with construction activity to meet all applicable provisions of Sections 301 and 402 of the CWA. These provisions require controls of pollutant discharges that utilize BAT and BCT to reduce pollutants and any more stringent controls necessary to meet water quality standards.

Risk Level 2 dischargers that pose a medium risk to water quality are subject to technology-based NALs for pH and turbidity. Risk Level 3 dischargers that pose a high risk to water quality are also subject to technology-based NALs for pH and turbidity.

c. Good Housekeeping

Proper handling and managing of construction materials can help minimize threats to water quality. The discharger must consider good housekeeping measures for: construction materials, waste management, vehicle storage & maintenance, landscape materials, and potential pollutant sources. Examples include; conducting an inventory of products used, implementing proper storage & containment, and properly cleaning all leaks from equipment and vehicles.

d. Non-Storm Water Management

Non-storm water discharges directly connected to receiving waters or the storm drain system have the potential to negatively impact water quality. The discharger must implement measures to control all non-storm water discharges during construction, and from dewatering activities associated with construction. Examples include; properly washing vehicles in contained areas, cleaning streets, and minimizing irrigation runoff.

e. Erosion Control

The best way to minimize the risk of creating erosion and sedimentation problems during construction is to disturb as little of the land surface as possible by fitting the development to the terrain. When development is tailored to the natural contours of the land, little grading is necessary and, consequently, erosion potential is lower.[14] Other effective erosion control measures include: preserving existing vegetation where feasible, limiting disturbance, and stabilizing and re-vegetating disturbed areas as soon as possible after grading or construction activities. Particular attention must be paid to large, mass-graded sites where the potential for soil exposure to the erosive effects of rainfall and wind is great and where there is potential for significant sediment discharge from the site to surface waters. Until permanent vegetation is established, soil cover is the most cost-effective and expeditious method to protect soil particles from detachment and transport by rainfall. Temporary soil stabilization can be the single most important factor in reducing erosion at construction sites. The discharger is required to consider measures such as: covering disturbed areas with mulch, temporary seeding, soil stabilizers, binders, fiber rolls or blankets, temporary vegetation, and permanent seeding. These erosion control measures are only examples of what should be considered and should not preclude new or innovative approaches currently available or being developed. Erosion control BMPs should be the primary means of preventing storm water contamination, and sediment control techniques should be used to capture any soil that becomes eroded.[12]

Risk Level 3 dischargers pose a higher risk to water quality and are therefore additionally required to ensure that post-construction soil loss is equivalent to or less than the pre-construction levels.

f. Sediment Control

Sediment control BMPs should be the secondary means of preventing storm water contamination. When erosion control techniques are ineffective, sediment control techniques should be used to capture any soil that becomes eroded. The discharger is required to consider perimeter control measures such as: installing silt fences or placing straw wattles below slopes. These sediment control measures are only

[12] U.S. Environmental Protection Agency. 2007. Developing Your Storm Water Pollution Prevention Plan: A Guide for Construction Sites.

examples of what should be considered and should not preclude new or innovative approaches currently available or being developed.

Because Risk Level 2 and 3 dischargers pose a higher risk to water quality, additional requirements for the application of sediment controls are imposed on these projects. This General Permit also authorizes the Regional Water Boards to require Risk Level 3 dischargers to implement additional site-specific sediment control requirements if the implementation of other erosion or sediment controls are not adequately protecting the receiving waters.

g. Run-on and Runoff Control

Inappropriate management of run-on and runoff can result in excessive physical impacts to receiving waters from sediment and increased flows. The discharger is required to manage all run-on and runoff from a project site. Examples include: installing berms and other temporary run-on and runoff diversions.

Risk Level 1 dischargers with lower risks to impact water quality are not subject to the run-on and runoff control requirements unless an evaluation deems them necessary or visual inspections show that such controls are required.

h. Inspection, Maintenance and Repair

All measures must be periodically inspected, maintained and repaired to ensure that receiving water quality is protected. Frequent inspections coupled with thorough documentation and timely repair is necessary to ensure that all measures are functioning as intended.

i. Rain Event Action Plan (REAP)

A Rain Event Action Plan (REAP) is a written document, specific for each rain event. A REAP should be designed that when implemented it protects all exposed portions of the site within 48 hours of any likely precipitation event forecast of 50% or greater probability.

This General Permit requires Risk Level 2 and 3 dischargers to develop and implement a REAP designed to protect all exposed portions of their sites within 48 hours prior to any likely precipitation event. The REAP requirement is designed to ensure that the discharger has adequate materials, staff, and time to implement erosion and sediment control measures that are intended to reduce the amount of sediment and other pollutants generated from the active site. A REAP must be developed when there is likely a forecast of 50% or greater probability of precipitation in the project area. (The National Oceanic and Atmospheric Administration (NOAA) defines a chance of precipitation as a probability of precipitation of 30% to 50% chance of producing precipitation in the project area.[13] NOAA defines the probability of precipitation (PoP) as the likelihood of occurrence (expressed as a percent) of a measurable amount (0.01 inch or more) of liquid precipitation (or the water equivalent of frozen precipitation) during a specified period of time at any given point in the forecast area.) Forecasts are normally issued for 12-hour time periods. Descriptive terms for uncertainty and aerial coverage are used as follows:

Table 8 -National Oceanic and Atmospheric Administration (NOAA) Definition of Probability of Precipitation (PoP)

[13] http://www.crh.noaa.gov/lot/severe/wxterms.php.

PoP	Expressions of Uncertainty	Aerial Coverage
0%	none used	none used
10%	none used	isolated
20%	slight chance	isolated
30-50%	chance	scattered
60-70%	likely	numerous
80-100%	none used	none used

The discharger must obtain the precipitation forecast information from the National Weather Service Forecast Office (http://www.srh.noaa.gov/).

2. **Linear Projects**

a. **Linear Risk Determination**

LUPs vary in complexity and water quality concerns based on the type of project. This General Permit has varying application requirements based on the project's risk to water quality. Factors that lead to the characterization of the project include location, sediment risk, and receiving water risk.

Based on the location and complexity of a project area or project section area, LUPs are separated into project types. As described below, LUPs have been categorized into three project types.

i. ***Type 1 LUPs***

Type 1 LUPs are those construction projects where:

(1) 70 percent or more of the construction activity occurs on a paved surface and where areas disturbed during construction will be returned to preconstruction conditions or equivalent protection established at the end of the construction activities for the day, or

(2) greater than 30 percent of construction activities occur within the non-paved shoulders or land immediately adjacent to paved surfaces, or where construction occurs on unpaved improved roads, including their shoulders or land immediately adjacent to them where:

Areas disturbed during construction will be returned to pre-construction conditions or equivalent protection established at the end of the construction activities for the day to minimize the potential for erosion and sediment deposition, and

Areas where established vegetation was disturbed during construction will be stabilized and re-vegetated by the end of project. When required, adequate temporary stabilization Best Management Practices (BMPs) will be installed and maintained until vegetation is established to meet minimum cover requirements established in this General Permit for final stabilization.

Type 1 LUPs typically do not have a high potential to impact storm water quality because (1) these construction activities are not typically conducted during a rain event, (2) these projects are normally constructed over a short period of time[14], minimizing the duration that pollutants could potentially be exposed to rainfall; and (3) disturbed soils such as those from trench excavation are required to be hauled away, backfilled into the trench, and/or covered (e.g., metal plates, pavement, plastic covers over spoil piles) at the end of the construction day.

Type 1 LUPs are determined during the risk assessment found in Attachment A.1 to be 1) low sediment risk and low receiving water risk; 2) low sediment risk and medium receiving water risk; and 3) medium sediment risk and low receiving water risk.

This General Permit requires the discharger to ensure a SWPPP is developed for these construction activities that is specific to project type, location and characteristics.

ii. ***Type 2 LUPs:***

Type 2 projects are determined to have a combination of High, Medium, and Low project sediment risk along with High, Medium, and Low receiving water risk. Like Type 1 projects, Type 2 projects are typically constructed over a short period of time. However, these projects have a higher potential to impact water quality because they:

(1) typically occur outside the more urban/developed areas;

(2) have larger areas of soil disturbance that are not closed or restored at the end of the day;

(3) may have onsite stockpiles of soil, spoil and other materials;

(4) cross or occur in close proximity to a wide variety of sensitive resources that may include, but are not limited to, steep topography and/or water bodies; and

(5) have larger areas of disturbed soils that may be exposed for a longer time interval before final stabilization, cleanup and/or reclamation occurs.

This General Permit requires the discharger to develop and implement a SWPPP for these construction activities that are specific for project type, location and characteristics.

iii. ***Type 3 LUPs:***

[14] Short period of time refers to a project duration of weeks to months, but typically less than one year in duration.

Type 3 projects are determined to have a combination of High and Medium project sediment risk along with High and Medium receiving water risk. Similar to Type 2 projects, Type 3 projects have a higher potential to impact water quality because they:

(1) typically occur outside of the more urban/developed areas;

(2) have larger areas of soil disturbance that are not closed or restored at the end of the day;

(3) may have onsite stockpiles of soil, spoil and other materials;

(4) cross or occur in close proximity to a wide variety of sensitive resources that may include, but are not limited to, steep topography and/or water bodies; and

(5) have larger areas of disturbed soils that may be exposed for a longer time interval before final stabilization, cleanup and/or reclamation occurs.

This General Permit requires the discharger to develop and implement a SWPPP for these construction activities that are specific for project type, location, and characteristics.

b. Linear Effluent Standards

All LUPs are subject to the narrative effluent limitations specified in the General Permit.

Type 2 and Type 3 projects are subject to technology-based NALs for pH and turbidity.

c. Linear Good Housekeeping

Improper use and handling of construction materials could potentially cause a threat to water quality. In order to ensure proper site management of these construction materials, all LUP dischargers must comply with a minimum set of Good Housekeeping measures specified in Attachment A of this General Permit.

d. Linear Non-Storm Water Management

In order to ensure control of all non-storm water discharges during construction, all LUP dischargers must comply with the Non-Storm Water Management measures specified in Attachment A of this General Permit.

e. Linear Erosion Control

This General Permit requires all LUP dischargers to implement effective wind erosion control measures, and soil cover for inactive areas. Type 3 LUPs posing a higher risk to water quality are additionally required to ensure the post-construction soil loss is equivalent to or less than the pre-construction levels.

f. Linear Sediment Control

In order to ensure control and containment of all sediment discharges, all LUP dischargers must comply with the general Sediment Control measures specified in Attachment A or this General Permit. Additional requirements for sediment controls are imposed on Type 2 & 3 LUPs due to their higher risk to water quality.

g. Linear Run-on and Runoff Control

Discharges originating outside of a project's perimeter and flowing onto the property can adversely affect the quantity and quality of discharges originating from a project site. In order to ensure proper management of run-on and runoff, all LUPs must comply with the run-on and runoff control measures specified in Attachment A of this General Permit. Due to the lower risk of impacting water quality, Type 1 LUPs are not required to implement run-on and runoff controls unless deemed necessary by the discharger.

h. Linear Inspection, Maintenance and Repair

Proper inspection, maintenance, and repair activities are important to ensure the effectiveness of on-site measures to control water quality. In order to ensure that inspection, maintenance, and repair activities are adequately performed, the all LUP dischargers a re required to comply with the Inspection, Maintenance, and Repair requirements specified in Attachment A of this General Permit.

K. ATS[15] Requirements

There are instances on construction sites where traditional erosion and sediment controls do not effectively control accelerated erosion. Under such circumstances, or under circumstances where storm water discharges leaving the site may cause or contribute to an exceedance of a water quality standard, the use of an Active Treatment System (ATS) may be necessary. Additionally, it may be appropriate to use an ATS when site constraints inhibit the ability to construct a correctly sized sediment basin, when clay and/or highly erosive soils are present, or when the site has very steep or long slope lengths.[16]

Although treatment systems have been in use in some form since the mid-1990s, the ATS industry in California is relatively young, and detailed regulatory standards have not yet been developed. Many developers are using these systems to treat storm water discharges from their construction sites. The new ATS requirements set forth in this General Permit are based on those in place for small wastewater treatment systems, ATS regulations from the Central Valley Regional Water Quality Control Board (September 2005 memorandum "2005/2006 Rainy Season – Monitoring Requirements for Storm Water Treatment Systems that Utilize Chemical Additives to Enhance Sedimentation"), the Construction Storm Water Program at the State of Washington's Department of Ecology, as well as recent advances in technology and knowledge of coagulant performance and aquatic safety.

The effective design of an ATS requires a detailed survey and analysis of site conditions. With proper planning, ATS performance can provide exceptional water quality discharge and prevent significant impacts to surface water quality, even under extreme environmental conditions.

These systems can be very effective in reducing the sediment in storm water runoff, but the systems that use additives/polymers to enhance sedimentation also pose a potential risk to water quality (e.g., operational failure, equipment failure, additive/polymer release, etc.). The State Water Board is concerned about the potential acute and chronic impacts that the polymers and other chemical additives may have on fish and aquatic organisms if released in sufficient quantities or concentrations. In addition

[15] An ATS is a treatment system that employs chemical coagulation, chemical flocculation, or electrocoagulation in order to reduce turbidity caused by fine suspended sediment.
[16] Pitt, R., S. Clark, and D. Lake. 2006. Construction Site Erosion and Sediment Controls: Planning, Design, and Performance. DEStech Publications. Lancaster, PA. 370pp.

to anecdotal evidence of polymer releases causing aquatic toxicity in California, the literature supports this concern.[17] For example, cationic polymers have been shown to bind with the negatively charged gills of fish, resulting in mechanical suffocation.[18] Due to the potential toxicity impacts, which may be caused by the release of additives/polymers into receiving waters, this General Permit establishes residual polymer monitoring and toxicity testing requirements have been established in this General Permit for discharges from construction sites that utilize an ATS in order to protect receiving water quality and beneficial uses.

The primary treatment process in an ATS is coagulation/flocculation. ATS's operate on the principle that the added coagulant is bound to suspended sediment, forming floc, which is gravitationally settled in tanks or a basin, or removed by sand filters. A typical installation utilizes an injection pump upstream from the clarifier tank, basin, or sand filters, which is electronically metered to both flow rate and suspended solids level of the influent, assuring a constant dose. The coagulant mixes and reacts with the influent, forming a dense floc. The floc may be removed by gravitational setting in a clarifier tank or basin, or by filtration. Water from the clarifier tank, basin, or sand filters may be routed through cartridge(s) and/or bag filters for final polishing. Vendor-specific systems use various methods of dose control, sediment/floc removal, filtration, etc., that are detailed in project-specific documentation. The particular coagulant/flocculant to be used for a given project is determined based on the water chemistry of the site because the coagulants are specific in their reactions with various types of sediments. Appropriate selection of dosage must be carefully matched to the characteristics of each site.

ATS's are operated in two differing modes, either Batch or Flow-Through. Batch treatment can be defined as Pump-Treat-Hold-Test-Release. In Batch treatment, water is held in a basin or tank, and is not discharged until treatment is complete. Batch treatment involves holding or recirculating the treated water in a holding basin or tank(s) until treatment is complete or the basin or storage tank(s) is full. In Flow-Through treatment, water is pumped into the ATS directly from the runoff collection system or storm water holding pond, where it is treated and filtered as it flows through the system, and is then directly discharged. "Flow-Through Treatment" is also referred to as "Continuous Treatment."

1. Effluent Standards

This General Permit establishes NELs for discharges from construction sites that utilize an ATS. These systems lend themselves to NELs for turbidity and pH because of their known reliable treatment. Advanced systems have been in use in some form since the mid-1990s. An ATS is considered reliable, can consistently produce a discharge of less than 10 NTU, and has been used successfully at many sites in several states since 1995 to reduce turbidity to very low levels.[19]

This General Permit contains "compliance storm event" exceptions from the technology-based NELs for ATS discharges. The rationale is that technology-based requirements are developed assuming a certain design storm. In the case of ATS the industry-standard design storm is 10-year, 24-hour (as stated in

[17] RomØen, K., B. Thu, and Ø. Evensen. 2002. Immersion delivery of plasmid DNA II. A study of the potentials of a chitosan based delivery system in rainbow trout (*Oncorhynchus mykiss*) fry. *Journal of Controlled Release* **85**: 215-225.
[18] Bullock, G., V. Blazer, S. Tsukuda, and S. Summerfelt. 2000. Toxicity of acidified chitosan for cultured rainbow trout (*Oncorhynchus mykiss*). *Aquaculture* **185**:273-280.
[19] Currier, B., G. Minton, R. Pitt, L. Roesner, K. Schiff, M. Stenstrom, E. Strassler, and E. Strecker. 2006. The Feasibility of Numeric Effluent Limits Applicable to Discharges of Storm Water Associated with Municipal, Industrial and Construction Activities.

Attachment F of this General Permit), so the compliance storm event has been established as the 10-year 24-hour event as well to provide consistency.

2. **Training**

Operator training is critical to the safe and efficient operation and maintenance of the ATS, and to ensure that all State Water Board monitoring and sampling requirements are met. The General Permit requires that all ATS operators have training specific to using ATS's liquid coagulants.

L. Post-Construction Requirements

Under past practices, new and redevelopment construction activities have resulted in modified natural watershed and stream processes. This is caused by altering the terrain, modifying the vegetation and soil characteristics, introducing impervious surfaces such as pavement and buildings, increasing drainage density through pipes and channels, and altering the condition of stream channels through straightening, deepening, and armoring. These changes result in a drainage system where sediment transport capacity is increased and sediment supply is decreased. A receiving channel's response is dependent on dominant channel materials and its stage of adjustment.

Construction activity can lead to impairment of beneficial uses in two main ways. First, during the actual construction process, storm water discharges can negatively affect the chemical, biological, and physical properties of downstream receiving waters. Due to the disturbance of the landscape, the most likely pollutant is sediment, however pH and other non-visible pollutants are also of great concern. Second, after most construction activities are completed at a construction site, the finished project may result in significant modification of the site's response to precipitation. New development and redevelopment projects have almost always resulted in permanent post-construction water quality impacts because more precipitation ends up as runoff and less precipitation is intercepted, evapotranspired, and infiltrated.

General Permit 99-08-DWQ required the SWPPP to include a description of all post-construction BMPs on a site and a maintenance schedule. An effective storm water management strategy must address the full suite of storm events (water quality, channel protection, overbank flood protection, extreme flood protection) (Figure 2).

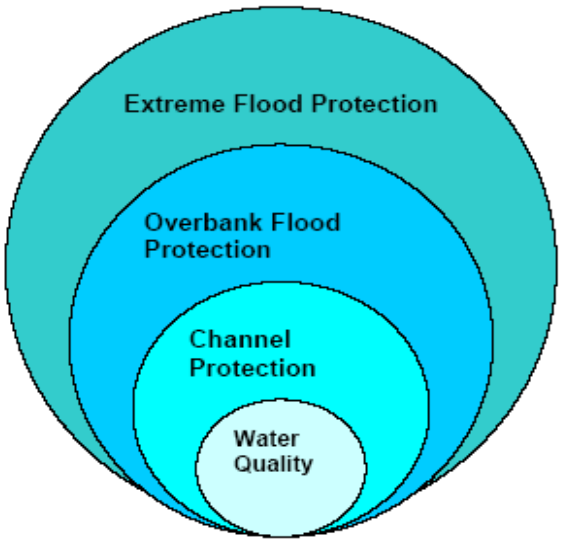

Figure 2 - Suite of Storm Events

The post-construction storm water performance standards in this General Permit specifically address water quality and channel protection events. Overbank flood protection and extreme flood protection events are traditionally dealt with in local drainage and flood protection ordinances. However, measures in this General Permit to address water quality and channel protection also reduce overbank and extreme flooding impacts. This General Permit aims to match post-construction runoff to pre-construction runoff for the 85th percentile storm event, which not only reduces the risk of impact to the receiving water's channel morphology but also provides some protection of water quality.

This General Permit clarifies that its runoff reduction requirements only apply to projects that lie outside of jurisdictions covered by a Standard Urban Storm water Management Plan (SUSMP) (or other more protective) post-construction requirements in either Phase I or Phase II permits.

Figures 3 and 4, below, show the General Permit enrollees (to Order 99-08-DWQ, as of March 10, 2008) overlaid upon a map with SUSMP (or more protective) areas in blue and purple. Areas without blue or purple indicate where the General Permit's runoff reduction requirements would actually apply.

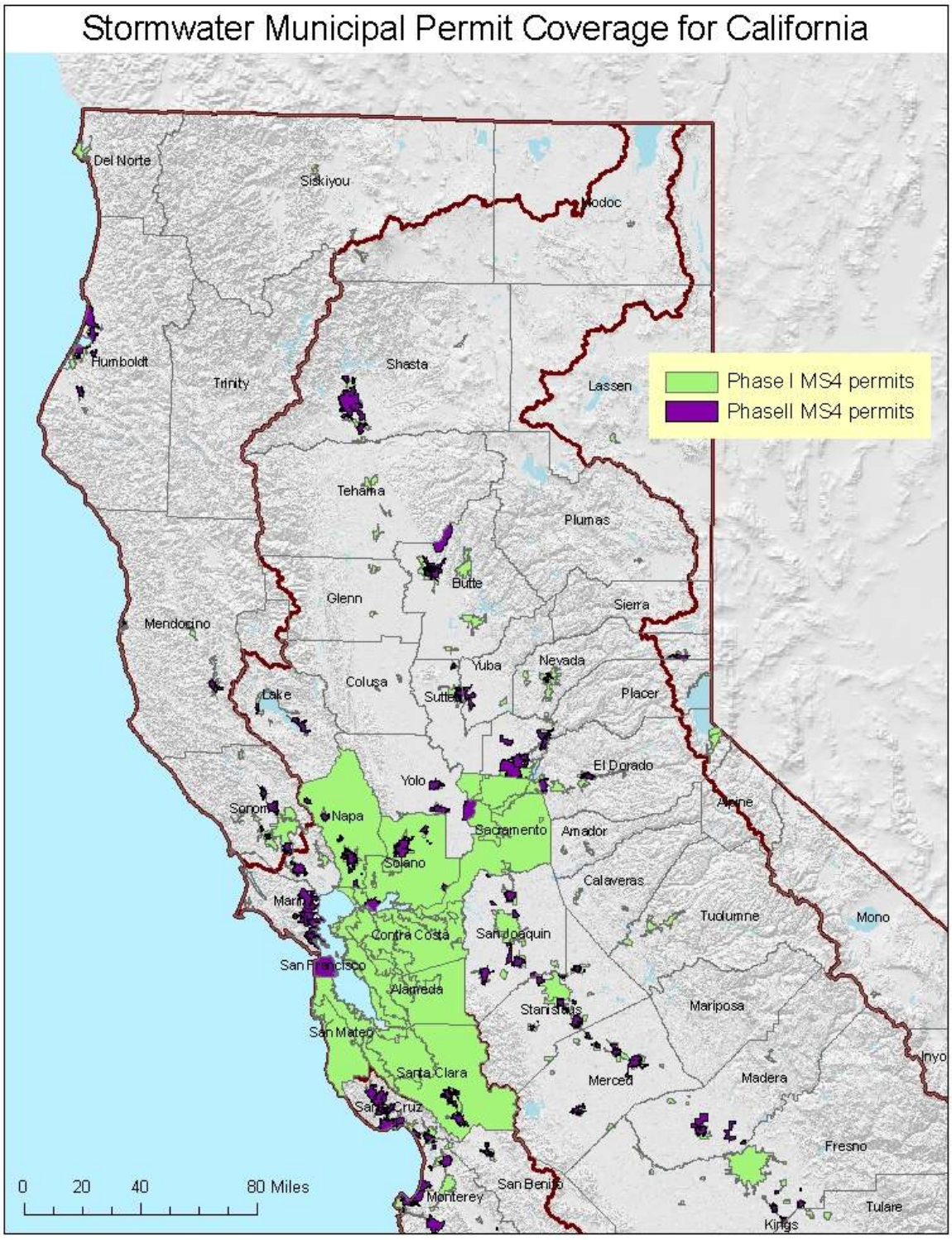

Figure 3 - Northern CA (2009) Counties / Cities With SUSMP-Plus Coverage

Figure 4 - Southern CA (2009) Counties / Cities With SUSMP-Plus Coverage

Water Quality:
This General Permit requires dischargers to replicate the pre-project runoff water balance (defined as the amount of rainfall that ends up as runoff) for the smallest storms up to the 85th percentile storm event, or the smallest storm event that generates runoff, whichever is larger. Contemporary storm water management generally routes these flows directly to the drainage system, increasing pollutant loads and potentially causing adverse effects on receiving waters. These smaller water quality events happen much more frequently than larger events and generate much higher pollutant loads on an annual basis. There are other adverse hydrological impacts that result from not designing according to the site's pre-construction water balance. In Maryland, Klein[20] noted that baseflow decreases as the extent of urbanization increases. Ferguson and Suckling[21] noted a similar relation in watersheds in Georgia. On Long Island, Spinello and Simmons[22] noted substantial decreases in base flow in intensely urbanized watersheds.

The permit emphasizes runoff reduction through on-site storm water reuse, interception, evapo-transpiration and infiltration through non-structural controls and conservation design measures (e.g., downspout disconnection, soil quality preservation/enhancement, interceptor trees). Employing these measures close to the source of runoff generation is the easiest and most cost-effective way to comply with the pre-construction water balance standard. Using low-tech runoff reduction techniques close to the source is consistent with a number of recommendations in the literature.[23] In many cases, BMPs implemented close to the source of runoff generation cost less than end-of the pipe measures.[24] Dischargers are given the option of using Appendix 2 to calculate the required runoff volume or a watershed process-based, continuous simulation model such as the EPA's Storm Water Management Model (SWMMM) or Hydrologic Simulation Program Fortran (HSPF). Such methods used by the discharger will be reviewed by the Regional Water Board upon NOT application.

Channel Protection:
In order to address channel protection, a basic understanding of fluvial geomorphic concepts is necessary. A dominant paradigm in fluvial geomorphology holds that streams adjust their channel dimensions (width and depth) in response to long-term changes in sediment supply and bankfull discharge (1.5 to 2 year recurrence interval). The bankfull stage corresponds to the discharge at which channel maintenance is the most effective, that is, the discharge at which the moving sediment, forming or removing bars, forming or changing bends and meanders, and generally doing work that results in the average morphologic characteristics of channels.[25] Lane (1955 as cited in Rosgen 1996[26]) showed the generalized relationship between sediment load, sediment size, stream discharge and stream slope in

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[20] Klein 1979 as cited in Delaware Department of Natural Resources (DDNR). 2004. Green Technology: The Delaware Urban Runoff Management Approach. Dover, DE. 117 pp.
[21] Ferguson and Suckling 1990 as cited Delaware Department of Natural Resources (DDNR). 2004. Green Technology: The Delaware Urban Runoff Management Approach. Dover, DE. 117 pp.
[22] Center for Watershed Protection (CWP). 2000. The Practice of Watershed Protection: Techniques for protecting our nation's streams, lakes, rivers, and estuaries. Ellicott City, MD. 741 pp.
[23] Bay Area Storm Water Management Agencies Association (BASMAA). 1997. Start at the Source: Residential Site Planning and Design Guidance Manual for Storm Water Quality Protection. Palo Alto, CA;
McCuen, R.H. 2003 Smart Growth: hydrologic perspective. Journal of Professional Issues in Engineering Education and Practice. Vol (129), pp.151-154;
Moglen, G.E. and S. Kim. 2007. Impervious imperviousness-are threshold based policies a good idea? Journal of the American Planning Association, Vol 73 No. 2. pp 161-171.
[24] Delaware Department of natural Resources (DDNR). 2004. Green technology: The Delaware urban Runoff Management Approcah. Dover, DE. 117 pp.
[25] Dunne, T and L.B. Leopold. 1978. Water in Environmental Planning. San Francisco W.H. Freeman and Company
[26] Rosgen. D.L. 1996. Applied River Morphology. Pagosa Springs. Wildland Hydrology

Figure 5. A change in any one of these variables sets up a series of mutual adjustments in the companion variables with a resulting direct change in the physical characteristics of the stream channel.

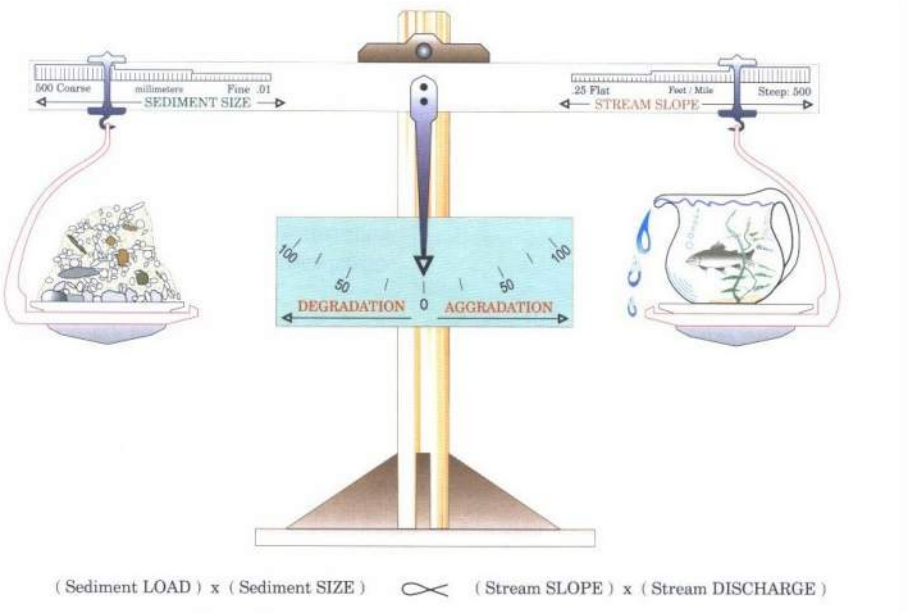

Figure 5 - Schematic of the Lane Relationship

After Lane (1955) as cited in Rosgen (1996)

Stream slope multiplied by stream discharge (the right side of the scale) is essentially an approximation of stream power, a unifying concept in fluvial geomorphology (Bledsoe 1999). Urbanization generally increases stream power and affects the resisting forces in a channel (sediment load and sediment size represented on the left side of the scale).

During construction, sediment loads can increase from 2 to 40,000 times over pre-construction levels.[27] Most of this sediment is delivered to stream channels during large, episodic rain events.[28] This increased sediment load leads to an initial aggradation phase where stream depths may decrease as sediment fills the channel, leading to a decrease in channel capacity and increase in flooding and overbank deposition. A degradation phase initiates after construction is completed.

Schumm et. al (1984) developed a channel evolution model that describes the series of adjustments from initial downcutting, to widening, to establishing new floodplains at lower elevations (Figure 6).

[27] Goldman S.J., K. Jackson, and T.A. Bursztynsky. 1986. Erosion and Sediment Control Handbook. McGraw Hill. San Francisco.
[28] Wolman 1967 as cited in Paul, M.P. and J.L. Meyer. 2001. Streams in the Urban Landscape. *Annu. Rev.Ecol. Syst.* 32: 333-365.

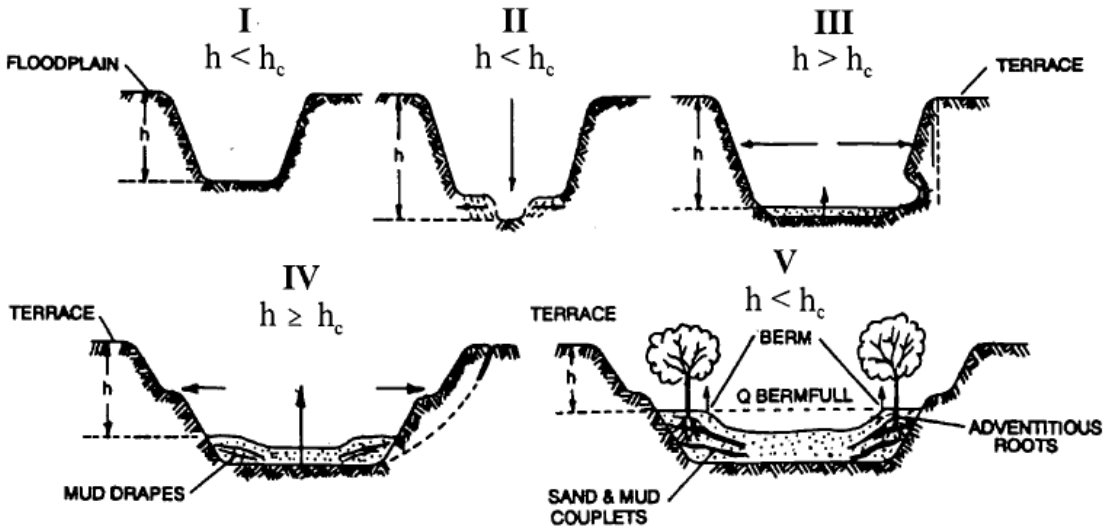

Figure 6 - Channel Changes Associated with Urbanization

After Incised Channel Evolution Sequence in Schumm et. al 1984

Channel incision (Stage II) and widening (Stages III and to a lesser degree, Stage IV) are due to a number of fundamental changes on the landscape. Connected impervious area and compaction of pervious surfaces increase the frequency and volume of bankfull discharges.[29] Increased drainage density (miles of stream length per square mile of watershed) also negatively impacts receiving stream channels.[30] Increased drainage density and hydraulic efficiency leads to an increase in the frequency and volume of bankfull discharges because the time of concentration is shortened. Flows from engineered pipes and channels are also often "sediment starved" and seek to replenish their sediment supply from the channel.

Encroachment of stream channels can also lead to an increase in stream slope, which leads to an increase in stream power. In addition, watershed sediment loads and sediment size (with size generally represented as the median bed and bank particle size, or d_{50}) decrease during urbanization.[31] This means

[29] Booth, D. B. and C. R. Jackson. 1997. Urbanization of Aquatic Systems: Degradation Thresholds, Storm Water Detection, and the Limits of Mitigation. Journal of the American Water Resources Association Vol. 33, No.5, pp. 1077-1089.

[30] May, C.W. 1998. Cumulative effects of urbanization on small streams in the Puget Sound Lowland ecoregion. Conference proceedings from Puget Sound Research '98 held March 12, 13 1998 in Seattle, WA;
Santa Clara Valley Urban Runoff Pollution Prevention Program. 2002. Hydromodification Management Plan Literature Review. 80 pp.

[31] Finkenbine, J.K., D.S. Atwater, and D.S. Mavinic. 2000. Stream health after urbanization. *J. Am. Water Resour. Assoc.* 36:1149-60;

that even if pre- and post-development stream power are the same, more erosion will occur in the post-development stage because the smaller particles are less resistant (provided they are non-cohesive).

As shown in Stages II and III, the channel deepens and widens to accommodate the increased stream power [32]and decrease in sediment load and sediment size. Channels may actually narrow as entrained sediment from incision is deposited laterally in the channel. After incised channels begin to migrate laterally (Stage III), bank erosion begins, which leads to general channel widening.[33] At this point, a majority of the sediment that leaves a drainage area comes from within the channel, as opposed to the background and construction related hillslope contribution. Stage IV is characterized by more aggradation and localized bank instability. Stage V represents a new quasi-equilibrium channel morphology in balance with the new flow and sediment supply regime. In other words, stream power is in balance with sediment load and sediment size.

The magnitude of the channel morphology changes discussed above varies along a stream network as well as with the age of development, slope, geology (sand-bedded channels may cycle through the evolution sequence in a matter of decades whereas clay-dominated channels may take much longer), watershed sediment load and size, type of urbanization, and land use history. It is also dependent on a channel's stage in the channel evolution sequence when urbanization occurs. Management strategies

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Pizzuto, J.E. W.S. Hession, and M. McBride. 2000. Comparing gravel-bed rivers in paired urban and rural catchments of southeastern Pennsylvania. *Geology* 28:79-82.

[32] Hammer 1973 as cited in Delaware Department of Natural Resources (DDNR). 2004. Green Technology: The Delaware Urban Runoff Management Approach. Dover, DE. 117 pp;
Booth, D.B. 1990. Stream Channel Incision Following Drainage Basin Urbanization. *Water Resour. Bull.* 26:407-417.

[33] Trimble, S.W. 1997. Contribution of Stream Channel Erosion to Sediment Yield from an Urbanizing Watershed. *Science*: Vol. 278 (21), pp. 1442-1444.

must take into account a channel's stage of adjustment and account for future changes in the evolution of channel form (Stein and Zaleski 2005). [34]

Traditional structural water quality BMPs (e.g. detention basins and other devices used to store volumes of runoff) unless they are highly engineered to provide adequate flow duration control, do not adequately protect receiving waters from accelerated channel bed and bank erosion, do not address post-development increases in runoff volume, and do not mitigate the decline in benthic macroinvertebrate communities in the receiving waters[35] suggest that structural BMPs are not as effective in protecting aquatic communities as a continuous riparian buffer of native vegetation. This is supported by the findings of Zucker and White[36], where instream biological metrics were correlated with the extent of forested buffers.

This General Permit requires dischargers to maintain pre-development drainage densities and times of concentration in order to protect channels and encourages dischargers to implement setbacks to reduce channel slope and velocity changes that can lead to aquatic habitat degradation.

There are a number of other approaches for modeling fluvial systems, including statistical and physical models and simpler stream power models.[37] The use of these models in California is described in Stein and Zaleski (2005).[38] Rather than prescribe a specific one-size-fits-all modeling method in this permit, the State Water Board intends to develop a stream power and channel evolution model-based framework to assess channels and develop a hierarchy of suitable analysis methods and management strategies. In time, this framework may become a State Water Board water quality control policy.

Permit Linkage to Overbank and Extreme Flood Protection
Site design BMPs (e.g. rooftop and impervious disconnection, vegetated swales, setbacks and buffers) filter and settle out pollutants and provide for more infiltration than is possible for traditional centralized structural BMPs placed at the lowest point in a site. They provide source control for runoff and lead to a reduction in pollutant loads. When implemented, they also help reduce the magnitude and volume of larger, less frequent storm events (e.g., 10-yr, 24-hour storm and larger), thereby reducing the need for expensive flood control infrastructure. Nonstructural BMPs can also be a landscape amenity, instead of a large isolated structure requiring substantial area for ancillary access, buffering, screening and maintenance facilities.[25] The multiple benefits of using non-structural benefits will be critically important as the state's population increases and imposes strains upon our existing water resources.

Maintaining predevelopment drainage densities and times of concentration will help reduce post-development peak flows and volumes in areas not covered under a municipal permit. The most effective way to preserve drainage areas and maximize time of concentration is to implement landform grading,

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[34] Stein, E.S. and S. Zaleski. 2005.Managing runoff to protect natural stream: the latest developments on investigation and management of hydromodification in California. Southern California Coastal Water Research Project Technical Report 475. 26 pp.
[35] Horner, R.R. 2006. Investigation of the Feasibility and Benefits of Low-Impact Site Design Practices (LID) for the San Diego Region. Available at: http://www.projectcleanwater.org/pdf/permit/case-study_lid.pdf.
[36] Delaware Department of Natural Resources (DDNR). 2004. Green Technology: The Delaware Urban Runoff Management Approach. Dover, DE. 117 pp.
[37] Finlayson, D.P. and D.R. Montgomery. 2003. Modeling large-scale fluvial erosion in geographic information systems. Geomorphology (53), pp. 147-164).
[38] Stein, E.S. and S. Zaleski. 2005.Managing runoff to protect natural stream: the latest developments on investigation and management of hydromodification in California. Southern California Coastal Water Research Project Technical Report 475. 26 pp.

incorporate site design BMPs and implement distributed structural BMPs (e.g., bioretention cells, rain gardens, rain cisterns).

M. Storm Water Pollution Prevention Plans

USEPA's Construction General Permit requires that qualified personnel conduct inspections. USEPA defines qualified personnel as "a person knowledgeable in the principles and practice of erosion and sediment controls who possesses the skills to assess conditions at the construction site that could impact storm water quality and to assess the effectiveness of any sediment and erosion control measures selected to control the quality of storm water discharges from the construction activity."[39] USEPA also suggests that qualified personnel prepare SWPPPs and points to numerous states that require certified professionals to be on construction sites at all times. States that currently have certification programs are Washington, Georgia, Florida, Delaware, Maryland, and New Jersey. The Permit 99-08-DWQ did not require that qualified personnel prepare SWPPPs or conduct inspections. However, to ensure that water quality is being protected, this General Permit requires that all SWPPPs be written, amended, and certified by a Qualified SWPPP Developer. A Qualified SWPPP Developer must possess one of the eight certifications and or registrations specified in this General Permit and effective two years after the adoption date of this General Permit, must have attended a State Water Board-sponsored or approved Qualified SWPPP Developer training course. Table 9 provides an overview of the criteria used in determining qualified certification titles for a QSD and QSP.

39 US Environmental Protection Agency. Stormwater Pollution Prevention Plans for Construction Activities. <http://cfpub.epa.gov/npdes/stormwater/swppp.cfm> and <http://www.epa.gov/npdes/pubs/sw_swppp_guide.pdf>.

Table 9 - Qualified SWPPP Developer/ Qualified SWPPP Practitioner Certification Criteria

Certification/ Title	Registered By	QSD/QSP	Certification Criteria
Professional Civil Engineer	California	Both	1. Approval Process 2. Code of Ethics 3. Accountability 4. Pre-requisites
Professional Geologist or Engineering Geologist	California	Both	1. Approval Process 2. Code of Ethics 3. Accountability 4. Pre-requisites
Landscape Architect	California	Both	1. Approval Process 2. Code of Ethics 3. Accountability 4. Pre-requisites
Professional Hydrologist	American Institute of Hydrology	Both	1. Approval Process 2. Code of Ethics 3. Accountability 4. Pre-requisites
Certified Professional in Erosion and Sediment Control™ (CPESC)	Enviro Cert International Inc.	Both	1. Approval Process 2. Code of Ethics 3. Accountability 4. Pre-requisites 5. Continuing Education
Certified Inspector of Sediment and Erosion Control™ (CISEC)	Certified Inspector of Sediment and Erosion Control, Inc.	QSP	1. Approval Process 2. Code of Ethics 3. Accountability 4. Pre-requisites 5. Continuing Education
Certified Erosion, Sediment and Storm Water Inspector™ (CESSWI)	Enviro Cert International Inc.	QSP	1. Approval Process 2. Code of Ethics 3. Accountability 4. Pre-requisites 5. Continuing Education
Certified Professional in Storm Water Quality™ (CPSWQ)	Enviro Cert International Inc.	Both	1. Approval Process 2. Code of Ethics 3. Accountability 4. Pre-requisites 5. Continuing Education

The previous versions of the General Permit required development and implementation of a SWPPP as the primary compliance mechanism. The SWPPP has two major objectives: (1) to help identify the sources of sediment and other pollutants that affect the quality of storm water discharges; and (2) to describe and ensure the implementation of BMPs to reduce or eliminate sediment and other pollutants in storm water and non-storm water discharges. The SWPPP must include BMPs that address source control, BMPs that address pollutant control, and BMPs that address treatment control.

This General Permit shifts some of the measures that were covered by this general requirement to specific permit requirements, each individually enforceable as a permit term. This General Permit emphasizes the use of appropriately selected, correctly installed and maintained pollution reduction BMPs. This approach provides the flexibility necessary to establish BMPs that can effectively address source control of pollutants during changing construction activities. These specific requirements also improve both the clarity and the enforceability of the General Permit so that the dischargers understand, and the public can determine whether the discharges are in compliance with, permit requirements.

The SWPPP must be implemented at the appropriate level to protect water quality at all times throughout the life of the project. The SWPPP must remain on the site during construction activities, commencing with the initial mobilization and ending with the termination of coverage under the General Permit. For LUPs the discharger shall make the SWPPP available at the construction site during working hours while construction is occurring and shall be made available upon request by a State or Municipal inspector. When the original SWPPP is retained by a crewmember in a construction vehicle and is not currently at the construction site, current copies of the BMPs and map/drawing will be left with the field crew and the original SWPPP shall be made available via a request by radio or telephone. Once construction activities are complete, until stabilization is achieved, the SWPPP shall be available from the SWPPP contact listed in the PRDs

A SWPPP must be appropriate for the type and complexity of a project and will be developed and implemented to address project specific conditions. Some projects may have similarities or complexities, yet each project is unique in its progressive state that requires specific description and selection of BMPs needed to address all possible generated pollutants

N. Regional Water Board Authorities

Because this General Permit will be issued to thousands of construction sites across the State, the Regional Water Boards retain discretionary authority over certain issues that may arise from the discharges in their respective regions. This General Permit does not grant the Regional Water Boards any authority they do not otherwise have; rather, it merely emphasizes that the Regional Water Boards can take specific actions related to this General Permit. For example, the Regional Water Boards will be enforcing this General Permit and may need to adjust some requirements for a discharger based on the discharger's compliance history.

Linda S. Adams
Secretary for
Environmental Protection

State Water Resources Control Board

Division of Water Quality
1001 I Street • Sacramento, California 95814 • (916) 341-5455
Mailing Address: P.O. Box 100 • Sacramento, California • 95812-0100
Fax (916) 341-5463 • http://www.waterboards.ca.gov

Arnold Schwarzenegger
Governor

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
GENERAL PERMIT FOR
STORM WATER DISCHARGES
ASSOCIATED WITH CONSTRUCTION AND LAND DISTURBANCE
ACTIVITIES

ORDER NO. 2009-0009-DWQ
NPDES NO**. CAS000002**

This Order was adopted by the State Water Resources Control Board on:	**September 2, 2009**
This Order shall become effective on:	**July 1, 2010**
This Order shall expire on:	**September 2, 2014**

IT IS HEREBY ORDERED, that this Order supersedes Order No. 99-08-DWQ [as amended by Order No. 2010-0014-DWQ] except for enforcement purposes. The Discharger shall comply with the requirements in this Order to meet the provisions contained in Division 7 of the California Water Code (commencing with section 13000) and regulations adopted thereunder, and the provisions of the federal Clean Water Act and regulations and guidelines adopted thereunder.

I, Jeanine Townsend, Clerk to the Board, do hereby certify that this Order with all attachments is a full, true, and correct copy of an Order adopted by the State Water Resources Control Board, on September 2, 2009.

AYE: Vice Chair Frances Spivy-Weber
Board Member Arthur G. Baggett, Jr.
Board Member Tam M. Doduc

NAY: Chairman Charles R. Hoppin

ABSENT: None

ABSTAIN: None

Jeanine Townsend
Clerk to the Board

Linda S. Adams
Secretary for
Environmental Protection

State Water Resources Control Board

Division of Water Quality
1001 I Street • Sacramento, California 95814 • (916) 341-5455
Mailing Address: P.O. Box 100 • Sacramento, California • 95812-0100
Fax (916) 341-5463 • http://www.waterboards.ca.gov

Arnold Schwarzenegger
Governor

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) GENERAL PERMIT FOR STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION AND LAND DISTURBANCE ACTIVITIES

ORDER NO. 2010-0014-DWQ
NPDES NO. CAS000002

Order No. 2009-0009-DWQ was adopted by the State Water Resources Control Board on:	**September 2, 2009**
Order No. 2009-0009-DWQ became effective on:	**July 1, 2010**
Order No. 2009-0009-DWQ shall expire on:	**September 2, 2014**
This Order, which amends Order No. 2009-0009-DWQ, was adopted by the State Water Resources Control Board on:	**November 16, 2010**
This Order shall become effective on:	**February 14, 2011**

IT IS HEREBY ORDERED that this Order amends Order No. 2009-0009-DWQ. Additions to Order No. 2009-0009-DWQ are reflected in blue-underline text and deletions are reflected in red-strikeout text.

IT IS FURTHER ORDERED that staff are directed to prepare and post a conformed copy of Order No. 2009-0009-DWQ incorporating the revisions made by this Order.

I, Jeanine Townsend, Clerk to the Board, do hereby certify that this Order with all attachments is a full, true, and correct copy of an Order adopted by the State Water Resources Control Board, on **November 16, 2010.**

AYE: Chairman Charles R. Hoppin
Vice Chair Frances Spivy-Weber
Board Member Arthur G. Baggett, Jr.
Board Member Tam M. Doduc

NAY: None

ABSENT: None

ABSTAIN: None

Jeanine Townsend
Clerk to the Board

CALIFORNIA
Water Boards

EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIQUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

State Water Resources Control Board

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
GENERAL PERMIT FOR
STORM WATER DISCHARGES
ASSOCIATED WITH CONSTRUCTION AND LAND DISTURBANCE ACTIVITIES

ORDER NO. 2012-0006-DWQ
NPDES NO**. CAS000002**

Order No. 2009-0009-DWQ was adopted by the State Water Resources Control Board on:	**September 2, 2009**
Order No. 2009-0009-DWQ became effective on:	**July 1, 2010**
Order No. 2010-0014-DWQ became effective on:	**February 14, 2011**
Order No. 2009-0009-DWQ as amended by 2010-0014-DWQ shall expire on:	**September 2, 2014**
This Order, which amends Order No. 2009-0009-DWQ as amended by 2010-0014-DWQ, was adopted by the State Water Resources Control Board on:	**July 17, 2012**
This Order No. 2012-0006-DWQ shall become effective on:	**July 17, 2012**

IT IS HEREBY ORDERED that this Order amends Order No. 2009-0009-DWQ. Additions to Order No. 2009-0009-DWQ are reflected in blue-underline text and deletions are reflected in red-strikeout text.

IT IS FURTHER ORDERED that staff are directed to prepare and post a conformed copy of Order No. 2009-000-DWQ incorporating the revisions made by this Order.

I, Jeanine Townsend, Clerk to the Board, do hereby certify that this Order with all attachments is a full, true, and correct copy of an Order adopted by the State Water Resources Control Board, on July 17, 2012.

AYE:	Chairman Charles R. Hoppin Vice Chair Frances Spivy-Weber Board Member Tam M. Doduc Board Member Steven Moore Board Member Felicia Marcus
NAY:	None
ABSENT:	None
ABSTAIN:	None

Jeanine Townsend
Clerk to the Board

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STATE WATER RESOURCES CONTROL BOARD
ORDER NO. 2009-0009-DWQ
[AS AMENDED BY ORDER NO. 2010-0014-DWQ]
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
GENERAL PERMIT NO. CAS000002

WASTE DISCHARGE REQUIREMENTS
FOR
DISCHARGES OF STORM WATER RUNOFF ASSOCIATED WITH CONSTRUCTION AND LAND DISTURBANCE ACTIVITIES

I. FINDINGS

A. General Findings

The State Water Resources Control Board (State Water Board) finds that:

1. The federal Clean Water Act (CWA) prohibits certain discharges of storm water containing pollutants except in compliance with a National Pollutant Discharge Elimination System (NPDES) permit (Title 33 United States Code (U.S.C.) §§ 1311 and 1342(p); also referred to as Clean Water Act (CWA) §§ 301 and 402(p)). The U.S. Environmental Protection Agency (U.S. EPA) promulgates federal regulations to implement the CWA's mandate to control pollutants in storm water runoff discharges. (Title 40 Code of Federal Regulations (C.F.R.) Parts 122, 123, and 124). The federal statutes and regulations require discharges to surface waters comprised of storm water associated with construction activity, including demolition, clearing, grading, and excavation, and other land disturbance activities (except operations that result in disturbance of less than one acre of total land area and which are not part of a larger common plan of development or sale), to obtain coverage under an NPDES permit. The NPDES permit must require implementation of Best Available Technology Economically Achievable (BAT) and Best Conventional Pollutant Control Technology (BCT) to reduce or eliminate pollutants in storm water runoff. The NPDES permit must also include additional requirements necessary to implement applicable water quality standards.

2. This General Permit authorizes discharges of storm water associated with construction activity so long as the dischargers comply with all requirements, provisions, limitations and prohibitions in the permit. In addition, this General Permit regulates the discharges of storm water associated with construction activities from all Linear

Underground/Overhead Projects resulting in the disturbance of greater than or equal to one acre (Attachment A).

3. This General Permit regulates discharges of pollutants in storm water associated with construction activity (storm water discharges) to waters of the United States from construction sites that disturb one or more acres of land surface, or that are part of a common plan of development or sale that disturbs more than one acre of land surface.

4. This General Permit does not preempt or supersede the authority of local storm water management agencies to prohibit, restrict, or control storm water discharges to municipal separate storm sewer systems or other watercourses within their jurisdictions.

5. This action to adopt a general NPDES permit is exempt from the provisions of Chapter 3 of the California Environmental Quality Act (CEQA) (Public Resources Code Section 21100, et seq.), pursuant to Section 13389 of the California Water Code.

6. Pursuant to 40 C.F.R. § 131.12 and State Water Board Resolution No. 68-16,[1] which incorporates the requirements of § 131.12 where applicable, the State Water Board finds that discharges in compliance with this General Permit will not result in the lowering of water quality standards, and are therefore consistent with those provisions. Compliance with this General Permit will result in improvements in water quality.

7. This General Permit serves as an NPDES permit in compliance with CWA § 402 and will take effect on July 1, 2010 by the State Water Board provided the Regional Administrator of the U.S. EPA has no objection. If the U.S. EPA Regional Administrator objects to its issuance, the General Permit will not become effective until such objection is withdrawn.

8. Following adoption and upon the effective date of this General Permit, the Regional Water Quality Control Boards (Regional Water Boards) shall enforce the provisions herein.

9. Regional Water Boards establish water quality standards in Basin Plans. The State Water Board establishes water quality standards in various statewide plans, including the California Ocean Plan. U.S. EPA establishes water quality standards in the National Toxic Rule (NTR) and the California Toxic Rule (CTR).

[1] Resolution No. 68-16 generally requires that existing water quality be maintained unless degradation is justified based on specific findings.

10. This General Permit does not authorize discharges of fill or dredged material regulated by the U.S. Army Corps of Engineers under CWA § 404 and does not constitute a waiver of water quality certification under CWA § 401.

11. The primary storm water pollutant at construction sites is excess sediment. Excess sediment can cloud the water, which reduces the amount of sunlight reaching aquatic plants, clog fish gills, smother aquatic habitat and spawning areas, and impede navigation in our waterways. Sediment also transports other pollutants such as nutrients, metals, and oils and greases.

12. Construction activities can impact a construction site's runoff sediment supply and transport characteristics. These modifications, which can occur both during and after the construction phase, are a significant cause of degradation of the beneficial uses established for water bodies in California. Dischargers can avoid these effects through better construction site design and activity practices.

13. This General Permit recognizes four distinct phases of construction activities. The phases are Grading and Land Development Phase, Streets and Utilities Phase, Vertical Construction Phase, and Final Landscaping and Site Stabilization Phase. Each phase has activities that can result in different water quality effects from different water quality pollutants. This General Permit also recognizes inactive construction as a category of construction site type.

14. Compliance with any specific limits or requirements contained in this General Permit does not constitute compliance with any other applicable requirements.

15. Following public notice in accordance with State and Federal laws and regulations, the State Water Board heard and considered all comments and testimony in a public hearing on 06/03/2009. The State Water Board has prepared written responses to all significant comments.

16. Construction activities obtaining coverage under the General Permit may have multiple discharges subject to requirements that are specific to general, linear, and/or active treatment system discharge types.

17. The State Water Board may reopen the permit if the U.S. EPA adopts a final effluent limitation guideline for construction activities.

B. Activities Covered Under the General Permit

18. Any construction or demolition activity, including, but not limited to, clearing, grading, grubbing, or excavation, or any other activity that results in a land disturbance of equal to or greater than one acre.

19. Construction activity that results in land surface disturbances of less than one acre if the construction activity is part of a larger common plan of development or the sale of one or more acres of disturbed land surface.

20. Construction activity related to residential, commercial, or industrial development on lands currently used for agriculture including, but not limited to, the construction of buildings related to agriculture that are considered industrial pursuant to U.S. EPA regulations, such as dairy barns or food processing facilities.

21. Construction activity associated with Linear Underground/Overhead Utility Projects (LUPs) including, but not limited to, those activities necessary for the installation of underground and overhead linear facilities (e.g., conduits, substructures, pipelines, towers, poles, cables, wires, connectors, switching, regulating and transforming equipment and associated ancillary facilities) and include, but are not limited to, underground utility mark-out, potholing, concrete and asphalt cutting and removal, trenching, excavation, boring and drilling, access road and pole/tower pad and cable/wire pull station, substation construction, substructure installation, construction of tower footings and/or foundations, pole and tower installations, pipeline installations, welding, concrete and/or pavement repair or replacement, and stockpile/borrow locations.

22. Discharges of sediment from construction activities associated with oil and gas exploration, production, processing, or treatment operations or transmission facilities.[2]

23. Storm water discharges from dredge spoil placement that occur outside of U.S. Army Corps of Engineers jurisdiction (upland sites) and that disturb one or more acres of land surface from construction activity are covered by this General Permit. Construction sites that intend to disturb one or more acres of land within the jurisdictional boundaries of

[2] Pursuant to the Ninth Circuit Court of Appeals' decision in *NRDC v. EPA* (9th Cir. 2008) 526 F.3d 591, and subsequent denial of the U.S. EPA's petition for reconsideration in November 2008, oil and gas construction activities discharging storm water contaminated only with sediment are no longer exempt from the NPDES program.

a CWA § 404 permit should contact the appropriate Regional Water Board to determine whether this permit applies to the site.

C. Activities Not Covered Under the General Permit

24. Routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of the facility.

25. Disturbances to land surfaces solely related to agricultural operations such as disking, harrowing, terracing and leveling, and soil preparation.

26. Discharges of storm water from areas on tribal lands; construction on tribal lands is regulated by a federal permit.

27. Construction activity and land disturbance involving discharges of storm water within the Lake Tahoe Hydrologic Unit. The Lahontan Regional Water Board has adopted its own permit to regulate storm water discharges from construction activity in the Lake Tahoe Hydrologic Unit (Regional Water Board 6SLT). Owners of construction sites in this watershed must apply for the Lahontan Regional Water Board permit rather than the statewide Construction General Permit.

28. Construction activity that disturbs less than one acre of land surface, and that is not part of a larger common plan of development or the sale of one or more acres of disturbed land surface.

29. Construction activity covered by an individual NPDES Permit for storm water discharges.

30. Discharges from small (1 to 5 acre) construction activities with an approved Rainfall Erosivity Waiver authorized by U.S. EPA Phase II regulations certifying to the State Board that small construction activity will occur only when the Rainfall Erosivity Factor is less than 5 (“R” in the Revised Universal Soil Loss Equation).

31. Landfill construction activity that is subject to the Industrial General Permit.

32. Construction activity that discharges to Combined Sewer Systems.

33. Conveyances that discharge storm water runoff combined with municipal sewage.

34. Discharges of storm water identified in CWA § 402(*l*)(2), 33 U.S.C. § 1342(*l*)(2).

35. Discharges occurring in basins that are not tributary or hydrologically connected to waters of the United States (for more information contact your Regional Water Board).

D. Obtaining and Modifying General Permit Coverage

36. This General Permit requires all dischargers to electronically file all Permit Registration Documents (PRDs), Notices of Termination (NOT), changes of information, annual reporting, and other compliance documents required by this General Permit through the State Water Board's Storm water Multi-Application and Report Tracking System (SMARTS) website.

37. Any information provided to the Regional Water Board shall comply with the Homeland Security Act and any other federal law that concerns security in the United States; any information that does not comply should not be submitted.

38. This General Permit grants an exception from the Risk Determination requirements for existing sites covered under Water Quality Orders No. 99-08-DWQ, and No. 2003-0007-DWQ. For certain sites, adding additional requirements may not be cost effective. Construction sites covered under Water Quality Order No. 99-08-DWQ shall obtain permit coverage at the Risk Level 1. LUPs covered under Water Quality Order No. 2003-0007-DWQ shall obtain permit coverage as a Type 1 LUP. The Regional Water Boards have the authority to require Risk Determination to be performed on sites currently covered under Water Quality Orders No. 99-08-DWQ and No. 2003-0007-DWQ where they deem it necessary. The State Water Board finds that there are two circumstances when it may be appropriate for the Regional Water Boards to require a discharger that had filed an NOI under State Water Board Order No. 99-08-DWQ to recalculate the site's risk level. These circumstances are: (1) when the discharger has a demonstrated history of noncompliance with State Water Board Order No. 99-08-DWQ or; (2) when the discharger's site poses a significant risk of causing or contributing to an exceedance of a water quality standard without the implementation of the additional Risk Level 2 or 3 requirements.

E. Prohibitions

39. All discharges are prohibited except for the storm water and non-storm water discharges specifically authorized by this General Permit or another NPDES permit. Non-storm water discharges include a wide variety of sources, including improper dumping, spills, or leakage from storage tanks or transfer areas. Non-storm water discharges may

contribute significant pollutant loads to receiving waters. Measures to control spills, leakage, and dumping, and to prevent illicit connections during construction must be addressed through structural as well as non-structural Best Management Practices (BMPs)[3]. The State Water Board recognizes, however, that certain non-storm water discharges may be necessary for the completion of construction.

40. This General Permit prohibits all discharges which contain a hazardous substance in excess of reportable quantities established in 40 C.F.R. §§ 117.3 and 302.4, unless a separate NPDES Permit has been issued to regulate those discharges.

41. This General Permit incorporates discharge prohibitions contained in water quality control plans, as implemented by the State Water Board and the nine Regional Water Boards.

42. Pursuant to the Ocean Plan, discharges to Areas of Special Biological Significance (ASBS) are prohibited unless covered by an exception that the State Water Board has approved.

43. This General Permit prohibits the discharge of any debris[4] from construction sites. Plastic and other trash materials can cause negative impacts to receiving water beneficial uses. The State Water Board encourages the use of more environmentally safe, biodegradable materials on construction sites to minimize the potential risk to water quality.

F. Training

44. In order to improve compliance with and to maintain consistent enforcement of this General Permit, all dischargers are required to appoint two positions - the Qualified SWPPP Developer (QSD) and the Qualified SWPPP Practitioner (QSP) - who must obtain appropriate training. Together with the key stakeholders, the State and Regional Water Boards are leading the development of this curriculum through a collaborative organization called The Construction General Permit (CGP) Training Team.

45. The Professional Engineers Act (Bus. & Prof. Code section 6700, et seq.) requires that all engineering work must be performed by a California licensed engineer.

[3] BMPs are scheduling of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants to waters of the United States. BMPs also include treatment requirements, operating procedures, and practice to control site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

[4] Litter, rubble, discarded refuse, and remains of destroyed inorganic anthropogenic waste.

G. Determining and Reducing Risk

46. The risk of accelerated erosion and sedimentation from wind and water depends on a number of factors, including proximity to receiving water bodies, climate, topography, and soil type.

47. This General Permit requires dischargers to assess the risk level of a site based on both sediment transport and receiving water risk. This General Permit contains requirements for Risk Levels 1, 2 and 3, and LUP Risk Type 1, 2, and 3 (Attachment A). Risk levels are established by determining two factors: first, calculating the site's sediment risk; and second, receiving water risk during periods of soil exposure (i.e. grading and site stabilization). Both factors are used to determine the site-specific Risk Level(s). LUPs can be determined to be Type 1 based on the flowchart in Attachment A.1.

48. Although this General Permit does not mandate specific setback distances, dischargers are encouraged to set back their construction activities from streams and wetlands whenever feasible to reduce the risk of impacting water quality (e.g., natural stream stability and habitat function). Because there is a reduced risk to receiving waters when setbacks are used, this General Permit gives credit to setbacks in the risk determination and post-construction storm water performance standards. The risk calculation and runoff reduction mechanisms in this General Permit are expected to facilitate compliance with any Regional Water Board and local agency setback requirements, and to encourage voluntary setbacks wherever practicable.

49. Rain events can occur at any time of the year in California. Therefore, a Rain Event Action Plan (REAP) is necessary for Risk Level 2 and 3 traditional construction projects (LUPs exempt) to ensure that active construction sites have adequate erosion and sediment controls implemented prior to the onset of a storm event, even if construction is planned only during the dry season.

50. Soil particles smaller than 0.02 millimeters (mm) (i.e., finer than medium silt) do not settle easily using conventional measures for sediment control (i.e., sediment basins). Given their long settling time, dislodging these soils results in a significant risk that fine particles will be released into surface waters and cause unacceptable downstream impacts. If operated correctly, an Active Treatment System (ATS[5]) can prevent or reduce the release of fine particles from construction sites.

[5] An ATS is a treatment system that employs chemical coagulation, chemical flocculation, or electro coagulation in order to reduce turbidity caused by fine suspended sediment.

Use of an ATS can effectively reduce a site's risk of impacting receiving waters.

51. Dischargers located in a watershed area where a Total Maximum Daily Load (TMDL) has been adopted or approved by the Regional Water Board or U.S. EPA may be required by a separate Regional Water Board action to implement additional BMPs, conduct additional monitoring activities, and/or comply with an applicable waste load allocation and implementation schedule. Such dischargers may also be required to obtain an individual Regional Water Board permit specific to the area.

H. Effluent Standards

52. The State Water Board convened a blue ribbon panel of storm water experts that submitted a report entitled, "The Feasibility of Numeric Effluent Limits Applicable to Discharges of Storm Water Associated with Municipal, Industrial and Construction Activities," dated June 19, 2006. The panel concluded that numeric limits or action levels are technically feasible to control construction storm water discharges, provided that certain conditions are considered. The panel also concluded that numeric effluent limitations (NELs) are feasible for discharges from construction sites that utilize an ATS. The State Water Board has incorporated the expert panel's suggestions into this General Permit, which includes numeric action levels (NALs) for pH and turbidity, and special numeric limits for ATS discharges.

Determining Compliance with Numeric Limitations

53. This General Permit sets a pH NAL of 6.5 to 8.5, and a turbidity NAL of 250 NTU. The purpose of the NAL and its associated monitoring requirement is to provide operational information regarding the performance of the measures used at the site to minimize the discharge of pollutants and to protect beneficial uses and receiving waters from the adverse effects of construction-related storm water discharges. An exceedance of a NAL does not constitute a violation of this General Permit.

54. This General Permit requires dischargers with NAL exceedances to immediately implement additional BMPs and revise their Storm Water Pollution Prevention Plans (SWPPPs) accordingly to either prevent pollutants and authorized non-storm water discharges from contaminating storm water, or to substantially reduce the pollutants to levels consistently below the NALs. NAL exceedances are reported in the State Water Boards SMARTS system, and the discharger is

required to provide an NAL Exceedance Report when requested by a Regional Water Board.

I. Receiving Water Limitations

55. This General Permit requires all enrolled dischargers to determine the receiving waters potentially affected by their discharges and to comply with all applicable water quality standards, including any more stringent standards applicable to a water body.

J. Sampling, Monitoring, Reporting and Record Keeping

56. Visual monitoring of storm water and non-storm water discharges is required for all sites subject to this General Permit.

57. Records of all visual monitoring inspections are required to remain on-site during the construction period and for a minimum of three years.

58. For all Risk Level 3/LUP Type 3 and Risk Level 2/LUP Type 2 sites, this General Permit requires effluent monitoring for pH and turbidity. Sampling, analysis and monitoring requirements for effluent monitoring for pH and turbidity are contained in this General Permit.

59. Risk Level 3 and LUP Type 3 sites with effluent that exceeds the Receiving Water Monitoring Triggers contained in this General Permit and with direct discharges to receiving water are required to conduct receiving water monitoring. An exceedance of a Receiving Water Monitoring Trigger does not constitute a violation of this General Permit.

60. This General Permit establishes a 5 year, 24 hour (expressed in inches of rainfall) as an exemptions to the receiving water monitoring requirements for Risk Level 3 and LUP Type 3 dischargers.

61. If run-on is caused by a forest fire or any other natural disaster, then receiving water monitoring triggers do not apply.

62. For Risk Level 3 and LUP Type 3 sites larger than 30 acres and with direct discharges to receiving waters, this General Permit requires bioassessment sampling before and after site completion to determine if significant degradation to the receiving water's biota has occurred. Bioassessment sampling guidelines are contained in this General Permit.

63. A summary and evaluation of the sampling and analysis results will be submitted in the Annual Reports.

64. This General Permit contains sampling, analysis and monitoring requirements for non-visible pollutants at all sites subject to this General Permit.

65. Compliance with the General Permit relies upon dischargers to electronically self-report any discharge violations and to comply with any Regional Water Board enforcement actions.

66. This General Permit requires that all dischargers maintain a paper or electronic copy of all required records for three years from the date generated or date submitted, whichever is last. These records must be available at the construction site until construction is completed. For LUPs, these documents may be retained in a crew member's vehicle and made available upon request.

K. Active Treatment System (ATS) Requirements

67. Active treatment systems add chemicals to facilitate flocculation, coagulation and filtration of suspended sediment particles. The uncontrolled release of these chemicals to the environment can negatively affect the beneficial uses of receiving waters and/or degrade water quality (e.g., acute and chronic toxicity). Additionally, the batch storage and treatment of storm water through an ATS' can potentially cause physical impacts on receiving waters if storage volume is inadequate or due to sudden releases of the ATS batches and improperly designed outfalls.

68. If designed, operated and maintained properly an ATS can achieve very high removal rates of suspended sediment (measured as turbidity), albeit at sometimes significantly higher costs than traditional erosion/sediment control practices. As a result, this General Permit establishes NELs consistent with the expected level of typical ATS performance.

69. This General Permit requires discharges of storm water associated with construction activity that undergo active treatment to comply with special operational and effluent limitations to ensure that these discharges do not adversely affect the beneficial uses of the receiving waters or cause degradation of their water quality.

70. For ATS discharges, this General Permit establishes technology-based NELs for turbidity.

71. This General Permit establishes a 10 year, 24 hour (expressed in inches of rainfall) Compliance Storm Event exemption from the technology-based numeric effluent limitations for ATS discharges. Exceedances of the ATS turbidity NEL constitutes a violation of this General Permit.

L. Post-Construction Requirements

72. This General Permit includes performance standards for post-construction that are consistent with State Water Board Resolution No. 2005-0006, "Resolution Adopting the Concept of Sustainability as a Core Value for State Water Board Programs and Directing Its Incorporation," and 2008-0030, "Requiring Sustainable Water Resources Management." The requirement for all construction sites to match pre-project hydrology will help ensure that the physical and biological integrity of aquatic ecosystems are sustained. This "runoff reduction" approach is analogous in principle to Low Impact Development (LID) and will serve to protect related watersheds and waterbodies from both hydrologic-based and pollution impacts associated with the post-construction landscape.

73. LUP projects are not subject to post-construction requirements due to the nature of their construction to return project sites to pre-construction conditions.

M. Storm Water Pollution Prevention Plan Requirements

74. This General Permit requires the development of a site-specific SWPPP. The SWPPP must include the information needed to demonstrate compliance with all requirements of this General Permit, and must be kept on the construction site and be available for review. The discharger shall ensure that a QSD develops the SWPPP.

75. To ensure proper site oversight, this General Permit requires a Qualified SWPPP Practitioner to oversee implementation of the BMPs required to comply with this General Permit.

N. Regional Water Board Authorities

76. Regional Water Boards are responsible for implementation and enforcement of this General Permit. A general approach to permitting is not always suitable for every construction site and environmental circumstances. Therefore, this General Permit recognizes that Regional Water Boards must have some flexibility and authority to alter, approve, exempt, or rescind permit authority granted under this

General Permit in order to protect the beneficial uses of our receiving waters and prevent degradation of water quality.

IT IS HEREBY ORDERED that all dischargers subject to this General Permit shall comply with the following conditions and requirements (including all conditions and requirements as set forth in Attachments A, B, C, D, E and F)[6]:

II. CONDITIONS FOR PERMIT COVERAGE

A. Linear Underground/Overhead Projects (LUPs)

1. Linear Underground/Overhead Projects (LUPs) include, but are not limited to, any conveyance, pipe, or pipeline for the transportation of any gaseous, liquid (including water and wastewater for domestic municipal services), liquescent, or slurry substance; any cable line or wire for the transmission of electrical energy; any cable line or wire for communications (e.g. telephone, telegraph, radio or television messages); and associated ancillary facilities. Construction activities associated with LUPs include, but are not limited to, (a) those activities necessary for the installation of underground and overhead linear facilities (e.g., conduits, substructures, pipelines, towers, poles, cables, wires, connectors, switching, regulating and transforming equipment, and associated ancillary facilities); and include, but are not limited to, (b) underground utility mark-out, potholing, concrete and asphalt cutting and removal, trenching, excavation, boring and drilling, access road and pole/tower pad and cable/wire pull station, substation construction, substructure installation, construction of tower footings and/or foundations, pole and tower installations, pipeline installations, welding, concrete and/ or pavement repair or replacement, and stockpile/borrow locations.

2. The Legally Responsible Person is responsible for obtaining coverage under the General Permit where the construction of pipelines, utility lines, fiber-optic cables, or other linear underground/overhead projects will occur across several properties unless the LUP construction activities are covered under another construction storm water permit.

3. Only LUPs shall comply with the conditions and requirements in Attachment A, A.1 & A.2 of this Order. The balance of this Order is not applicable to LUPs except as indicated in Attachment A.

[6] These attachments are part of the General Permit itself and are not separate documents that are capable of being updated independently by the State Water Board.

B. Obtaining Permit Coverage Traditional Construction Sites

1. The Legally Responsible Person (LRP) (see Special Provisions, Electronic Signature and Certification Requirements, Section IV.I.1) must obtain coverage under this General Permit.

2. To obtain coverage, the LRP must electronically file Permit Registration Documents (PRDs) prior to the commencement of construction activity. Failure to obtain coverage under this General Permit for storm water discharges to waters of the United States is a violation of the CWA and the California Water Code.

3. PRDs shall consist of:

   a. Notice of Intent (NOI)
   b. Risk Assessment (Section VIII)
   c. Site Map
   d. Storm Water Pollution Prevention Plan (Section XIV)
   e. Annual Fee
   f. Signed Certification Statement

   Any information provided to the Regional Water Board shall comply with the Homeland Security Act and any other federal law that concerns security in the United States; any information that does not comply should not be submitted.

   Attachment B contains additional PRD information. Dischargers must electronically file the PRDs, and mail the appropriate annual fee to the State Water Board.

4. This permit is effective on July 1, 2010.

   a. **Dischargers Obtaining Coverage On or After July 1, 2010:** All dischargers requiring coverage on or after July 1, 2010, shall electronically file their PRDs prior to the commencement of construction activities, and mail the appropriate annual fee no later than seven days prior to the commencement of construction activities. Permit coverage shall not commence until the PRDs and the annual fee are received by the State Water Board, and a WDID number is assigned and sent by SMARTS.

   b. **Dischargers Covered Under 99-08-DWQ and 2003-0007-DWQ:** Existing dischargers subject to State Water Board Order No. 99-08-DWQ (existing dischargers) will continue coverage under 99-08-DWQ until July 1, 2010. After July 1, 2010, all NOIs subject to State Water Board Order No. 99-08-DWQ will be terminated.

Existing dischargers shall electronically file their PRDs no later than July 1, 2010. If an existing discharger's site acreage subject to the annual fee has changed, it shall mail a revised annual fee no less than seven days after receiving the revised annual fee notification, **or else lose permit coverage**. All existing dischargers shall be exempt from the risk determination requirements in Section VIII of this General Permit until two years after permit adoption. All existing dischargers are therefore subject to Risk Level 1 requirements regardless of their site's sediment and receiving water risks. However, a Regional Board retains the authority to require an existing discharger to comply with the Section VIII risk determination requirements.

5. The discharger is only considered covered by this General Permit upon receipt of a Waste Discharger Identification (WDID) number assigned and sent by the State Water Board Storm water Multi-Application and Report Tracking System (SMARTS). In order to demonstrate compliance with this General Permit, the discharger must obtain a WDID number and must present documentation of a valid WDID upon demand.

6. During the period this permit is subject to review by the U.S. EPA, the prior permit (State Water Board Order No. 99-08-DWQ) remains in effect. Existing dischargers under the prior permit will continue to have coverage under State Water Board Order No. 99-08-DWQ until this General Permit takes effect on July 1, 2010. Dischargers who complete their projects and electronically file an NOT prior to July 1, 2010, are not required to obtain coverage under this General Permit.

7. Small Construction Rainfall Erosivity Waiver

   EPA's Small Construction Erosivity Waiver applies to sites between one and five acres demonstrating that there are no adverse water quality impacts.

   Dischargers eligible for a Rainfall Erosivity Waiver based on low erosivity potential shall complete the electronic Notice of Intent (NOI) and Sediment Risk form through the State Water Board's SMARTS system, certifying that the construction activity will take place during a period when the value of the rainfall erosivity factor is less than five. Where the LRP changes or another LRP is added during construction, the new LRP must also submit a waiver certification through the SMARTS system.

   If a small construction site continues beyond the projected completion date given on the waiver certification, the LRP shall recalculate the

rainfall erosivity factor for the new project duration and submit this information through the SMARTS system. If the new R factor is below five (5), the discharger shall update through SMARTS all applicable information on the waiver certification and retain a copy of the revised waiver onsite. The LRP shall submit the new waiver certification 30 days prior to the projected completion date listed on the original waiver form to assure exemption from permitting requirements is uninterrupted. If the new R factor is five (5) or above, the LRP shall be required to apply for coverage under this Order.

8. In the case of a public emergency that requires immediate construction activities, a discharger shall submit a brief description of the emergency construction activity within five days of the onset of construction, and then shall submit all PRDs within thirty days.

C. Revising Permit Coverage for Change of Acreage or New Ownership

1. The discharger may reduce or increase the total acreage covered under this General Permit when a portion of the site is complete and/or conditions for termination of coverage have been met (See Section II.D Conditions for Termination of Coverage); when ownership of a portion of the site is sold to a different entity; or when new acreage, subject to this General Permit, is added to the site.

2. Within 30 days of a reduction or increase in total disturbed acreage, the discharger shall electronically file revisions to the PRDs that include:

   a. A revised NOI indicating the new project size;

   b. A revised site map showing the acreage of the site completed, acreage currently under construction, acreage sold/transferred or added, and acreage currently stabilized in accordance with the Conditions for Termination of Coverage in Section II.D below.

   c. SWPPP revisions, as appropriate; and

   d. Certification that any new landowners have been notified of applicable requirements to obtain General Permit coverage. The certification shall include the name, address, telephone number, and e-mail address of the new landowner.

   e. If the project acreage has increased, dischargers shall mail payment of revised annual fees within 14 days of receiving the revised annual fee notification.

3. The discharger shall continue coverage under the General Permit for any parcel that has not achieved "Final Stabilization" as defined in Section II.D.

4. When an LRP with active General Permit coverage transfers its LRP status to another person or entity that qualifies as an LRP, the existing LRP shall inform the new LRP of the General Permit's requirements. In order for the new LRP to continue the construction activity on its parcel of property, the new LRP, or the new LRP's approved signatory, must submit PRDs in accordance with this General Permit's requirements.

D. Conditions for Termination of Coverage

1. Within 90 days of when construction is complete or ownership has been transferred, the discharger shall electronically file a Notice of Termination (NOT), a final site map, and photos through the State Water Boards SMARTS system. Filing a NOT certifies that all General Permit requirements have been met. The Regional Water Board will consider a construction site complete only when all portions of the site have been transferred to a new owner, or all of the following conditions have been met:

   a. For purposes of "final stabilization," the site will not pose any additional sediment discharge risk than it did prior to the commencement of construction activity;

   b. There is no potential for construction-related storm water pollutants to be discharged into site runoff;

   c. Final stabilization has been reached;

   d. Construction materials and wastes have been disposed of properly;

   e. Compliance with the Post-Construction Standards in Section XIII of this General Permit has been demonstrated;

   f. Post-construction storm water management measures have been installed and a long-term maintenance plan[7] has been established; and

   g. All construction-related equipment, materials and any temporary BMPs no longer needed are removed from the site.

[7] For the purposes of this requirement a long-term maintenance plan will be designed for a minimum of five years, and will describe the procedures to ensure that the post-construction storm water management measures are adequately maintained.

2. The discharger shall certify that final stabilization conditions are satisfied in their NOT. Failure to certify shall result in continuation of permit coverage and annual billing.

3. The NOT must demonstrate through photos, RUSLE or RUSLE2, or results of testing and analysis that the site meets all of the conditions above (Section II.D.1) and the final stabilization condition (Section II.D.1.a) is attained by one of the following methods:

   a. "70% final cover method," no computational proof required

      OR:

   b. "RUSLE or RUSLE2 method," computational proof required

      OR:

   c. "Custom method", the discharger shall demonstrate in some other manner than a or b, above, that the site complies with the "final stabilization" requirement in Section II.D.1.a.

III. DISCHARGE PROHIBITIONS

A. Dischargers shall not violate any discharge prohibitions contained in applicable Basin Plans or statewide water quality control plans. Waste discharges to Areas of Special Biological Significance (ASBS) are prohibited by the California Ocean Plan, unless granted an exception issued by the State Water Board.

B. All discharges are prohibited except for the storm water and non-storm water discharges specifically authorized by this General Permit or another NPDES permit.

C. Authorized non-storm water discharges may include those from de-chlorinated potable water sources such as: fire hydrant flushing, irrigation of vegetative erosion control measures, pipe flushing and testing, water to control dust, uncontaminated ground water from dewatering, and other discharges not subject to a separate general NPDES permit adopted by a Regional Water Board. The discharge of non-storm water is authorized under the following conditions:

1. The discharge does not cause or contribute to a violation of any water quality standard;

2. The discharge does not violate any other provision of this General Permit;

3. The discharge is not prohibited by the applicable Basin Plan;

4. The discharger has included and implemented specific BMPs required by this General Permit to prevent or reduce the contact of the non-storm water discharge with construction materials or equipment.

5. The discharge does not contain toxic constituents in toxic amounts or (other) significant quantities of pollutants;

6. The discharge is monitored and meets the applicable NALs; and

7. The discharger reports the sampling information in the Annual Report.

If any of the above conditions are not satisfied, the discharge is not authorized by this General Permit. The discharger shall notify the Regional Water Board of any anticipated non-storm water discharges not already authorized by this General Permit or another NPDES permit, to determine whether a separate NPDES permit is necessary.

D. Debris resulting from construction activities are prohibited from being discharged from construction sites.

E. When soil contamination is found or suspected and a responsible party is not identified, or the responsible party fails to promptly take the appropriate action, the discharger shall have those soils sampled and tested to ensure proper handling and public safety measures are implemented. The discharger shall notify the appropriate local, State, and federal agency(ies) when contaminated soil is found at a construction site, and will notify the appropriate Regional Water Board.

IV. SPECIAL PROVISIONS

A. Duty to Comply

1. The discharger shall comply with all of the conditions of this General Permit. Any permit noncompliance constitutes a violation of the Clean Water Act (CWA) and the Porter-Cologne Water Quality Control Act and is grounds for enforcement action and/or removal from General Permit coverage.

2. The discharger shall comply with effluent standards or prohibitions established under Section 307(a) of the CWA for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions, even if this General Permit has not yet been modified to incorporate the requirement.

B. General Permit Actions

1. This General Permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the discharger for a General Permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not annul any General Permit condition.

2. If any toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is promulgated under Section 307(a) of the CWA for a toxic pollutant which is present in the discharge and that standard or prohibition is more stringent than any limitation on the pollutant in this General Permit, this General Permit shall be modified or revoked and reissued to conform to the toxic effluent standard or prohibition and the dischargers so notified.

C. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a discharger in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this General Permit.

D. Duty to Mitigate

The discharger shall take all responsible steps to minimize or prevent any discharge in violation of this General Permit, which has a reasonable likelihood of adversely affecting human health or the environment.

E. Proper Operation and Maintenance

The discharger shall at all times properly operate and maintain any facilities and systems of treatment and control (and related appurtenances) which are installed or used by the discharger to achieve compliance with the conditions of this General Permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. Proper operation and maintenance may require the operation of backup or auxiliary facilities or similar systems installed by a discharger when necessary to achieve compliance with the conditions of this General Permit.

F. Property Rights

This General Permit does not convey any property rights of any sort or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor does it authorize any infringement of Federal, State, or local laws or regulations.

G. Duty to Maintain Records and Provide Information

1. The discharger shall maintain a paper or electronic copy of all required records, including a copy of this General Permit, for three years from the date generated or date submitted, whichever is last. These records shall be available at the construction site until construction is completed.

2. The discharger shall furnish the Regional Water Board, State Water Board, or U.S. EPA, within a reasonable time, any requested information to determine compliance with this General Permit. The discharger shall also furnish, upon request, copies of records that are required to be kept by this General Permit.

H. Inspection and Entry

The discharger shall allow the Regional Water Board, State Water Board, U.S. EPA, and/or, in the case of construction sites which discharge through a municipal separate storm sewer, an authorized representative of the municipal operator of the separate storm sewer system receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the discharger's premises at reasonable times where a regulated construction activity is being conducted or where records must be kept under the conditions of this General Permit;

2. Access and copy at reasonable times any records that must be kept under the conditions of this General Permit;

3. Inspect at reasonable times the complete construction site, including any off-site staging areas or material storage areas, and the erosion/sediment controls; and

4. Sample or monitor at reasonable times for the purpose of ensuring General Permit compliance.

I. Electronic Signature and Certification Requirements

1. All Permit Registration Documents (PRDs) and Notices of Termination (NOTs) shall be electronically signed, certified, and submitted via SMARTS to the State Water Board. Either the Legally Responsible Person (LRP), as defined in Appendix 5 – Glossary, or a person legally authorized to sign and certify PRDs and NOTs on behalf of the LRP (the LRP's Approved Signatory, as defined in Appendix 5 - Glossary) must submit all information electronically via SMARTS.

2. Changes to Authorization. If an Approved Signatory's authorization is no longer accurate, a new authorization satisfying the requirements of paragraph (a) of this section must be submitted via SMARTS prior to or together with any reports, information or applications to be signed by an Approved Signatory.

3. All Annual Reports, or other information required by the General Permit (other than PRDs and NOTs) or requested by the Regional Water Board, State Water Board, U.S. EPA, or local storm water management agency shall be certified and submitted by the LRP or the LRP's Approved Signatory.

J. Certification

Any person signing documents under Section IV.I above, shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

K. Anticipated Noncompliance

The discharger shall give advance notice to the Regional Water Board and local storm water management agency of any planned changes in the construction activity, which may result in noncompliance with General Permit requirements.

L. Bypass

Bypass[8] is prohibited. The Regional Water Board may take enforcement action against the discharger for bypass unless:

1. Bypass was unavoidable to prevent loss of life, personal injury or severe property damage;[9]

2. There were no feasible alternatives to bypass, such as the use of auxiliary treatment facilities, retention of untreated waste, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that could occur during normal periods of equipment downtime or preventative maintenance;

3. The discharger submitted a notice at least ten days in advance of the need for a bypass to the Regional Water Board; or

4. The discharger may allow a bypass to occur that does not cause effluent limitations to be exceeded, but only if it is for essential maintenance to assure efficient operation. In such a case, the above bypass conditions are not applicable. The discharger shall submit notice of an unanticipated bypass as required.

M. Upset

1. A discharger that wishes to establish the affirmative defense of an upset[10] in an action brought for noncompliance shall demonstrate,

[8] The intentional diversion of waste streams from any portion of a treatment facility

[9] Severe property damage means substantial physical damage to property, damage to the treatment facilities that causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

[10] An exceptional incident in which there is unintentional and temporary noncompliance the technology based numeric effluent limitations because of factors beyond the reasonable control of the discharger. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventative maintenance, or careless or improper operation.

through properly signed, contemporaneous operating logs, or other relevant evidence that:

a. An upset occurred and that the discharger can identify the cause(s) of the upset

b. The treatment facility was being properly operated by the time of the upset

c. The discharger submitted notice of the upset as required; and

d. The discharger complied with any remedial measures required

2. No determination made before an action of noncompliance occurs, such as during administrative review of claims that noncompliance was caused by an upset, is final administrative action subject to judicial review.

3. In any enforcement proceeding, the discharger seeking to establish the occurrence of an upset has the burden of proof

N. Penalties for Falsification of Reports

Section 309(c)(4) of the CWA provides that any person who knowingly makes any false material statement, representation, or certification in any record or other document submitted or required to be maintained under this General Permit, including reports of compliance or noncompliance shall upon conviction, be punished by a fine of not more than $10,000 or by imprisonment for not more than two years or by both.

O. Oil and Hazardous Substance Liability

Nothing in this General Permit shall be construed to preclude the institution of any legal action or relieve the discharger from any responsibilities, liabilities, or penalties to which the discharger is or may be subject to under Section 311 of the CWA.

P. Severability

The provisions of this General Permit are severable; and, if any provision of this General Permit or the application of any provision of this General Permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this General Permit shall not be affected thereby.

Q. Reopener Clause

This General Permit may be modified, revoked and reissued, or terminated for cause due to promulgation of amended regulations, receipt of U.S. EPA guidance concerning regulated activities, judicial decision, or in accordance with 40 Code of Federal Regulations (CFR) 122.62, 122.63, 122.64, and 124.5.

R. Penalties for Violations of Permit Conditions

1. Section 309 of the CWA provides significant penalties for any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the CWA or any permit condition or limitation implementing any such section in a permit issued under Section 402. Any person who violates any permit condition of this General Permit is subject to a civil penalty not to exceed $37,500[11] per calendar day of such violation, as well as any other appropriate sanction provided by Section 309 of the CWA.

2. The Porter-Cologne Water Quality Control Act also provides for civil and criminal penalties, which in some cases are greater than those under the CWA.

S. Transfers

This General Permit is not transferable.

T. Continuation of Expired Permit

This General Permit continues in force and effect until a new General Permit is issued or the SWRCB rescinds this General Permit. Only those dischargers authorized to discharge under the expiring General Permit are covered by the continued General Permit.

[11] May be further adjusted in accordance with the Federal Civil Penalties Inflation Adjustment Act.

V. EFFLUENT STANDARDS & RECEIVING WATER MONITORING

A. Narrative Effluent Limitations

1. Storm water discharges and authorized non-storm water discharges regulated by this General Permit shall not contain a hazardous substance equal to or in excess of reportable quantities established in 40 C.F.R. §§ 117.3 and 302.4, unless a separate NPDES Permit has been issued to regulate those discharges.

2. Dischargers shall minimize or prevent pollutants in storm water discharges and authorized non-storm water discharges through the use of controls, structures, and management practices that achieve BAT for toxic and non-conventional pollutants and BCT for conventional pollutants.

Table 1- Numeric Action Levels, Test Methods, Detection Limits, and Reporting Units

Parameter	Test Method	Discharge Type	Min. Detection Limit	Units	Numeric Action Level
pH	Field test with calibrated portable instrument	Risk Level 2	0.2	pH units	lower NAL = 6.5 upper NAL = 8.5
		Risk Level 3			lower NAL = 6.5 upper NAL = 8.5
Turbidity	EPA 0180.1 and/or field test with calibrated portable instrument	Risk Level 2	1	NTU	250 NTU
		Risk Level 3			250 NTU

B. Numeric Action Levels (NALs)

1. For Risk Level 2 and 3 dischargers, the lower storm event average NAL for pH is 6.5 pH units and the upper storm event average NAL for

pH is 8.5 pH units. The discharger shall take actions as described below if the discharge is outside of this range of pH values.

2. For Risk Level 2 and 3 dischargers, the NAL storm event daily average for turbidity is 250 NTU. The discharger shall take actions as described below if the discharge is outside of this range of turbidity values.

3. Whenever the results from a storm event daily average indicate that the discharge is below the lower NAL for pH, exceeds the upper NAL for pH, or exceeds the turbidity NAL (as listed in Table 1), the discharger shall conduct a construction site and run-on evaluation to determine whether pollutant source(s) associated with the site's construction activity may have caused or contributed to the NAL exceedance and shall immediately implement corrective actions if they are needed.

4. The site evaluation shall be documented in the SWPPP and specifically address whether the source(s) of the pollutants causing the exceedance of the NAL:

   a. Are related to the construction activities and whether additional BMPs are required to (1) meet BAT/BCT requirements; (2) reduce or prevent pollutants in storm water discharges from causing exceedances of receiving water objectives; and (3) determine what corrective action(s) were taken or will be taken and with a description of the schedule for completion.

      AND/OR:

   b. Are related to the run-on associated with the construction site location and whether additional BMPs measures are required to (1) meet BAT/BCT requirements; (2) reduce or prevent pollutants in storm water discharges from causing exceedances of receiving water objectives; and (3) what corrective action(s) were taken or will be taken with a description of the schedule for completion.

C. Receiving Water Monitoring Triggers

1. The receiving water monitoring triggers for Risk Level 3 dischargers with direct discharges to surface waters are triggered when the daily average effluent pH values during any site phase when there is a high risk of pH discharge[12] fall outside of the range of 6.0 and 9.0 pH units, or when the daily average effluent turbidity exceeds 500 NTU.

2. Risk Level 3 dischargers with with direct discharges to surface waters shall conduct receiving water monitoring whenever their effluent monitoring results exceed the receiving water monitoring triggers. If the pH trigger is exceeded, the receiving water shall be monitored for pH for the duration of coverage under this General Permit. If the turbidity trigger is exceeded, the receiving water shall be monitored for turbidity and SSC for the duration of coverage under this general permit.

3. Risk Level 3 dischargers with direct discharges to surfaces waters shall initiate receiving water monitoring when the triggers are exceeded unless the storm event causing the exceedance is determined after the fact to equal to or greater than the 5-year 24-hour storm (expressed in inches of rainfall) as determined by using these maps:

   http://www.wrcc.dri.edu/pcpnfreq/nca5y24.gif
   http://www.wrcc.dri.edu/pcpnfreq/sca5y24.gif

   Verification of the 5-year 24-hour storm event shall be done by reporting on-site rain gauge readings as well as nearby governmental rain gauge readings.

4. If run-on is caused by a forest fire or any other natural disaster, then receiving water monitoring triggers do not apply.

[12] A period of high risk of pH discharge is defined as a project's complete utilities phase, complete vertical build phase, and any portion of any phase where significant amounts of materials are placed directly on the land at the site in a manner that could result in significant alterations of the background pH of the discharges.

VI. RECEIVING WATER LIMITATIONS

A. The discharger shall ensure that storm water discharges and authorized non-storm water discharges to any surface or ground water will not adversely affect human health or the environment.

B. The discharger shall ensure that storm water discharges and authorized non-storm water discharges will not contain pollutants in quantities that threaten to cause pollution or a public nuisance.

C. The discharger shall ensure that storm water discharges and authorized non-storm water discharges will not contain pollutants that cause or contribute to an exceedance of any applicable water quality objectives or water quality standards (collectively, WQS) contained in a Statewide Water Quality Control Plan, the California Toxics Rule, the National Toxics Rule, or the applicable Regional Water Board's Water Quality Control Plan (Basin Plan).

D. Dischargers located within the watershed of a CWA § 303(d) impaired water body, for which a TMDL has been approved by the U.S. EPA, shall comply with the approved TMDL if it identifies "construction activity" or land disturbance as a source of the pollution.

VII. TRAINING QUALIFICATIONS AND CERTIFICATION REQUIREMENTS

A. General

The discharger shall ensure that all persons responsible for implementing requirements of this General Permit shall be appropriately trained in accordance with this Section. Training should be both formal and informal, occur on an ongoing basis, and should include training offered by recognized governmental agencies or professional organizations. Those responsible for preparing and amending SWPPPs shall comply with the requirements in this Section VII.

The discharger shall provide documentation of all training for persons responsible for implementing the requirements of this General Permit in the Annual Reports.

B. SWPPP Certification Requirements

1. **Qualified SWPPP Developer:** The discharger shall ensure that SWPPPs are written, amended and certified by a Qualified SWPPP Developer (QSD). A QSD shall have one of the following registrations or certifications, and appropriate experience, as required for:

   a. A California registered professional civil engineer;

   b. A California registered professional geologist or engineering geologist;

   c. A California registered landscape architect;

   d. A professional hydrologist registered through the American Institute of Hydrology;

   e. A Certified Professional in Erosion and Sediment Control (CPESC) ™ registered through Enviro Cert International, Inc.;

   f. A Certified Professional in Storm Water Quality (CPSWQ) ™ registered through Enviro Cert International, Inc.; or

   g. A professional in erosion and sediment control registered through the National Institute for Certification in Engineering Technologies (NICET).

Effective two years after the adoption date of this General Permit, a QSD shall have attended a State Water Board-sponsored or approved QSD training course.

2. The discharger shall list the name and telephone number of the currently designated Qualified SWPPP Developer(s) in the SWPPP.

3. **Qualified SWPPP Practitioner:** The discharger shall ensure that all BMPs required by this General Permit are implemented by a Qualified SWPPP Practitioner (QSP). A QSP is a person responsible for non-storm water and storm water visual observations, sampling and analysis. Effective two years from the date of adoption of this General Permit, a QSP shall be either a QSD or have one of the following certifications:

   a. A certified erosion, sediment and storm water inspector registered through Enviro Cert International, Inc.; or

   b. A certified inspector of sediment and erosion control registered through Certified Inspector of Sediment and Erosion Control, Inc.

   Effective two years after the adoption date of this General Permit, a QSP shall have attended a State Water Board-sponsored or approved QSP training course.

4. The LRP shall list in the SWPPP, the name of any Approved Signatory, and provide a copy of the written agreement or other mechanism that provides this authority from the LRP in the SWPPP.

5. The discharger shall include, in the SWPPP, a list of names of all contractors, subcontractors, and individuals who will be directed by the Qualified SWPPP Practitioner. This list shall include telephone numbers and work addresses. Specific areas of responsibility of each subcontractor and emergency contact numbers shall also be included.

6. The discharger shall ensure that the SWPPP and each amendment will be signed by the Qualified SWPPP Developer. The discharger shall include a listing of the date of initial preparation and the date of each amendment in the SWPPP.

VIII. RISK DETERMINATION

The discharger shall calculate the site's sediment risk and receiving water risk during periods of soil exposure (i.e. grading and site stabilization) and use the calculated risks to determine a Risk Level(s) using the methodology in

Appendix 1. For any site that spans two or more planning watersheds,[13] the discharger shall calculate a separate Risk Level for each planning watershed. The discharger shall notify the State Water Board of the site's Risk Level determination(s) and shall include this determination as a part of submitting the PRDs. If a discharger ends up with more than one Risk Level determination, the Regional Water Board may choose to break the project into separate levels of implementation.

IX. RISK LEVEL 1 REQUIREMENTS

Risk Level 1 Dischargers shall comply with the requirements included in Attachment C of this General Permit.

X. RISK LEVEL 2 REQUIREMENTS

Risk Level 2 Dischargers shall comply with the requirements included in Attachment D of this General Permit.

XI. RISK LEVEL 3 REQUIREMENTS

Risk Level 3 Dischargers shall comply with the requirements included in Attachment E of this General Permit.

XII. ACTIVE TREATMENT SYSTEMS (ATS)

Dischargers choosing to implement an ATS on their site shall comply with all of the requirements in Attachment F of this General Permit.

[13] Planning watershed: defined by the Calwater Watershed documents as a watershed that ranges in size from approximately 3,000 to 10,000 acres http://cain.ice.ucdavis.edu/calwater/calwfaq.html, http://gis.ca.gov/catalog/BrowseRecord.epl?id=22175 .

XIII. POST-CONSTRUCTION STANDARDS

A. All dischargers shall comply with the following runoff reduction requirements unless they are located within an area subject to post-construction standards of an active Phase I or II municipal separate storm sewer system (MS4) permit that has an approved Storm Water Management Plan.

1. This provision shall take effect three years from the adoption date of this permit, or later at the discretion of the Executive Officer of the Regional Board.

2. The discharger shall demonstrate compliance with the requirements of this section by submitting with their NOI a map and worksheets in accordance with the instructions in Appendix 2. The discharger shall use non-structural controls unless the discharger demonstrates that non-structural controls are infeasible or that structural controls will produce greater reduction in water quality impacts.

3. The discharger shall, through the use of non-structural and structural measures as described in Appendix 2, replicate the pre-project water balance (for this permit, defined as the volume of rainfall that ends up as runoff) for the smallest storms up to the 85th percentile storm event (or the smallest storm event that generates runoff, whichever is larger). Dischargers shall inform Regional Water Board staff at least 30 days prior to the use of any structural control measure used to comply with this requirement. Volume that cannot be addressed using non-structural practices shall be captured in structural practices and approved by the Regional Water Board. When seeking Regional Board approval for the use of structural practices, dischargers shall document the infeasibility of using non-structural practices on the project site, or document that there will be fewer water quality impacts through the use of structural practices.

4. For sites whose disturbed area exceeds two acres, the discharger shall preserve the pre-construction drainage density (miles of stream length per square mile of drainage area) for all drainage areas within the area serving a first order stream[14] or larger stream and ensure that post-project time of runoff concentration is equal or greater than pre-project time of concentration.

[14] A first order stream is defined as a stream with no tributaries.

B. All dischargers shall implement BMPs to reduce pollutants in storm water discharges that are reasonably foreseeable after all construction phases have been completed at the site (Post-construction BMPs).

XIV. SWPPP REQUIREMENTS

A. The discharger shall ensure that the Storm Water Pollution Prevention Plans (SWPPPs) for all traditional project sites are developed and amended or revised by a QSD. The SWPPP shall be designed to address the following objectives:

1. All pollutants and their sources, including sources of sediment associated with construction, construction site erosion and all other activities associated with construction activity are controlled;

2. Where not otherwise required to be under a Regional Water Board permit, all non-storm water discharges are identified and either eliminated, controlled, or treated;

3. Site BMPs are effective and result in the reduction or elimination of pollutants in storm water discharges and authorized non-storm water discharges from construction activity to the BAT/BCT standard;

4. Calculations and design details as well as BMP controls for site run-on are complete and correct, and

5. Stabilization BMPs installed to reduce or eliminate pollutants after construction are completed.

B. To demonstrate compliance with requirements of this General Permit, the QSD shall include information in the SWPPP that supports the conclusions, selections, use, and maintenance of BMPs.

C. The discharger shall make the SWPPP available at the construction site during working hours while construction is occurring and shall be made available upon request by a State or Municipal inspector. When the original SWPPP is retained by a crewmember in a construction vehicle and is not currently at the construction site, current copies of the BMPs and map/drawing will be left with the field crew and the original SWPPP shall be made available via a request by radio/telephone.

XV. REGIONAL WATER BOARD AUTHORITIES

A. In the case where the Regional Water Board does not agree with the discharger's self-reported risk level (e.g., they determine themselves to be a Level 1 Risk when they are actually a Level 2 Risk site), Regional Water Boards may either direct the discharger to reevaluate the Risk Level(s) for their site or terminate coverage under this General Permit.

B. Regional Water Boards may terminate coverage under this General Permit for dischargers who fail to comply with its requirements or where they determine that an individual NPDES permit is appropriate.

C. Regional Water Boards may require dischargers to submit a Report of Waste Discharge / NPDES permit application for Regional Water Board consideration of individual requirements.

D. Regional Water Boards may require additional Monitoring and Reporting Program Requirements, including sampling and analysis of discharges to sediment-impaired water bodies.

E. Regional Water Boards may require dischargers to retain records for more than the three years required by this General Permit.

XVI. ANNUAL REPORTING REQUIREMENTS

A. All dischargers shall prepare and electronically submit an Annual Report no later than September 1 of each year.

B. The discharger shall certify each Annual Report in accordance with the Special Provisions.

C. The discharger shall retain an electronic or paper copy of each Annual Report for a minimum of three years after the date the annual report is filed.

D. The discharger shall include storm water monitoring information in the Annual Report consisting of:

1. a summary and evaluation of all sampling and analysis results, including copies of laboratory reports;

2. the analytical method(s), method reporting unit(s), and method detection limit(s) of each analytical parameter (analytical results that are less than the method detection limit shall be reported as "less than the method detection limit");

3. a summary of all corrective actions taken during the compliance year;

4. identification of any compliance activities or corrective actions that were not implemented;

5. a summary of all violations of the General Permit;

6. the names of individual(s) who performed the facility inspections, sampling, visual observation (inspections), and/or measurements;

7. the date, place, time of facility inspections, sampling, visual observation (inspections), and/or measurements, including precipitation (rain gauge); and

8. the visual observation and sample collection exception records and reports specified in Attachments C, D, and E.

E. The discharger shall provide training information in the Annual Report consisting of:

1. documentation of all training for individuals responsible for all activities associated with compliance with this General Permit;

2. documentation of all training for individuals responsible for BMP installation, inspection, maintenance, and repair; and

3. documentation of all training for individuals responsible for overseeing, revising, and amending the SWPPP.

ATTACHMENT A
Linear Underground/ Overhead Requirements

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All Linear Underground/Overhead project dischargers who submit permit registration documents (PRDs) indicating their intention to be regulated under the provisions of this General Permit shall comply with the following:

A. DEFINITION OF LINEAR UNDERGROUND/OVERHEAD PROJECTS

1. Linear Underground/Overhead Projects (LUPs) include, but are not limited to, any conveyance, pipe, or pipeline for the transportation of any gaseous, liquid (including water and wastewater for domestic municipal services), liquiescent, or slurry substance; any cable line or wire for the transmission of electrical energy; any cable line or wire for communications (e.g., telephone, telegraph, radio, or television messages); and associated ancillary facilities. Construction activities associated with LUPs include, but are not limited to, (a) those activities necessary for the installation of underground and overhead linear facilities (e.g., conduits, substructures, pipelines, towers, poles, cables, wires, connectors, switching, regulating and transforming equipment, and associated ancillary facilities); and include, but are not limited to, (b) underground utility mark-out, potholing, concrete and asphalt cutting and removal, trenching, excavation, boring and drilling, access road and pole/tower pad and cable/wire pull station, substation construction, substructure installation, construction of tower footings and/or foundations, pole and tower installations, pipeline installations, welding, concrete and/ or pavement repair or replacement, and stockpile/borrow locations.

2. LUP evaluation shall consist of two tasks:

a. Confirm that the project or project section(s) qualifies as an LUP. The State Water Board website contains a project determination guidance flowchart. http://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.shtml

b. Identify which Type(s) (1, 2 or 3 described in Section I below) are applicable to the project or project sections based on project sediment and receiving water risk. (See Attachment A.1)

3. A Legally Responsible Person (LRP) for a Linear Underground/Overhead project is required to obtain CGP coverage under one or more permit registration document (PRD) electronic submittals to the State Water Board's Storm Water Multi-Application and Report Tracking (SMARTs) system. Attachment A.1 contains a flow chart to be used when determining if a linear project qualifies for coverage and to determine LUP Types. Since a LUP may be constructed within both developed and undeveloped locations and portions of LUPs may be constructed by different contractors, LUPs may be broken into logical permit sections. Sections may be determined based on portions of a project conducted by one contractor. Other situations may also occur, such as the time period in which the sections of a project will be constructed (e.g. project phases), for which separate permit coverage is possible. For projects that are broken into separate sections, a description of how each section relates to the overall project and the definition of the boundaries between sections shall be clearly stated.

4. Where construction activities transverse or enter into different Regional Water Board jurisdictions, LRPs shall obtain permit coverage for each Regional Water Board area involved prior to the commencement of construction activities.

5. Small Construction Rainfall Erosivity Waiver

EPA's Small Construction Erosivity Waiver applies to sites between one and five acres demonstrating that there are no adverse water quality impacts.

Dischargers eligible for a Rainfall Erosivity Waiver based on low erosivity potential shall complete the electronic Notice of Intent (NOI) and Sediment Risk form through the State Water Board's SMARTS system, certifying that the construction activity will take place during a period when the value of the rainfall erosivity factor is less than five. Where the LRP changes or another LRP is added during construction, the new LRP must also submit a waiver certification through the SMARTS system.

If a small linear construction site continues beyond the projected completion date given on the waiver certification, the LRP shall recalculate the rainfall erosivity factor for the new project duration and submit this information through the SMARTS system. If the new R factor is below five (5), the discharger shall update through SMARTS all applicable information on the waiver certification and retain a copy of the revised waiver onsite. The LRP shall submit the new waiver certification 30 days prior to the projected completion date listed on the original waiver form to assure exemption from permitting requirements is uninterrupted. If the new R factor is five (5) or above, the LRP shall be required to apply for coverage under this Order.

B. LINEAR PROJECT PERMIT REGISTRATION DOCUMENTS (PRDs)

Any information provided to the Regional Water Board shall comply with the Homeland Security Act and any other federal law that concerns security in the United States; any information that does not comply should not be submitted. PRDs shall consist of the following:

1. Notice of Intent (NOI)

Prior to construction activities, the LRP of a proposed linear underground/overhead project shall utilize the processes and methods provided in Attachment A.2, Permit Registration Documents (PRDs) – General Instructions for Linear Underground/Overhead Projects to comply with the Construction General Permit.

2. Site Maps

LRPs submitting PRDs shall include at least 3 maps. The first map will be a zoomed[1] 1000-1500 ft vicinity map that shows the starting point of the project. The second will be a zoomed map of 1000-1500 ft showing the ending location of the project. The third will be a larger view vicinity map, 1000 ft to 2000 ft, displaying the entire project location depending on the project size, and indicating the LUP type (1, 2 or 3) areas within the total project footprint.

3. Drawings

LRPs submitting PRDs shall include a construction drawing(s) or other appropriate drawing(s) or map(s) that shows the locations of storm drain

[1] An image with a close-up/enhanced detailed view of site features that show minute details such as streets and neighboring structures.
Or: An image with a close-up/enhanced detailed view of the site's surrounding infrastructure.
Or: An image with a close up detailed view of the project and its surroundings.

inlets and waterbodies[2] that may receive discharges from the construction activities and that shows the locations of BMPs to be installed for all those BMPs that can be illustrated on the revisable drawing(s) or map(s). If storm drain inlets, waterbodies, and/or BMPs cannot be adequately shown on the drawing(s) or map(s) they should be described in detail within the SWPPP.

4. Storm Water Pollution Prevention Plan (SWPPP)

LUP dischargers shall comply with the SWPPP Preparation, Implementation, and Oversight requirements in Section K of this Attachment.

5. Contact information

LUP dischargers shall include contact information for all contractors (or subcontractors) responsible for each area of an LUP project. This should include the names, telephone numbers, and addresses of contact personnel. Specific areas of responsibility of each contact, and emergency contact numbers should also be included.

6. In the case of a public emergency that requires immediate construction activities, a discharger shall submit a brief description of the emergency construction activity within five days of the onset of construction, and then shall submit all PRDs within thirty days.

C. LINEAR PROJECT TERMINATION OF COVERAGE REQUIREMENTS

The LRP may terminate coverage of an LUP when construction activities are completed by submitting an electronic notice of termination (NOT) through the State Water Board's SMARTS system. Termination requirements are different depending on the complexity of the LUP. An LUP is considered complete when: (a) there is no potential for construction-related storm water pollution; (b) all elements of the SWPPP have been completed; (c) construction materials and waste have been disposed of properly; (d) the site is in compliance with all local storm water management requirements; and (e) the LRP submits a notice of termination (NOT) and has received approval for termination from the appropriate Regional Water Board office.

1. LUP Stabilization Requirements

The LUP discharger shall ensure that all disturbed areas of the construction site are stabilized prior to termination of coverage under this General Permit. Final stabilization for the purposes of submitting an NOT

[2] Includes basin(s) that the MS4 storm sewer systems may drain to for Hydromodification or Hydrological Conditional of Concerns under the MS4 permits.

is satisfied when all soil disturbing activities are completed and one of the following criteria is met:

a. In disturbed areas that were vegetated prior to construction activities of the LUP, the area disturbed must be re-established to a uniform vegetative cover equivalent to 70 percent coverage of the preconstruction vegetative conditions. Where preconstruction vegetation covers less than 100 percent of the surface, such as in arid areas, the 70 percent coverage criteria is adjusted as follows: if the preconstruction vegetation covers 50 percent of the ground surface, 70 percent of 50 percent (.70 X .50=.35) would require 35 percent total uniform surface coverage; or

b. Where no vegetation is present prior to construction, the site is returned to its original line and grade and/or compacted to achieve stabilization; or

c. Equivalent stabilization measures have been employed. These measures include, but are not limited to, the use of such BMPs as blankets, reinforced channel liners, soil cement, fiber matrices, geotextiles, or other erosion resistant soil coverings or treatments.

2. LUP Termination of Coverage Requirements

The LRP shall file an NOT through the State Water Board's SMARTS system. By submitting an NOT, the LRP is certifying that construction activities for an LUP are complete and that the project is in full compliance with requirements of this General Permit and that it is now compliant with soil stabilization requirements where appropriate. Upon approval by the appropriate Regional Water Board office, permit coverage will be terminated.

3. Revising Coverage for Change of Acreage

When the LRP of a portion of an LUP construction project changes, or when a phase within a multi-phase project is completed, the LRP may reduce the total acreage covered by this General Permit. In reducing the acreage covered by this General Permit, the LRP shall electronically file revisions to the PRDs that include:

a. a revised NOI indicating the new project size;

b. a revised site map showing the acreage of the project completed, acreage currently under construction, acreage sold, transferred or added, and acreage currently stabilized.

c. SWPPP revisions, as appropriate; and

d. certification that any new LRPs have been notified of applicable requirements to obtain General Permit coverage. The certification shall include the name, address, telephone number, and e-mail address (if known) of the new LRP.

If the project acreage has increased, dischargers shall mail payment of revised annual fees within 14 days of receiving the revised annual fee notification.

D. DISCHARGE PROHIBITIONS

1. LUP dischargers shall not violate any discharge prohibitions contained in applicable Basin Plans or statewide water quality control plans. Waste discharges to Areas of Special Biological Significance (ASBS) are prohibited by the California Ocean Plan, unless granted an exception issued by the State Water Board.

2. LUP dischargers are prohibited from discharging non-storm water that is not otherwise authorized by this General Permit. Non-storm water discharges authorized by this General Permit[3] may include, fire hydrant flushing, irrigation of vegetative erosion control measures, pipe flushing and testing, water to control dust, street cleaning, dewatering,[4] uncontaminated groundwater from dewatering, and other discharges not subject to a separate general NPDES permit adopted by a Regional Water Board. Such discharges are allowed by this General Permit provided they are not relied upon to clean up failed or inadequate construction or post-construction BMPs designed to keep materials on site. These authorized non-storm water discharges:

[3] Dischargers must identify all authorized non-storm water discharges in the LUP's SWPPP and identify BMPs that will be implemented to either eliminate or reduce pollutants in non-storm water discharges. Regional Water Boards may direct the discharger to discontinue discharging such non-storm water discharges if determined that such discharges discharge significant pollutants or threaten water quality.
[4] Dewatering activities may be prohibited or need coverage under a separate permit issued by the Regional Water Boards. Dischargers shall check with the appropriate Regional Water Boards for any required permit or basin plan conditions prior to initial dewatering activities to land, storm drains, or waterbodies.

a. Shall not cause or contribute to a violation of any water quality standard;

b. Shall not violate any other provision of this General Permit;

c. Shall not violate any applicable Basin Plan;

d. Shall comply with BMPs as described in the SWPPP;

e. Shall not contain toxic constituents in toxic amounts or (other) significant quantities of pollutants;

f. Shall be monitored and meets the applicable NALs; and

g. Shall be reported by the discharger in the Annual Report.

If any of the above conditions are not satisfied, the discharge is not authorized by this General Permit. The discharger shall notify the Regional Water Board of any anticipated non-storm water discharges not authorized by this General Permit to determine the need for a separate NPDES permit.

Additionally, some LUP dischargers may be required to obtain a separate permit if the applicable Regional Water Board has adopted a General Permit for dewatering discharges. Wherever feasible, alternatives, that do not result in the discharge of non-storm water, shall be implemented in accordance with this Attachment's Section K.2 - SWPPP Implementation Schedule.

3. LUP dischargers shall ensure that trench spoils or any other soils disturbed during construction activities that are contaminated[5] are not discharged with storm water or non-storm water discharges into any storm drain or water body except pursuant to an NPDES permit.

When soil contamination is found or suspected and a responsible party is not identified, or the responsible party fails to promptly take the appropriate action, the LUP discharger shall have those soils sampled and tested to ensure that proper handling and public safety measures are

[5] Contaminated soil contains pollutants in concentrations that exceed the appropriate thresholds that various regulatory agencies set for those substances. Preliminary testing of potentially contaminated soils will be based on odor, soil discoloration, or prior history of the site's chemical use and storage and other similar factors. When soil contamination is found or suspected and a responsible party is not identified, or the responsible party fails to promptly take the appropriate action, the discharger shall have those soils sampled and tested to ensure proper handling and public safety measures are implemented. The legally responsible person will notify the appropriate local, State, or federal agency(ies) when contaminated soil is found at a construction site, and will notify the Regional Water Board by submitting an NOT at the completion of the project.

implemented. The LUP discharger shall notify the appropriate local, State, and federal agency(ies) when contaminated soil is found at a construction site, and will notify the appropriate Regional Water Board.

4. Discharging any pollutant-laden water that will cause or contribute to an exceedance of the applicable Regional Water Board's Basin Plan from a dewatering site or sediment basin into any receiving water or storm drain is prohibited.

5. Debris[6] resulting from construction activities are prohibited from being discharged from construction project sites.

E. SPECIAL PROVISIONS

1. Duty to Comply

a. The LUP discharger must comply with all of the conditions of this General Permit. Any permit noncompliance constitutes a violation of the Clean Water Act (CWA) and the Porter-Cologne Water Quality Control Act and is grounds for enforcement action and/or removal from General Permit coverage.

b. The LUP discharger shall comply with effluent standards or prohibitions established under Section 307(a) of the CWA for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions, even if this General Permit has not yet been modified to incorporate the requirement.

2. General Permit Actions

a. This General Permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the discharger for a General Permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not annul any General Permit condition.

[6] Litter, rubble, discarded refuse, and remains of something destroyed.

b. If any toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is promulgated under Section 307(a) of the CWA for a toxic pollutant which is present in the discharge and that standard or prohibition is more stringent than any limitation on the pollutant in this General Permit, this General Permit shall be modified or revoked and reissued to conform to the toxic effluent standard or prohibition and the dischargers so notified.

3. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for an LUP discharger in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this General Permit.

4. Duty to Mitigate

The LUP discharger shall take all responsible steps to minimize or prevent any discharge in violation of this General Permit, which has a reasonable likelihood of adversely affecting human health or the environment.

5. Proper Operation and Maintenance

The LUP discharger shall at all times properly operate and maintain any facilities and systems of treatment and control (and related appurtenances) which are installed or used by the discharger to achieve compliance with the conditions of this General Permit and with the requirements of the Storm Water Pollution Prevention Plan (SWPPP). Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. Proper operation and maintenance may require the operation of backup or auxiliary facilities or similar systems installed by a discharger when necessary to achieve compliance with the conditions of this General Permit.

6. Property Rights

This General Permit does not convey any property rights of any sort or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor does it authorize any infringement of Federal, State, or local laws or regulations.

7. Duty to Maintain Records and Provide Information

a. The LUP discharger shall maintain a paper or electronic copy of all required records, including a copy of this General Permit, for three years from the date generated or date submitted, whichever is last. These records shall be kept at the construction site or in a crew

member's vehicle until construction is completed, and shall be made available upon request.

b. The LUP discharger shall furnish the Regional Water Board, State Water Board, or USEPA, within a reasonable time, any requested information to determine compliance with this General Permit. The LUP discharger shall also furnish, upon request, copies of records that are required to be kept by this General Permit.

8. Inspection and Entry

The LUP discharger shall allow the Regional Water Board, State Water Board, USEPA, and/or, in the case of construction sites which discharge through a municipal separate storm sewer, an authorized representative of the municipal operator of the separate storm sewer system receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to:

a. Enter upon the discharger's premises at reasonable times where a regulated construction activity is being conducted or where records must be kept under the conditions of this General Permit;

b. Access and copy at reasonable times any records that must be kept under the conditions of this General Permit;

c. Inspect at reasonable times the complete construction site, including any off-site staging areas or material storage areas, and the erosion/sediment controls; and

d. Sample or monitor at reasonable times for the purpose of ensuring General Permit compliance.

9. Electronic Signature and Certification Requirements

a. All Permit Registration Documents (PRDs) and Notices of Termination (NOTs) shall be electronically signed, certified, and submitted via SMARTS to the State Water Board. Either the Legally Responsible Person (LRP), as defined in Appendix 5 – Glossary, or a person legally authorized to sign and certify PRDs and NOTs on behalf of the LRP (the LRP's Approved Signatory, as defined in Appendix 5 - Glossary) must submit all information electronically via SMARTS.

b. Changes to Authorization. If an Approved Signatory's authorization is no longer accurate, a new authorization satisfying the requirements of paragraph (a) of this section must be submitted via SMARTS prior to or

together with any reports, information or applications to be signed by an Approved Signatory.

c. All SWPPP revisions, annual reports, or other information required by the General Permit (other than PRDs and NOTs) or requested by the Regional Water Board, State Water Board, USEPA, or local storm water management agency shall be certified and submitted by the LRP or the LRP's Approved Signatory.

10. Certification

Any person signing documents under Section E.9 above, shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

11. Anticipated Noncompliance

The LUP discharger shall give advance notice to the Regional Water Board and local storm water management agency of any planned changes in the construction activity, which may result in noncompliance with General Permit requirements.

12. Penalties for Falsification of Reports

Section 309(c)(4) of the CWA provides that any person who knowingly makes any false material statement, representation, or certification in any record or other document submitted or required to be maintained under this General Permit, including reports of compliance or noncompliance shall upon conviction, be punished by a fine of not more than $10,000 or by imprisonment for not more than two years or by both.

13. Oil and Hazardous Substance Liability

Nothing in this General Permit shall be construed to preclude the institution of any legal action or relieve the discharger from any responsibilities, liabilities, or penalties to which the LUP discharger is or may be subject to under Section 311 of the CWA.

14. Severability

The provisions of this General Permit are severable; and, if any provision of this General Permit or the application of any provision of this General Permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this General Permit shall not be affected thereby.

15. Reopener Clause

This General Permit may be modified, revoked and reissued, or terminated for cause due to promulgation of amended regulations, receipt of USEPA guidance concerning regulated activities, judicial decision, or in accordance with 40 Code of Federal Regulations (CFR) 122.62, 122.63, 122.64, and 124.5.

16. Penalties for Violations of Permit Conditions

a. Section 309 of the CWA provides significant penalties for any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the CWA or any permit condition or limitation implementing any such section in a permit issued under Section 402. Any person who violates any permit condition of this General Permit is subject to a civil penalty not to exceed $37,500[7] per calendar day of such violation, as well as any other appropriate sanction provided by Section 309 of the CWA.

b. The Porter-Cologne Water Quality Control Act also provides for civil and criminal penalties, which in some cases are greater than those under the CWA.

17. Transfers

This General Permit is not transferable. A new LRP of an ongoing construction activity must submit PRDs in accordance with the requirements of this General Permit to be authorized to discharge under this General Permit. An LRP who is a property owner with active General Permit coverage who sells a fraction or all the land shall inform the new property owner(s) of the requirements of this General Permit.

18. Continuation of Expired Permit

This General Permit continues in force and effect until a new General Permit is issued or the SWRCB rescinds this General Permit. Only those

[7] May be further adjusted in accordance with the Federal Civil Penalties Inflation Adjustment Act

dischargers authorized to discharge under the expiring General Permit are covered by the continued General Permit.

F. EFFLUENT STANDARDS & RECEIVING WATER MONITORING

1. Narrative Effluent Limitations

a. LUP dischargers shall ensure that storm water discharges and authorized non-storm water discharges regulated by this General Permit do not contain a hazardous substance equal to or in excess of reportable quantities established in 40 C.F.R. §§ 117.3 and 302.4, unless a separate NPDES Permit has been issued to regulate those discharges.

b. LUP dischargers shall minimize or prevent pollutants in storm water discharges and authorized non-storm water discharges through the use of structural or non-structural controls, structures, and management practices that achieve BAT for toxic and non-conventional pollutants and BCT for conventional pollutants.

Table 1. Numeric Action Levels, Test Methods, Detection Limits, and Reporting Units

Parameter	Test Method	Discharge Type	Min. Detection Limit	Units	Numeric Action Level
pH	Field test with calibrated portable instrument	LUP Type 2	0.2	pH units	lower NAL = 6.5 upper NAL = 8.5
		LUP Type 3			lower NAL = 6.5 upper NAL = 8.5
Turbidity	EPA 0180.1 and/or field test with calibrated portable instrument	LUP Type 2	1	NTU	250 NTU
		LUP Type 3			250 NTU

2. Numeric Action Levels (NALs)

a. For LUP Type 2 and 3 dischargers, the lower storm event daily average NAL for pH is 6.5 pH units and the upper storm event daily average NAL for pH is 8.5 pH units. The LUP discharger shall take actions as described below if the storm event daily average discharge is outside of this range of pH values.

b. For LUP Type 2 and 3 dischargers, the storm event daily average NAL for turbidity is 250 NTU. The discharger shall take actions as described below if the storm event daily average discharge is outside of this range of turbidity values.

c. Whenever daily average analytical effluent monitoring results indicate that the discharge is below the lower NAL for pH, exceeds the upper NAL for pH, or exceeds the turbidity NAL (as listed in Table 1), the LUP discharger shall conduct a construction site and run-on evaluation to determine whether pollutant source(s) associated with the site's construction activity may have caused or contributed to the NAL exceedance and shall immediately implement corrective actions if they are needed.

d. The site evaluation will be documented in the SWPPP and specifically address whether the source(s) of the pollutants causing the exceedance of the NAL:

i Are related to the construction activities and whether additional BMPs or SWPPP implementation measures are required to (1) meet BAT/BCT requirements; (2) reduce or prevent pollutants in storm water discharges from causing exceedances of receiving water objectives; and (3) determine what corrective action(s) were taken or will be taken and with a description of the schedule for completion.

AND/OR:

ii Are related to the run-on associated with the construction site location and whether additional BMPs or SWPPP implementation measures are required to (1) meet BAT/BCT requirements; (2) reduce or prevent pollutants in storm water discharges from causing exceedances of receiving water objectives; and (3) decide what corrective action(s) were taken or will be taken, including a description of the schedule for completion.

3. Receiving Water Monitoring Triggers

a. The receiving water monitoring triggers for LUP Type 3 dischargers with direct discharges to surface waters are triggered when the daily average effluent pH values during any site phase when there is a high risk of pH discharge[8] fall outside of the range of 6.0 and 9.0 pH units, or when the daily average effluent turbidity exceeds 500 NTU.

b. LUP Type 3 dischargers with direct discharges to surface waters shall conduct receiving water monitoring whenever their effluent monitoring results exceed the receiving water monitoring triggers. If the pH trigger is exceeded, the receiving water shall be monitored for pH for the duration of coverage under this General Permit. If the turbidity trigger is exceeded, the receiving water shall be monitored for turbidity and SSC for the duration of coverage under this General Permit.

c. LUP Type 3 dischargers with direct discharges to surfaces waters shall initiate receiving water monitoring when the triggers are exceeded unless the storm event causing the exceedance is determined after the fact to equal to or greater than the 5-year 24-hour storm (expressed in inches of rainfall) as determined by using these maps:

   http://www.wrcc.dri.edu/pcpnfreq/nca5y24.gif
   http://www.wrcc.dri.edu/pcpnfreq/sca5y24.gif

   Verification of the 5-year 24-hour storm event shall be done by reporting on-site rain gauge readings as well as nearby governmental rain gauge readings.

d. If run-on is caused by a forest fire or any other natural disaster, then receiving water monitoring triggers do not apply.

G. RECEIVING WATER LIMITATIONS

1. LUP dischargers shall ensure that storm water discharges and authorized non-storm water discharges to any surface or ground water will not adversely affect human health or the environment.

2. LUP dischargers shall ensure that storm water discharges and authorized non-storm water discharges will not contain pollutants in quantities that threaten to cause pollution or a public nuisance.

3. LUP dischargers shall ensure that storm water discharges and authorized non-storm water discharges will not contain pollutants that cause or

[8] A period of high risk of pH discharge is defined as a project's complete utilities phase, complete vertical build phase, and any portion of any phase where significant amounts of materials are placed directly on the land at the site in a manner that could result in significant alterations of the background pH of the discharges.

contribute to an exceedance of any applicable water quality objectives or water quality standards (collectively, WQS) contained in a Statewide Water Quality Control Plan, the California Toxics Rule, the National Toxics Rule, or the applicable Regional Water Board's Water Quality Control Plan (Basin Plan).

H. TRAINING QUALIFICATIONS

1. General

All persons responsible for implementing requirements of this General Permit shall be appropriately trained. Training should be both formal and informal, occur on an ongoing basis, and should include training offered by recognized governmental agencies or professional organizations. Persons responsible for preparing, amending and certifying SWPPPs shall comply with the requirements in this Section H.

2. SWPPP Certification Requirements

a. **Qualified SWPPP Developer:** The LUP discharger shall ensure that all SWPPPs be written, amended and certified by a Qualified SWPPP Developer (QSD). A QSD shall have one of the following registrations or certifications, and appropriate experience, as required for:

i A California registered professional civil engineer;

ii A California registered professional geologist or engineering geologist;

iii A California registered landscape architect;

iv A professional hydrologist registered through the American Institute of Hydrology;

v A certified professional in erosion and sediment control (CPESC) ™ registered through Enviro Cert International, Inc;

vi A certified professional in storm water quality (CPSWQ)™ registered through Enviro Cert International, Inc.; or

vii A certified professional in erosion and sediment control registered through the National Institute for Certification in Engineering Technologies (NICET).

Effective two years after the adoption date of this General Permit, a QSD shall have attended a State Water Board-sponsored or approved QSD training course.

b. The LUP discharger shall ensure that the SWPPP is written and amended, as needed, to address the specific circumstances for each construction site covered by this General Permit prior to commencement of construction activity for any stage.

c. The LUP discharger shall list the name and telephone number of the currently designated Qualified SWPPP Developer(s) in the SWPPP.

d. **Qualified SWPPP Practitioner:** The LUP discharger shall ensure that all elements of any SWPPP for each project will be implemented by a Qualified SWPPP Practitioner (QSP). A QSP is a person responsible for non-storm water and storm water visual observations, sampling and analysis, and for ensuring full compliance with the permit and implementation of all elements of the SWPPP. Effective two years from the date of adoption of this General Permit, a QSP shall be either a QSD or have one of the following certifications:

   i A certified erosion, sediment and storm water inspector registered through Certified Professional in Erosion and Sediment Control, Inc.; or

   ii A certified inspector of sediment and erosion control registered through Certified Inspector of Sediment and Erosion Control, Inc.

   Effective two years after the adoption date of this General Permit, a QSP shall have attended a State Water Board-sponsored or approved QSP training course.

e. The LUP discharger shall ensure that the SWPPP include a list of names of all contractors, subcontractors, and individuals who will be directed by the Qualified SWPPP Practitioner, and who is ultimately responsible for implementation of the SWPPP. This list shall include telephone numbers and work addresses. Specific areas of responsibility of each subcontractor and emergency contact numbers shall also be included.

f. The LUP discharger shall ensure that the SWPPP and each amendment be signed by the Qualified SWPPP Developer. The LUP discharger shall include a listing of the date of initial preparation and the dates of each amendment in the SWPPP.

I. TYPES OF LINEAR PROJECTS

This attachment establishes three types (Type 1, 2 & 3) of complexity for areas within an LUP or project section based on threat to water quality. Project area Types are determined through Attachment A.1.

The Type 1 requirements below establish the baseline requirements for all LUPs subject to this General Permit. Additional requirements for Type 2 and Type 3 LUPs are labeled.

1. Type 1 LUPs*:*

LUP dischargers with areas of a LUP designated as Type 1 shall comply with the requirements in this Attachment. Type 1 LUPs are:

a. Those construction areas where 70 percent or more of the construction activity occurs on a paved surface and where areas disturbed during construction will be returned to preconstruction conditions or equivalent protection established at the end of the construction activities for the day; or

b. Where greater than 30 percent of construction activities occur within the non-paved shoulders or land immediately adjacent to paved surfaces, or where construction occurs on unpaved improved roads, including their shoulders or land immediately adjacent to them where:

   i Areas disturbed during construction will be returned to preconstruction conditions or equivalent protection is established at the end of the construction activities for the day to minimize the potential for erosion and sediment deposition, and

   ii Areas where established vegetation was disturbed during construction will be stabilized and re-vegetated by the end of project. When required, adequate temporary stabilization BMPs will be installed and maintained until vegetation is established to meet minimum cover requirements established in this General Permit for final stabilization.

c. Where the risk determination is as follows:

   i Low sediment risk, low receiving water risk, or

   ii Low sediment risk, medium receiving water risk, or

   iii Medium sediment risk, low receiving water risk

2. Type 2 LUPs:

Type 2 LUPs are determined by the Combined Risk Matrix in Attachment A.1. Type 2 LUPs have the specified combination of risk:

d. High sediment risk, low receiving water risk, or

e. Medium sediment risk, medium receiving water risk, or

f. Low sediment risk, high receiving water risk

Receiving water risk is either considered "Low" for those areas of the project that are not in close proximity to a sensitive receiving watershed, "Medium" for those areas of the project within a sensitive receiving watershed yet outside of the flood plain of a sensitive receiving water body, and "High" where the soil disturbance is within close proximity to a sensitive receiving water body. Project sediment risk is calculated based on the Risk Factor Worksheet in Attachment C of this General Permit.

3. Type 3 LUPs:

Type 3 LUPs are determined by the Combined Risk Matrix in Attachment A.1. Type 3 LUPs have the specified combination of risk:

a. High sediment risk, high receiving water risk, or

b. High sediment risk, medium receiving water risk, or

c. Medium sediment risk, high receiving water risk

Receiving water risk is either considered "Medium" for those areas of the project within a sensitive receiving watershed yet outside of the flood plain of a sensitive receiving water body, or "High" where the soil disturbance is within close proximity to a sensitive receiving water body. Project sediment risk is calculated based on the Risk Factor Worksheet in Attachment C.

J. LUP TYPE-SPECIFIC REQUIREMENTS

1. Effluent Standards

a. Narrative – LUP dischargers shall comply with the narrative effluent standards below.

i Storm water discharges and authorized non-storm water discharges regulated by this General Permit shall not contain a hazardous substance equal to or in excess of reportable quantities established in 40 C.F.R. §§ 117.3 and 302.4, unless a separate NPDES Permit has been issued to regulate those discharges.

ii LUP dischargers shall minimize or prevent pollutants in storm water discharges and authorized non-storm water discharges through the use of controls, structures, and management practices that achieve BAT for toxic and non-conventional pollutants and BCT for conventional pollutants.

b. Numeric – LUP Type 1 dischargers are not subject to a numeric effluent standard

c. Numeric –LUP Type 2 dischargers are subject to a pH NAL of 6.5-8.5, and a turbidity NAL of 250 NTU.

d. Numeric – LUP Type 3 dischargers are subject to a pH NAL of 6.5-8.5, and a turbidity NAL of 250 NTU.

2. Good Site Management "Housekeeping"

a. LUP dischargers shall implement good site management (i.e., "housekeeping") measures for construction materials that could potentially be a threat to water quality if discharged. At a minimum, the good housekeeping measures shall consist of the following:

i Identify the products used and/or expected to be used and the end products that are produced and/or expected to be produced. This does not include materials and equipment that are designed to be outdoors and exposed to environmental conditions (i.e. poles, equipment pads, cabinets, conductors, insulators, bricks, etc.).

ii Cover and berm loose stockpiled construction materials that are not actively being used (i.e. soil, spoils, aggregate, fly-ash, stucco, hydrated lime, etc.).

iii Store chemicals in watertight containers (with appropriate secondary containment to prevent any spillage or leakage) or in a storage shed (completely enclosed).

iv Minimize exposure of construction materials to precipitation (not applicable to materials designed to be outdoors and exposed to the environment).

v Implement BMPs to control the off-site tracking of loose construction and landscape materials.

b. LUP dischargers shall implement good housekeeping measures for waste management, which, at a minimum, shall consist of the following:

i Prevent disposal of any rinse or wash waters or materials on impervious or pervious site surfaces or into the storm drain system.

ii Ensure the containment of sanitation facilities (e.g., portable toilets) to prevent discharges of pollutants to the storm water drainage system or receiving water.

iii Clean or replace sanitation facilities and inspecting them regularly for leaks and spills.

iv Cover waste disposal containers at the end of every business day and during a rain event.

v Prevent discharges from waste disposal containers to the storm water drainage system or receiving water.

vi Contain and securely protect stockpiled waste material from wind and rain at all times unless actively being used.

vii Implement procedures that effectively address hazardous and non-hazardous spills.

viii Develop a spill response and implementation element of the SWPPP prior to commencement of construction activities. The SWPPP shall require that:

(1) Equipment and materials for cleanup of spills shall be available on site and that spills and leaks shall be cleaned up immediately and disposed of properly; and

(2) Appropriate spill response personnel are assigned and trained.

ix Ensure the containment of concrete washout areas and other washout areas that may contain additional pollutants so there is no discharge into the underlying soil and onto the surrounding areas.

c. LUP dischargers shall implement good housekeeping for vehicle storage and maintenance, which, at a minimum, shall consist of the following:

   i Prevent oil, grease, or fuel from leaking into the ground, storm drains or surface waters.

   ii Implement appropriate BMPs whenever equipment or vehicles are fueled, maintained or stored.

   iii Clean leaks immediately and disposing of leaked materials properly.

d. LUP dischargers shall implement good housekeeping for landscape materials, which, at a minimum, shall consist of the following:

   i Contain stockpiled materials such as mulches and topsoil when they are not actively being used.

   ii Contain fertilizers and other landscape materials when they are not actively being used.

   iii Discontinue the application of any erodible landscape material at least 2 days before a forecasted rain event[9] or during periods of precipitation.

   iv Applying erodible landscape material at quantities and application rates according to manufacture recommendations or based on written specifications by knowledgeable and experienced field personnel.

   v Stacking erodible landscape material on pallets and covering or storing such materials when not being used or applied.

e. LUP dischargers shall conduct an assessment and create a list of potential pollutant sources and identify any areas of the site where additional BMPs are necessary to reduce or prevent pollutants in storm water discharges and authorized non-storm water discharges. This potential pollutant list shall be kept with the SWPPP and shall identify all non-visible pollutants which are known, or should be known, to occur on the construction site. At a minimum, when developing BMPs, LUP dischargers shall do the following:

[9] 50% or greater chance of producing precipitation.

i Consider the quantity, physical characteristics (e.g., liquid, powder, solid), and locations of each potential pollutant source handled, produced, stored, recycled, or disposed of at the site.

ii Consider the degree to which pollutants associated with those materials may be exposed to and mobilized by contact with storm water.

iii Consider the direct and indirect pathways that pollutants may be exposed to storm water or authorized non-storm water discharges. This shall include an assessment of past spills or leaks, non-storm water discharges, and discharges from adjoining areas.

iv Ensure retention of sampling, visual observation, and inspection records.

v Ensure effectiveness of existing BMPs to reduce or prevent pollutants in storm water discharges and authorized non-storm water discharges.

f. LUP dischargers shall implement good housekeeping measures on the construction site to control the air deposition of site materials and from site operations.

3. Non-Storm Water Management

a. LUP dischargers shall implement measures to control all non-storm water discharges during construction.

b. LUP dischargers shall wash vehicles in such a manner as to prevent non-storm water discharges to surface waters or MS4 drainage systems.

c. LUP dischargers shall clean streets in such a manner as to prevent unauthorized non-storm water discharges from reaching surface water or MS4 drainage systems.

4. Erosion Control

a. LUP dischargers shall implement effective wind erosion control.

b. LUP dischargers shall provide effective soil cover for inactive[10] areas and all finished slopes, and utility backfill.

[10] Areas of construction activity that have been disturbed and are not scheduled to be re-disturbed for at least 14 days

c. LUP dischargers shall limit the use of plastic materials when more sustainable, environmentally friendly alternatives exist. Where plastic materials are deemed necessary, the discharger shall consider the use of plastic materials resistant to solar degradation.

5. Sediment Controls

a. LUP dischargers shall establish and maintain effective perimeter controls as needed, and implement effective BMPs for all construction entrances and exits to sufficiently control erosion and sediment discharges from the site.

b. On sites where sediment basins are to be used, LUP dischargers shall, at minimum, design sediment basins according to the guidance provided in CASQA's Construction BMP Handbook.

c. **Additional LUP Type 2 & 3 Requirement:** LUP Type 2 & 3 dischargers shall apply linear sediment controls along the toe of the slope, face of the slope, and at the grade breaks of exposed slopes to comply with sheet flow lengths[11] in accordance with Table 2 below.

Table 2 – Critical Slope/Sheet Flow Length Combinations

Slope Percentage	Sheet flow length not to exceed
0-25%	20 feet
25-50%	15 feet
Over 50%	10 feet

d. **Additional LUP Type 2 & 3 Requirement:** LUP Type 2 & 3 dischargers shall ensure that construction activity traffic to and from the project is limited to entrances and exits that employ effective controls to prevent off-site tracking of sediment.

e. **Additional LUP Type 2 & 3 Requirement:** LUP Type 2 & 3 dischargers shall ensure that all storm drain inlets and perimeter controls, runoff control BMPs, and pollutant controls at entrances and exits (e.g. tire washoff locations) are maintained and protected from activities that reduce their effectiveness.

f. **Additional LUP Type 2 & 3 Requirement:** LUP Type 2 & 3 dischargers shall inspect all immediate access roads. At a minimum daily and prior to any rain event, the discharger shall remove any

[11] Sheet flow length is the length that shallow, low velocity flow travels across a site.

sediment or other construction activity-related materials that are deposited on the roads (by vacuuming or sweeping).

g. **Additional LUP Type 3 Requirement:** The Regional Water Board may require LUP Type 3 dischargers to implement additional site-specific sediment control requirements if the implementation of the other requirements in this section are not adequately protecting the receiving waters.

6. Run-on and Run-off Controls

a. LUP dischargers shall effectively manage all run-on, all runoff within the site and all runoff that discharges off the site. Run-on from off site-shall be directed away from all disturbed areas or shall collectively be in compliance with the effluent limitations in this Attachment.

b. Run-on and runoff controls are not required for Type 1 LUPs unless the evaluation of quantity and quality of run-on and runoff deems them necessary or visual inspections show that the site requires such controls.

7. Inspection, Maintenance and Repair

a. All inspection, maintenance repair and sampling activities at the discharger's LUP location shall be performed or supervised by a QSP representing the discharger. The QSP may delegate any or all of these activities to an employee trained to do the task(s) appropriately, but shall ensure adequate deployment.

b. LUP dischargers shall conduct visual inspections and observations daily during working hours (not recorded). At least once each 24-hour period during extended storm events, **LUP Type 2 & 3 dischargers** shall conduct visual inspections to identify and record BMPs that need maintenance to operate effectively, that have failed, or that could fail to operate as intended. Inspectors shall be the QSP or be trained by the QSP.

c. Upon identifying failures or other shortcomings, as directed by the QSP, LUP dischargers shall begin implementing repairs or design changes to BMPs within 72 hours of identification and complete the changes as soon as possible.

d. For each pre- and post-rain event inspection required, LUP dischargers shall complete an inspection checklist, using a form provided by the State Water Board or Regional Water Board or in an alternative format that includes the information described below.

e. The LUP discharger shall ensure that the checklist remains on-site or with the SWPPP. At a minimum, an inspection checklist should include:

i Inspection date and date the inspection report was written.

ii Weather information, including presence or absence of precipitation, estimate of beginning of qualifying storm event, duration of event, time elapsed since last storm, and approximate amount of rainfall in inches.

iii Site information, including stage of construction, activities completed, and approximate area of the site exposed.

iv A description of any BMPs evaluated and any deficiencies noted.

v If the construction site is safely accessible during inclement weather, list the observations of all BMPs: erosion controls, sediment controls, chemical and waste controls, and non-storm water controls. Otherwise, list the results of visual inspections at all relevant outfalls, discharge points, downstream locations and any projected maintenance activities.

vi Report the presence of noticeable odors or of any visible sheen on the surface of any discharges.

vii Any corrective actions required, including any necessary changes to the SWPPP and the associated implementation dates.

viii Photographs taken during the inspection, if any.

ix Inspector's name, title, and signature.

K. STORM WATER POLLUTION PREVENTION PLAN (SWPPP) REQUIREMENTS

1. Objectives

SWPPPs for all LUPs shall be developed and amended or revised by a QSD. The SWPPP shall be designed to address the following objectives:

a. All pollutants and their sources, including sources of sediment, associated with construction activities associated with LUP activity are controlled;

b. All non-storm water discharges are identified and either eliminated, controlled, or treated;

c. BMPs are effective and result in the reduction or elimination of pollutants in storm water discharges and authorized non-storm water discharges from LUPs during construction; and

d. Stabilization BMPs installed to reduce or eliminate pollutants after construction is completed are effective and maintained.

2. SWPPP Implementation Schedule

a. LUPs for which PRDs have been submitted to the State Water Board shall develop a site/project location SWPPP prior to the start of land-disturbing activity in accordance with this Section and shall implement the SWPPP concurrently with commencement of soil-disturbing activities.

b. For an ongoing LUP involving a change in the LRP, the new LRP shall review the existing SWPPP and amend it, if necessary, or develop a new SWPPP within 15 calendar days to conform to the requirements set forth in this General Permit.

3. Availability

The SWPPP shall be available at the construction site during working hours while construction is occurring and shall be made available upon request by a State or Municipal inspector. When the original SWPPP is retained by a crewmember in a construction vehicle and is not currently at the construction site, copies of the BMPs and map/drawing will be left with the field crew and the original SWPPP shall be made available via a request by radio/telephone.

L. REGIONAL WATER BOARD AUTHORITIES

1. Regional Water Boards shall administer the provisions of this General Permit. Administration of this General Permit may include, but is not limited to, requesting the submittal of SWPPPs, reviewing SWPPPs, reviewing monitoring and sampling and analysis reports, conducting compliance inspections, gathering site information by any medium including sampling, photo and video documentation, and taking enforcement actions.

2. Regional Water Boards may terminate coverage under this General Permit for dischargers who fail to comply with its requirements or where they determine that an individual NPDES permit is appropriate.

3. Regional Water Boards may issue separate permits for discharges of storm water associated with construction activity to individual dischargers, categories of dischargers, or dischargers in a geographic area. Upon issuance of such permits by a Regional Water Board, dischargers subject to those permits shall no longer be regulated by this General Permit.

4. Regional Water Boards may direct the discharger to reevaluate the LUP Type(s) for the project (or elements/areas of the project) and impose the appropriate level of requirements.

5. Regional Water Boards may terminate coverage under this General Permit for dischargers who negligently or with willful intent incorrectly determine or report their LUP Type (e.g., they determine themselves to be a LUP Type 1 when they are actually a Type 2).

6. Regional Water Boards may review PRDs and reject or accept applications for permit coverage or may require dischargers to submit a Report of Waste Discharge / NPDES permit application for Regional Water Board consideration of individual requirements.

7. Regional Water Boards may impose additional requirements on dischargers to satisfy TMDL implementation requirements or to satisfy provisions in their Basin Plans.

8. Regional Water Boards may require additional Monitoring and Reporting Program Requirements, including sampling and analysis of discharges to sediment-impaired water bodies.

9. Regional Water Boards may require dischargers to retain records for more than the three years required by this General Permit.

10. Based on an LUP's threat to water quality and complexity, the Regional Water Board may determine on a case-by-case basis that an LUP, or a portion of an LUP, is not eligible for the linear project requirements contained in this Attachment, and require that the discharger comply with all standard requirements in this General Permit.

11. The Regional Water Board may require additional monitoring and reporting program requirements including sampling and analysis of discharges to CWA § 303(d)-listed water bodies. Additional requirements imposed by the Regional Water Board shall be consistent with the overall monitoring effort in the receiving waters.

M. MONITORING AND REPORTING REQUIREMENTS

Table 3. LUP Summary of Monitoring Requirements

LUP Type	Visual Inspections				Sample Collection		
	Daily Site BMP	Pre-storm Event / Baseline	Daily Storm BMP	Post Storm	Storm Water Discharge	Receiving Water	Non-Visible (when applicable)
1	X						X
2	X	X	X	X	X		X
3	X	X	X	X	X	X	X

1. Objectives

LUP dischargers shall prepare a monitoring and reporting program (M&RP) prior to the start of construction and immediately implement the program at the start of construction for LUPs. The monitoring program must be implemented at the appropriate level to protect water quality at all times throughout the life of the project. The M&RP must be a part of the SWPPP, included as an appendix or separate SWPPP chapter.

2. M&RP Implementation Schedule

a. LUP dischargers shall implement the requirements of this Section at the time of commencement of construction activity. LUP dischargers are responsible for implementing these requirements until construction activity is complete and the site is stabilized.

b. LUP dischargers shall revise the M&RP when:

i Site conditions or construction activities change such that a change in monitoring is required to comply with the requirements and intent of this General Permit.

ii The Regional Water Board requires the discharger to revise its M&RP based on its review of the document. Revisions may include, but not be limited to, conducting additional site inspections, submitting reports, and certifications. Revisions shall be submitted via postal mail or electronic e-mail.

iii The Regional Water Board may require additional monitoring and reporting program requirements including sampling and analysis of discharges to CWA § 303(d)-listed water bodies. Additional requirements imposed by the Regional Water Board shall be consistent with the overall monitoring effort in the receiving waters.

3. LUP Type 1 Monitoring and Reporting Requirements

a. LUP Type 1 Inspection Requirements

i LUP Type 1 dischargers shall ensure that all inspections are conducted by trained personnel. The name(s) and contact number(s) of the assigned inspection personnel should be listed in the SWPPP.

ii LUP Type 1 dischargers shall ensure that all visual inspections are conducted daily during working hours and in conjunction with other daily activities in areas where active construction is occurring.

iii LUP Type 1 dischargers shall ensure that photographs of the site taken before, during, and after storm events are taken during inspections, and submitted through the State Water Board's SMARTS website once every three rain events.

iv LUP Type 1 dischargers shall conduct daily visual inspections to verify that:

(1) Appropriate BMPs for storm water and non-storm water are being implemented in areas where active construction is occurring (including staging areas);

(2) Project excavations are closed, with properly protected spoils, and that road surfaces are cleaned of excavated material and construction materials such as chemicals by either removing or storing the material in protective storage containers at the end of every construction day;

(3) Land areas disturbed during construction are returned to pre-construction conditions or an equivalent protection is used at the end of each workday to eliminate or minimize erosion and the possible discharge of sediment or other pollutants during a rain event.

v Inspections may be discontinued in non-active construction areas where soil-disturbing activities are completed and final soil stabilization is achieved (e.g., paving is completed, substructures

are installed, vegetation meets minimum cover requirements for final stabilization, or other stabilization requirements are met).

vi Inspection programs are required for LUP Type 1 projects where temporary and permanent stabilization BMPs are installed and are to be monitored after active construction is completed. Inspection activities shall continue until adequate permanent stabilization is established and, in areas where re-vegetation is chosen, until minimum vegetative coverage is established in accordance with Section C.1 of this Attachment.

b. LUP Type 1 Monitoring Requirements for Non-Visible Pollutants

LUP Type 1 dischargers shall implement sampling and analysis requirements to monitor non-visible pollutants associated with (1) construction sites; (2) activities producing pollutants that are not visually detectable in storm water discharges; and (3) activities which could cause or contribute to an exceedance of water quality objectives in the receiving waters.

i Sampling and analysis for non-visible pollutants is only required where the LUP Type 1 discharger believes pollutants associated with construction activities have the potential to be discharged with storm water runoff due to a spill or in the event there was a breach, malfunction, failure and/or leak of any BMP. Also, failure to implement BMPs may require sample collection.

(1) Visual observations made during the monitoring program described above will help the LUP Type 1 discharger determine when to collect samples.

(2) The LUP Type 1 discharger is not required to sample if one of the conditions described above (e.g., breach or spill) occurs and the site is cleaned of material and pollutants and/or BMPs are implemented prior to the next storm event.

ii LUP Type 1 dischargers shall collect samples down-gradient from all discharge locations where the visual observations were made triggering the monitoring, and which can be safely accessed. For sites where sampling and analysis is required, personnel trained in water quality sampling procedures shall collect storm water samples.

iii If sampling for non-visible pollutant parameters is required, LUP Type 1 dischargers shall ensure that samples be analyzed for parameters indicating the presence of pollutants identified in the pollutant source assessment required in Section J.2.a.i.

iv LUP Type 1 dischargers shall collect samples during the first two hours of discharge from rain events that occur during business hours and which generate runoff.

v LUP Type 1 dischargers shall ensure that a sufficiently large sample of storm water that has not come into contact with the disturbed soil or the materials stored or used on-site (uncontaminated sample[12]) will be collected for comparison with the discharge sample. Samples shall be collected during the first two hours of discharge from rain events that occur during daylight hours and which generate runoff.

vi LUP Type 1 dischargers shall compare the uncontaminated sample to the samples of discharge using field analysis or through laboratory analysis. Analyses may include, but are not limited to, indicator parameters such as: pH, specific conductance, dissolved oxygen, conductivity, salinity, and Total Dissolved Solids (TDS).

vii For laboratory analyses, all sampling, sample preservation, and other analyses must be conducted according to test procedures pursuant to 40 C.F.R. Part 136. LUP Type 1 dischargers shall ensure that field samples are collected and analyzed according to manufacturer specifications of the sampling devices employed. Portable meters shall be calibrated according to manufacturer's specification.

viii LUP Type 1 dischargers shall ensure that all field and/or analytical data are kept in the SWPPP document.

c. <u>LUP Type 1 Visual Observation Exceptions</u>

i LUP Type 1 dischargers shall be prepared to collect samples and conduct visual observation (inspections) to meet the minimum visual observation requirements of this Attachment. The Type 1 LUP discharger is not required to physically collect samples or conduct visual observation (inspections) under the following conditions:

(1) During dangerous weather conditions such as flooding and electrical storms;

(2) Outside of scheduled site business hours.

(3) When access to the site is unsafe due to storm events.

[12] Sample collected at a location unaffected by contruction activities.

ii If the LUP Type 1 discharger does not collect the required samples or visual observation (inspections) due to these exceptions, an explanation why the sampling or visual observation (inspections) were not conducted shall be included in both the SWPPP and the Annual Report.

d. Particle Size Analysis for Risk Justification

LUP Type 1 dischargers utilizing justifying an alternative project risk shall report a soil particle size analysis used to determine the RUSLE K-Factor. ASTM D-422 (Standard Test Method for Particle-Size Analysis of Soils), as revised, shall be used to determine the percentages of sand, very fine sand, silt, and clay on the site.

4. LUP Type 2 & 3 Monitoring and Reporting Requirements

a. LUP Type 2 & 3 Inspection Requirements

i LUP Type 2 & 3 dischargers shall ensure that all inspections are conducted by trained personnel. The name(s) and contact number(s) of the assigned inspection personnel should be listed in the SWPPP.

ii LUP Type 2 & 3 dischargers shall ensure that all visual inspections are conducted daily during working hours and in conjunction with other daily activities in areas where active construction is occurring.

iii LUP Type 2 & 3 dischargers shall ensure that photographs of the site taken before, during, and after storm events are taken during inspections, and submitted through the State Water Board's SMARTS website once every three rain events.

iv LUP Type 2 & 3 dischargers shall conduct daily visual inspections to verify that appropriate BMPs for storm water and non-storm water are being implemented and in place in areas where active construction is occurring (including staging areas).

v LUP Type 2 & 3 dischargers shall conduct inspections of the construction site prior to anticipated storm events, during extended storm events, and after actual storm events to identify areas contributing to a discharge of storm water associated with construction activity. Pre-storm inspections are to ensure that BMPs are properly installed and maintained; post-storm inspections are to assure that BMPs have functioned adequately. During

extended storm events, inspections shall be required during normal working hours for each 24-hour period.

vi Inspections may be discontinued in non-active construction areas where soil-disturbing activities are completed and final soil stabilization is achieved (e.g., paving is completed, substructures are installed, vegetation meets minimum cover requirements for final stabilization, or other stabilization requirements are met).

vii LUP Type 2 & 3 dischargers shall implement a monitoring program for inspecting projects that require temporary and permanent stabilization BMPs after active construction is complete. Inspections shall ensure that the BMPs are adequate and maintained. Inspection activities shall continue until adequate permanent stabilization is established and, in vegetated areas, until minimum vegetative coverage is established in accordance with Section C.1 of this Attachment.

viii If possible, LUP Type 2 & 3 dischargers shall install a rain gauge on-site at an accessible and secure location with readings made during all storm event inspections. When readings are unavailable, data from the closest rain gauge with publically available data may be used.

ix LUP Type 2 & 3 dischargers shall Include and maintain a log of the inspections conducted in the SWPPP. The log will provide the date and time of the inspection and who conducted the inspection.

b. LUP Type 2 & 3 Storm Water Effluent Monitoring Requirements

Table 4. LUP Type 2 & 3 Effluent Monitoring Requirements

LUP Type	Frequency	Effluent Monitoring
2	Minimum of 3 samples per day characterizing discharges associated with construction activity from the project active areas of construction.	Turbidity, pH, and non-visible pollutant parameters (if applicable)
3	Minimum of 3 samples per day characterizing discharges associated with construction activity from the project active areas of construction.	turbidity, pH, and non-visible pollutant parameters (if applicable)

i LUP Type 2 & 3 dischargers shall collect storm water grab samples from sampling locations characterizing discharges associated with activity from the LUP active areas of construction. At a minimum, 3 samples shall be collected per day of discharge.

ii LUP Type 2 & 3 dischargers shall collect samples of stored or contained storm water that is discharged subsequent to a storm event producing precipitation of ½ inch or more at the time of discharge.

iii LUP Type 2 & 3 dischargers shall ensure that storm water grab sample(s) obtained be representative of the flow and characteristics of the discharge.

iv LUP Type 2 & 3 dischargers shall analyze their effluent samples for:

(1) pH and turbidity
(2) Any additional parameter for which monitoring is required by the Regional Water Board.

c. LUP Type 2 & 3 Storm Water Effluent Sampling Locations

i LUP Type 2 & 3 dischargers shall perform sampling and analysis of storm water discharges to characterize discharges associated with construction activity from the entire disturbed project or area.

ii LUP Type 2 & 3 dischargers may monitor and report run-on from surrounding areas if there is reason to believe run-on may contribute to exceedance of NALs.

iii LUP Type 2 & 3 dischargers shall select analytical test methods from the list provided in Table 5 below.

iv LUP Type 2 & 3 dischargers shall ensure that all storm water sample collection preservation and handling shall be conducted in accordance with the “Storm Water Sample Collection and Handling Instructions” below.

d. LUP Type 3 Receiving Water Monitoring Requirements

i In the event that an LUP Type 3 discharger’s effluent exceeds the receiving water monitoring triggers of 500 NTU turbidity or pH range of 6.0-9.0, contained in this General Permit and has a direct discharge to receiving waters, the LUP discharger shall subsequently sample Receiving Waters (RWs) for turbidity, pH (if applicable) and SSC for the duration of coverage under this General Permit. In the event that an LUP Tupe 3 discharger utilizing ATS with direct discharges into receiving waters discharges effluent that exceeds the NELs in this permit, the discharger shall

subsequently sample RWs for turbidity, pH (if applicable), and SSC for the duration of coverage under this General Permit.

ii LUP Type 3 dischargers that meet the project criteria in Appendix 3 of this General Permit and have more than 30 acres of soil disturbance in the project area or project section area designated as Type 3, shall comply with the Bioassessment requirements prior to commencement of construction activity.

iii LUP Type 3 dischargers shall obtain RW samples in accordance with the requirements of the Receiving Water Sampling Locations section (Section M.4.c. of this Attachment).

e. LUP Type 3 Receiving Water Sampling Locations

i **Upstream/up-gradient RW samples**: LUP Type 3 dischargers shall obtain any required upstream/up-gradient receiving water samples from a representative and accessible location as close as possible to and upstream from the effluent discharge point.

ii **Downstream/down-gradient RW samples**: LUP Type 3 dischargers shall obtain any required downstream/down-gradient receiving water samples from a representative and accessible location as close as possible to and downstream from the effluent discharge point.

iii If two or more discharge locations discharge to the same receiving water, LUP Type 3 dischargers may sample the receiving water at a single upstream and downstream location.

f. LUP Type 2 & 3 Monitoring Requirements for Non-Visible Pollutants

LUP Type 2 & 3 dischargers shall implement sampling and analysis requirements to monitor non-visible pollutants associated with (1) construction sites; (2) activities producing pollutants that are not visually detectable in storm water discharges; and (3) activities which could cause or contribute to an exceedance of water quality objectives in the receiving waters.

i Sampling and analysis for non-visible pollutants is only required where LUP Type 2 & 3 dischargers believe pollutants associated with construction activities have the potential to be discharged with storm water runoff due to a spill or in the event there was a breach, malfunction, failure and/or leak of any BMP. Also, failure to implement BMPs may require sample collection.

(1) Visual observations made during the monitoring program described above will help LUP Type 2 & 3 dischargers determine when to collect samples.

(2) LUP Type 2 & 3 dischargers are not required to sample if one of the conditions described above (e.g., breach or spill) occurs and the site is cleaned of material and pollutants and/or BMPs are implemented prior to the next storm event.

ii LUP Type 2 & 3 dischargers shall collect samples down-gradient from the discharge locations where the visual observations were made triggering the monitoring and which can be safely accessed. For sites where sampling and analysis is required, personnel trained in water quality sampling procedures shall collect storm water samples.

iii If sampling for non-visible pollutant parameters is required, LUP Type 2 & 3 dischargers shall ensure that samples be analyzed for parameters indicating the presence of pollutants identified in the pollutant source assessment required in Section J.2.a.i.

iv LUP Type 2 & 3 dischargers shall collect samples during the first two hours of discharge from rain events that occur during business hours and which generate runoff.

v LUP Type 2 & 3 dischargers shall ensure that a sufficiently large sample of storm water that has not come into contact with the disturbed soil or the materials stored or used on-site (uncontaminated sample[13]) will be collected for comparison with the discharge sample. Samples shall be collected during the first two hours of discharge from rain events that occur during daylight hours and which generate runoff.

vi LUP Type 2 & 3 dischargers shall compare the uncontaminated sample to the samples of discharge using field analysis or through laboratory analysis. Analyses may include, but are not limited to, indicator parameters such as: pH, specific conductance, dissolved oxygen, conductivity, salinity, and Total Dissolved Solids (TDS).

vii For laboratory analyses, all sampling, sample preservation, and other analyses must be conducted according to test procedures pursuant to 40 C.F.R. Part 136. LUP Type 2 & 3 dischargers shall ensure that field samples are collected and analyzed according to manufacturer specifications of the sampling devices employed.

[13] Sample collected at a location unaffected by construction activities

Portable meters shall be calibrated according to manufacturer's specification.

viii LUP Type 2 & 3 dischargers shall ensure that all field and/or analytical data are kept in the SWPPP document.

g. LUP Type 2 & 3 Visual Observation and Sample Collection Exceptions

i LUP Type 2 & 3 dischargers shall be prepared to collect samples and conduct visual observation (inspections) to meet the minimum visual observation requirements of this Attachment. Type 2 & 3 LUP dischargers are not required to physically collect samples or conduct visual observation (inspections) under the following conditions:

(1) During dangerous weather conditions such as flooding and electrical storms;

(2) Outside of scheduled site business hours.

(3) When access to the site is unsafe due to storm events.

ii If the LUP Type 2 or 3 discharger does not collect the required samples or visual observation (inspections) due to these exceptions, an explanation why the sampling or visual observation (inspections) were not conducted shall be included in both the SWPPP and the Annual Report.

h. LUP Type 2 & 3 Storm Water Sample Collection and Handling Instructions

LUP Type 2 & 3 dischargers shall refer to Table 5 below for test Methods, detection Limits, and reporting Units. During storm water sample collection and handling, the LUP Type 2 & 3 discharger shall:

i Identify the parameters required for testing and the number of storm water discharge points that will be sampled. Request the laboratory to provide the appropriate number of sample containers, types of containers, sample container labels, blank chain of custody forms, and sample preservation instructions.

ii Determine how to ship the samples to the laboratory. The testing laboratory should receive samples within 48 hours of the physical sampling (unless otherwise required by the laboratory). The options are to either deliver the samples to the laboratory, arrange to have the laboratory pick them up, or ship them overnight to the laboratory.

iii Use only the sample containers provided by the laboratory to collect and store samples. Use of any other type of containers could contaminate your samples.

iv Prevent sample contamination, by not touching, or putting anything into the sample containers before collecting storm water samples.

v Not overfilling sample containers. Overfilling can change the analytical results.

vi Tightly screw the cap of each sample container without stripping the threads of the cap.

vii Complete and attach a label to each sample container. The label shall identify the date and time of sample collection, the person taking the sample, and the sample collection location or discharge point. The label should also identify any sample containers that have been preserved.

viii Carefully pack sample containers into an ice chest or refrigerator to prevent breakage and maintain temperature during shipment. Remember to place frozen ice packs into the shipping container. Samples should be kept as close to 4° C (39° F) as possible until arriving at the laboratory. Do not freeze samples.

ix Complete a Chain of Custody form for each set of samples. The Chain of Custody form shall include the discharger's name, address, and phone number, identification of each sample container and sample collection point, person collecting the samples, the date and time each sample container was filled, and the analysis that is required for each sample container.

x Upon shipping/delivering the sample containers, obtain both the signatures of the persons relinquishing and receiving the sample containers.

xi Designate and train personnel to collect, maintain, and ship samples in accordance with the above sample protocols and good laboratory practices.

xii Refer to the Surface Water Ambient Monitoring Program's (SWAMP) 2008 Quality Assurance Program Plan (QAPrP) for more

information on sampling collection and analysis. See http://www.waterboards.ca.gov/water_issues/programs/swamp/[14]

Table 5. Test Methods, Detection Limits, Reporting Units and Applicable NALs

Parameter	Test Method	Discharge Type	Min. Detection Limit	Reporting Units	Numeric Action Levels	(LUP Type 3) Receiving Water Monitoring Trigger
pH	Field test with calibrated portable instrument	Type 2 & 3	0.2	pH units	Lower = 6.5 upper = 8.5	Lower = 6.0 upper = 9.0
Turbidity	EPA 0180.1 and/or field test with calibrated portable instrument	Type 2 & 3	1	NTU	250 NTU	500 NTU
SSC	ASTM Method D 3977-97[15]	Type 3 if Receiving Water Monitoring Trigger is exceeded	5	Mg/L	N/A	N/A
Bioassessment	(STE) Level I of (SAFIT),[16] fixed-count of 600 org/sample	Type 3 LUPs > 30 acres	N/A	N/A	N/A	N/A

i. LUP Type 2 & 3 Monitoring Methods

i The LUP Type 2 or 3 discharger's project M&RP shall include a description of the following items:

(1) Visual observation locations, visual observation procedures, and visual observation follow-up and tracking procedures.

[14] Additional information regarding SWAMP's QAPrP can be found at: http://www.waterboards.ca.gov/water_issues/programs/swamp/.

[15] ASTM, 1999, Standard Test Method for Determining Sediment Concentration in Water Samples: American Society of Testing and Materials, D 3977-97, Vol. 11.02, pp. 389-394

[16] The current SAFIT STEs (28 November 2006) list requirements for both the Level I and Level II taxonomic effort, and are located at: http://www.swrcb.ca.gov/swamp/docs/safit/ste_list.pdf. When new editions are published by SAFIT, they will supersede all previous editions. All editions will be posted at the State Water Board's SWAMP website.

(2) Sampling locations, and sample collection and handling procedures. This shall include detailed procedures for sample collection, storage, preservation, and shipping to the testing lab to assure that consistent quality control and quality assurance is maintained. Dischargers shall attach to the monitoring program a copy of the Chain of Custody form used when handling and shipping samples.

(3) Identification of the analytical methods and related method detection limits (if applicable) for each parameter required in Section M.4.f above.

ii LUP Type 2 & 3 dischargers shall ensure that all sampling and sample preservation be in accordance with the current edition of "Standard Methods for the Examination of Water and Wastewater" (American Public Health Association). All monitoring instruments and equipment (including a discharger's own field instruments for measuring pH and turbidity) shall be calibrated and maintained in accordance with manufacturers' specifications to ensure accurate measurements. All laboratory analyses shall be conducted according to test procedures under 40 CFR Part 136, unless other test procedures have been specified in this General Permit or by the Regional Water Board. With the exception of field analysis conducted by the discharger for turbidity and pH, all analyses shall be sent to and conducted at a laboratory certified for such analyses by the State Department of Health Services (SSC exception). The LUP discharger shall conduct its own field analysis of pH and may conduct its own field analysis of turbidity if the discharger has sufficient capability (qualified and trained employees, properly calibrated and maintained field instruments, etc.) to adequately perform the field analysis.

j. LUP Type 2 & 3 Analytical Methods

LUP Type 2 & 3 dischargers shall refer to Table 5 above for test Methods, detection Limits, and reporting Units.

i **pH**: LUP Type 2 & 3 dischargers shall perform pH analysis on-site with a calibrated pH meter or pH test kit. The LUP discharger shall record pH monitoring results on paper and retain these records in accordance with Section M.4.o, below.

ii **Turbidity**: LUP Type 2 & 3 dischargers shall perform turbidity analysis using a calibrated turbidity meter (turbidimeter), either on-site or at an accredited lab. Acceptable test methods include Standard Method 2130 or USEPA Method 180.1. The results shall

be recorded in the site log book in Nephelometric Turbidity Units (NTU).

iii **Suspended sediment concentration (SSC)**: LUP Type 3 dischargers exceeding the turbidity Receiving Water Monitoring Trigger, shall perform SSC analysis using ASTM Method D3977-97.

iv **Bioassessment**: LUP Type 3 dischargers shall perform bioassessment sampling and analysis according to Appendix 3 of this General Permit.

k. Watershed Monitoring Option

If an LUP Type 2 or 3 discharger is part of a qualified regional watershed-based monitoring program the LUP Type 2 or 3 discharger may be eligible for relief from the monitoring requirements in this Attachment. The Regional Water Board may approve proposals to substitute an acceptable watershed-based monitoring program if it determines that the watershed-based monitoring program will provide information to determine each discharger's compliance with the requirements of this General Permit.

l. Particle Size Analysis for Risk Justification

LUP Type 2 & 3 dischargers justifying an alternative project risk shall report a soil particle size analysis used to determine the RUSLE K-Factor. ASTM D-422 (Standard Test Method for Particle-Size Analysis of Soils), as revised, shall be used to determine the percentages of sand, very fine sand, silt, and clay on the site.

m. NAL Exceedance Report

i In the event that any effluent sample exceeds an applicable NAL, the Regional Water Boards may require LUP Type 2 & 3 dischargers to submit NAL Exceedance Reports.

ii LUP Type 2 & 3 dischargers shall certify each NAL Exceedance Report in accordance with the Special Provisions for Construction Activity.

iii LUP Type 2 & 3 dischargers shall retain an electronic or paper copy of each NAL Exceedance Report for a minimum of three years after the date the exceedance report is filed.

iv LUP Type 2 & 3 dischargers shall include in the NAL Exceedance Report:

(1) the analytical method(s), method reporting unit(s), and method detection limit(s) of each analytical parameter (analytical results that are less than the method detection limit shall be reported as "less than the method detection limit"); and
(2) the date, place, time of sampling, visual observation (inspections), and/or measurements, including precipitation.
(3) Description of the current BMPs associated with the effluent sample that exceeded the NAL and the proposed corrective actions taken.

n. Monitoring Records

LUP Type 2 & 3 dischargers shall ensure that records of all storm water monitoring information and copies of all reports (including Annual Reports) required by this General Permit be retained for a period of at least three years. LUP Type 2 & 3 dischargers may retain records off-site and make them available upon request. These records shall include:

i The date, place, time of facility inspections, sampling, visual observation (inspections), and/or measurements, including precipitation (rain gauge);

ii The individual(s) who performed the facility inspections, sampling, visual observation (inspections), and or measurements;

iii The date and approximate time of analyses;

iv The individual(s) who performed the analyses;

v A summary of all analytical results from the last three years, the method detection limits and reporting units, the analytical techniques or methods used, and all chain of custody forms;

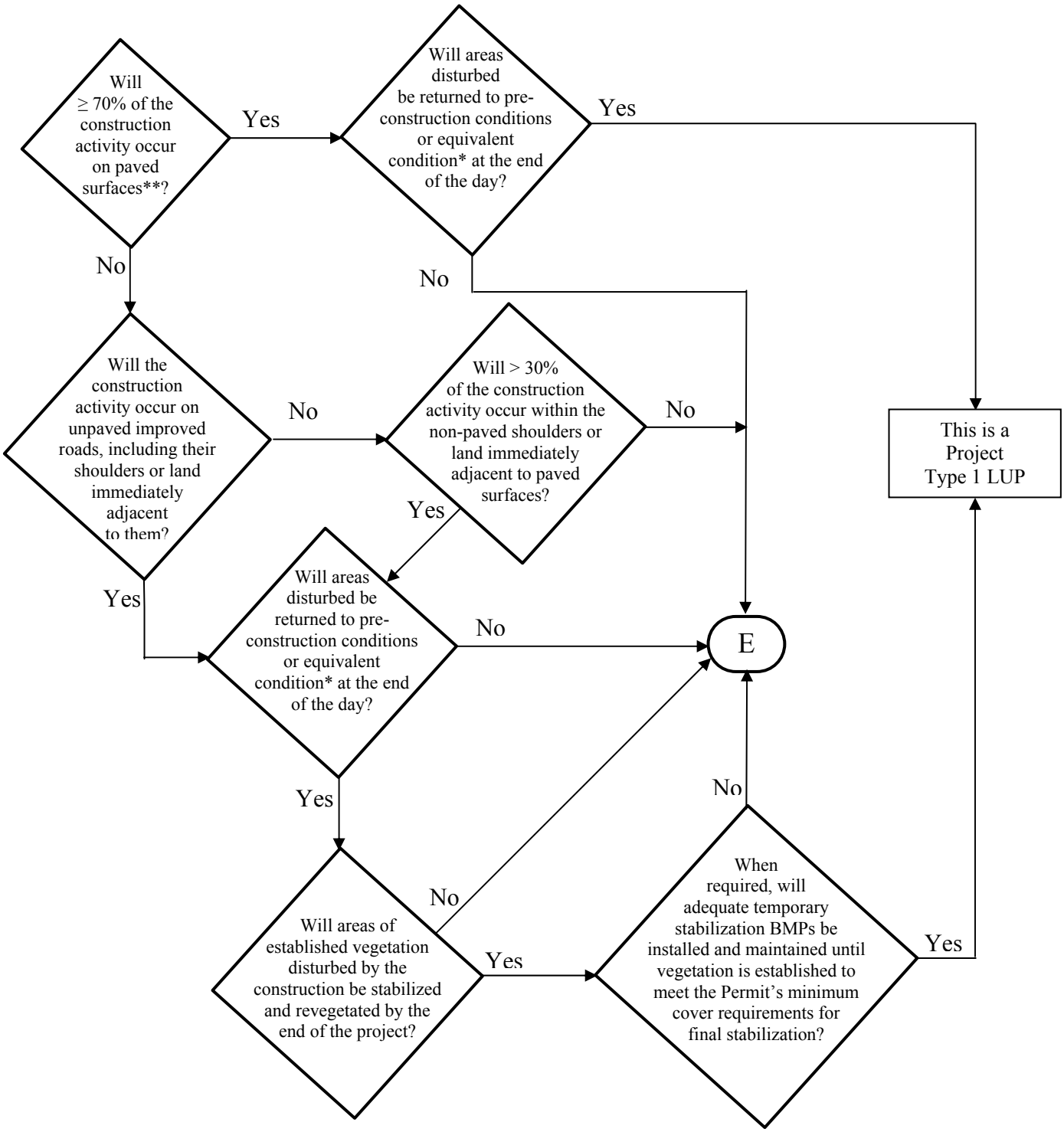
vi Quality assurance/quality control records and results;

vii Non-storm water discharge inspections and visual observation (inspections) and storm water discharge visual observation records (see Section M.4.a above);

viii Visual observation and sample collection exception records (see Section M.4.g above); and

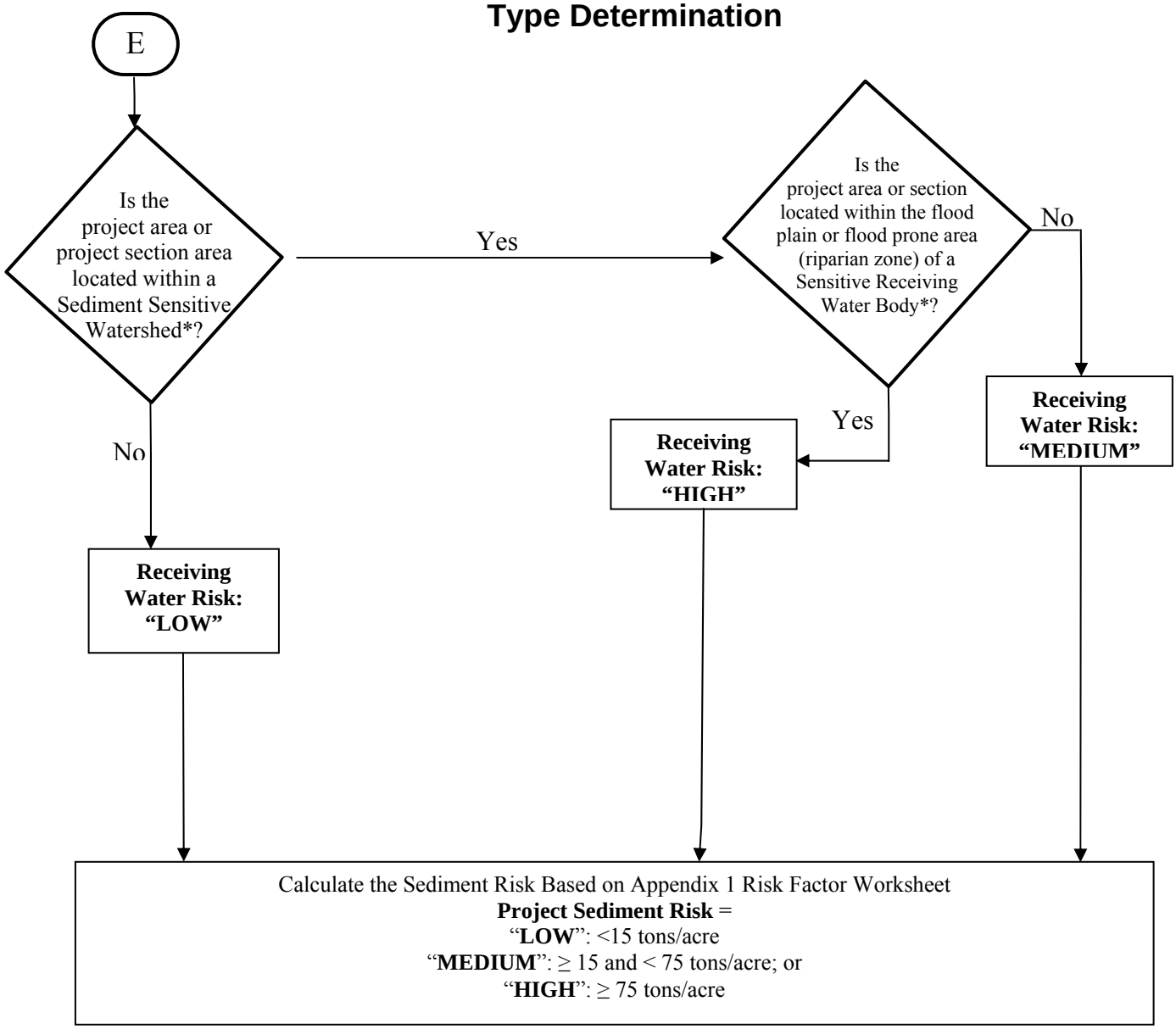
ix The records of any corrective actions and follow-up activities that resulted from analytical results, visual observation (inspections), or inspections.

ATTACHMENT A.1
LUP Project Area or Project Section Area Type Determination



*See Definition of Terms
** Or: "Will < 30% of the soil disturbance occur on unpaved surfaces?

ATTACHMENT A.1
LUP Project Area or Project Section Area Type Determination



* See Definition of Terms

PROJECT SEDIMENT RISK

RECEIVING WATER RISK	**LOW**	**MEDIUM**	**HIGH**
LOW	Type 1	Type 1	Type 2
MEDIUM	Type 1	Type 2	Type 3
HIGH	Type 2	Type 3	Type 3

ATTACHMENT A.1
Definition of Terms

1. **Equivalent Condition** – Means disturbed soils such as those from trench excavation are required to be hauled away, backfilled into the trench, and/or covered (e.g., metal plates, pavement, plastic covers over spoil piles) at the end of the construction day.
2. **Linear Construction Activity** – Linear construction activity consists of underground/ overhead facilities that typically include, but are not limited to, any conveyance, pipe or pipeline for the transportation of any gaseous, liquid (including water, wastewater for domestic municipal services), liquescent, or slurry substance; any cable line or wire for the transmission of electrical energy; any cable line or wire for communications (e.g., telephone, telegraph, radio or television messages); and associated ancillary facilities. Construction activities associated with LUPs include, but are not limited to those activities necessary for the installation of underground and overhead linear facilities (e.g., conduits, substructures, pipelines, towers, poles, cables, wires, connectors, switching, regulating and transforming equipment and associated ancillary facilities) and include, but are not limited to, underground utility mark-out, potholing, concrete and asphalt cutting and removal, trenching, excavation, boring and drilling, access road and pole/ tower pad and cable/ wire pull station, substation construction, substructure installation, construction of tower footings and/or foundations, pole and tower installations, pipeline installations, welding, concrete and/or pavement repair or replacement, and stockpile/ borrow locations.
3. **Sediment Sensitive Receiving Water Body –** Defined as a water body segment that is listed on EPA's approved CWA 303(d) list for sedimentation/siltation, turbidity, or is designated with beneficial uses of SPAWN, MIGRATORY, and COLD.
4. **Sediment Sensitive Watershed –** Defined as a watershed draining into a receiving water body listed on EPA's approved CWA 303(d) list for sedimentation/siltation, turbidity, or a water body designated with beneficial uses of SPAWN, MIGRATORY, and COLD.

ATTACHMENT A.2
PERMIT REGISTRATION DOCUMENTS (PRDs)
GENERAL INSTRUCTIONS FOR LINEAR UNDERGROUND/OVERHEAD PROJECTS TO COMPLY WITH THE CONSTRUCTION GENERAL PERMIT

GENERAL INSTRUCTIONS

Who Must Submit

This permit is effective on July 1, 2010.

The Legally Responsible Person (LRP) for construction activities associated with linear underground/overhead project (LUP) must electronically apply for coverage under this General Permit on or after July 1, 2010. If it is determined that the LUP construction activities require an NPDES permit, the Legally Responsible Person[1] (LRP) shall submit PRDs for this General Permit in accordance with the following:

LUPs associated with Private or Municipal Development Projects

1. For LUPs associated with pre-development and pre-redevelopment construction activities:

   The LRP must obtain coverage[2] under this General Permit for its pre-development and pre-redevelopment construction activities where the total disturbed land area of these construction activities is greater than 1 acre.

2. For LUPs associated with new development and redevelopment construction projects:

   The LRP must obtain coverage under this General Permit for LUP construction activities associated with new development and redevelopment projects where the total disturbed land area of the LUP is greater than 1 acre. Coverage under this permit is not required where the same LUP construction activities are covered by another NPDES permit.

LUPs not associated with private or municipal new development or redevelopment projects:

The LRP must obtain coverage under this General Permit on or after July 1, 2010 for its LUP construction activities where the total disturbed land area is greater than 1 acre.

PRD Submittal Requirements

Prior to the start of construction activities a LRP must submit PRDs and fees to the State Water Board for each LUP.

New and Ongoing LUPs

Dischargers of new LUPs that commence construction activities after the adoption date of this General Permit shall file PRDs prior to the commencement of construction and implement the SWPPP upon the start of construction.

[1] person possessing the title of the land on which the construction activities will occur for the regulated site
[2] obtain coverage means filing PRDs for the project.

PERMIT REGISTRATION DOCUMENTS (PRDs)
GENERAL INSTRUCTIONS (CONTINUED)

Dischargers of ongoing LUPs that are currently covered under State Water Board Order No. 2003-0007 (Small LUP General Permit) shall electronically file Permit Registration Documents no later than July 1, 2010. After July 1, 2010, all NOIs subject to State Water Board Order No. 2003-0007-DWQ will be terminated. All existing dischargers shall be exempt from the risk determination requirements in Attachment A. All existing dischargers are therefore subject to LUP Type 1 requirements regardless of their project's sediment and receiving water risks. However, a Regional Board retains the authority to require an existing discharger to comply with the risk determination requirements in Attachment A.

Where to Apply

The Permit Registration Documents (PRDs) can be found at www.waterboards.ca.gov/water_issues/programs/stormwater/

Fees

The annual fee for storm water permits are established through the State of California Code of Regulations.

When Permit Coverage Commences

To obtain coverage under the General Permit, the LRP must include the complete PRDs and the annual fee. All PRDs deemed incomplete will be rejected with an explanation as to what is required to complete submittal. Upon receipt of complete PRDs and associated fee, each discharger will be sent a waste discharger's identification (WDID) number.

Projects and Activities Not Defined As Construction Activity

1. LUP construction activity does not include routine maintenance projects to maintain original line and grade, hydraulic capacity, or original purpose of the facility. Routine maintenance projects are projects associated with operations and maintenance activities that are conducted on existing lines and facilities and within existing right-of-way, easements, franchise agreements or other legally binding agreements of the discharger. Routine maintenance projects include, but are not limited to projects that are conducted to:

    - Maintain the original purpose of the facility, or hydraulic capacity.
    - Update existing lines[3] and facilities to comply with applicable codes, standards and regulations regardless if such projects result in increased capacity.
    - Repairing leaks.

    Routine maintenance does not include construction of new[4] lines or facilities resulting from compliance with applicable codes, standards and regulations.

[3] Update existing lines includes replacing existing lines with new materials or pipes.
[4] New lines are those that are not associated with existing facilities and are not part of a project to update or replace existing lines.

PERMIT REGISTRATION DOCUMENTS (PRDs)
GENERAL INSTRUCTIONS (CONTINUED)

Routine maintenance projects do not include those areas of maintenance projects that are outside of an existing right-of-way, franchise, easements, or agreements. When a project must acquire new areas, those areas may be subject to this General Permit based on the area of disturbed land outside the original right-of-way, easement, or agreement.

2. LUP construction activity does not include field activities associated with the planning and design of a project (e.g., activities associated with route selection).

3. Tie-ins conducted immediately adjacent to "energized" or "pressurized" facilities by the discharger are not considered small construction activities where all other LUP construction activities associated with the tie-in are covered by a NOI and SWPPP of a third party or municipal agency.

Calculating Land Disturbance Areas of LUPs

The total land area disturbed for LUPs is the sum of the:

- Surface areas of trenches, laterals and ancillary facilities, plus
- Area of the base of stockpiles on unpaved surfaces, plus
- Surface area of the borrow area, plus
- Areas of paved surfaces constructed for the project, plus
- Areas of new roads constructed or areas of major reconstruction to existing roads (e.g. improvements to two-track surfaces or road widening) for the sole purpose of accessing construction activities or as part of the final project, plus
- Equipment and material storage, staging, and preparation areas (laydown areas) not on paved surfaces, plus
- Soil areas outside the surface area of trenches, laterals and ancillary facilities that will be graded, and/or disturbed by the use of construction equipment, vehicles and machinery during construction activities.

Stockpiling Areas

Stockpiling areas, borrow areas and the removal of soils from a construction site may or may not be included when calculating the area of disturbed soil for a site depending on the following conditions:

- For stockpiling of soils onsite or immediately adjacent to a LUP site and the stockpile is not on a paved surface, the area of the base of the stockpile is to be included in the disturbed area calculation.

- The surface area of borrow areas that are onsite or immediately adjacent to a project site are to be included in the disturbed area calculation.

- For soil that is hauled offsite to a location owned or operated by the discharger that is not a paved surface, the area of the base of the stockpile is to be included in the disturbed area calculation except when the offsite location is already subject to a separate storm water permit.

PERMIT REGISTRATION DOCUMENTS (PRDs)
GENERAL INSTRUCTIONS (CONTINUED)

- For soil that is brought to the project from an off-site location owned or operated by the discharger the surface area of the borrow pit is to be included in the disturbed area calculation except when the offsite location is already subject to a separate storm water permit.

- Trench spoils on a paved surface that are either returned to the trench or excavation or hauled away from the project daily for disposal or reuse will not be included in the disturbed area calculation.

If you have any questions concerning submittal of PRDs, please call the State Water Board at (866) 563-3107.

ATTACHMENT B
PERMIT REGISTRATION DOCUMENTS (PRDs) TO COMPLY WITH THE TERMS OF THE GENERAL PERMIT TO DISCHARGE STORM WATER ASSOCIATED WITH CONSTRUCTION ACTIVITY

GENERAL INSTRUCTIONS

A. All Linear Construction Projects shall comply with the PRD requirements in Attachment A.2 of this Order.

B. Who Must Submit

Discharges of storm water associated with construction that results in the disturbance of one acre or more of land must apply for coverage under the General Construction Storm Water Permit (General Permit). Any construction activity that is a part of a larger common plan of development or sale must also be permitted, regardless of size. (For example, if 0.5 acre of a 20-acre subdivision is disturbed by the construction activities of discharger A and the remaining 19.5 acres is to be developed by discharger B, discharger A must obtain a General Storm Water Permit for the 0.5 acre project).

Other discharges from construction activities that are covered under this General Permit can be found in the General Permit Section II.B.

It is the LRP's responsibility to obtain coverage under this General Permit by electronically submitting complete PRDs (Permit Registration Documents).

In all cases, the proper procedures for submitting the PRDs must be completed before construction can commence.

C. Construction Activity Not Covered By This General Permit

Discharges from construction that are not covered under this General Permit can be found in the General Permit Sections II.A &B..

D. Annual Fees and Fee Calculation

Annual fees are calculated based upon the total area of land to be disturbed not the total size of the acreage owned. However, the calculation includes all acres to be disturbed during the duration of the project. For example, if 10 acres are scheduled to be disturbed the first year and 10 in each subsequent year for 5 years, the annual fees would be based upon 50 acres of disturbance. The State Water Board will evaluate adding acreage to an existing Permit Waste Discharge Identification (WDID) number on a case-by-case basis. In general, any acreage to be considered must be contiguous to the permitted land area and the existing

SWPPP must be appropriate for the construction activity and topography of the acreage under consideration. As acreage is built out and stabilized or sold, the Change of Information (COI) form enables the applicant to remove those acres from inclusion in the annual fee calculation. Checks should be made payable to: State Water Board.

The Annual fees are established through regulations adopted by the State Water Board. The total annual fee is the current base fee plus applicable surcharges for all construction sites submitting an NOI, based on the total acreage to be disturbed during the life of the project. Annual fees are subject to change by regulation.

Dischargers that apply for and satisfy the Small Construction Erosivity Wavier requirements shall pay a fee of $200.00 plus an applicable surcharge, see the General Permit Section II.B.7.

E. When to Apply

LRP's proposing to conduct construction activities subject to this General Permit must submit their PRDs prior to the commencement of construction activity.

F. Requirements for Completing Permit Registration Documents (PRDs)

All dischargers required to comply with this General Permit shall electronically submit the required PRDs for their type of construction as defined below.

G. Standard PRD Requirements (All Dischargers)

1. Notice of Intent
2. Risk Assessment (Standard or Site-Specific)
3. Site Map
4. SWPPP
5. Annual Fee
6. Certification

H. Additional PRD Requirements Related to Construction Type

1. Discharger in unincorporated areas of the State (not covered under an adopted Phase I or II SUSMP requirements) and that are not a linear project shall also submit a completed:
   a. Post-Construction Water Balance Calculator (Appendix 2).

2. Dischargers who are proposing to implement ATS shall submit:
   a. Complete ATS Plan in accordance with Attachment F at least 14 days prior to the planned operation of the ATS and a paper copy shall be available onsite during ATS operation.

b. Certification proof that design done by a professional in accordance with Attachment F.

3. Dischargers who are proposing an alternate Risk Justification:
   a. Particle Size Analysis.

I. Exceptions to Standard PRD Requirements

Construction sites with an R value less than 5 as determined in the Risk Assessment are not required to submit a SWPPP.

J. Description of PRDs

1. Notice of Intent (NOI)

2. Site Map(s) Includes:
   a. The project's surrounding area (vicinity)
   b. Site layout
   c. Construction site boundaries
   d. Drainage areas
   e. Discharge locations
   f. Sampling locations
   g. Areas of soil disturbance (temporary or permanent)
   h. Active areas of soil disturbance (cut or fill)
   i. Locations of all runoff BMPs
   j. Locations of all erosion control BMPs
   k. Locations of all sediment control BMPs
   l. ATS location (if applicable)
   m. Locations of sensitive habitats, watercourses, or other features which are not to be disturbed
   n. Locations of all post-construction BMPs
   o. Locations of storage areas for waste, vehicles, service, loading/unloading of materials, access (entrance/exits) points to construction site, fueling, and water storage, water transfer for dust control and compaction practices

3. **SWPPPs**
   A site-specific SWPPP shall be developed by each discharger and shall be submitted with the PRDs.

4. **Risk Assessment**
   All dischargers shall use the Risk Assessment procedure as describe in the General Permit Appendix 1.

   a. The Standard Risk Assessment includes utilization of the following:
      i. Receiving water Risk Assessment interactive map

ii. EPA Rainfall Erosivity Factor Calculator Website
iii. Sediment Risk interactive map
iv. Sediment sensitive water bodies list

b. The Site-Specific Risk Assessment includes the completion of the hand calculated R value Risk Calculator

5. **Post-Construction Water Balance Calculator**
All dischargers subject to this requirement shall complete the Water Balance Calculator (in Appendix 2) in accordance with the instructions.

6. **ATS Design Document and Certification**
All dischargers using ATS must submit electronically their system design (as well as any supporting documentation) and proof that the system was designed by a qualified ATS design professional (See Attachment F).

To obtain coverage under the General Permit PRDs must be included and completed. If any of the required items are missing, the PRD submittal is considered incomplete and will be rejected. Upon receipt of a complete PRD submittal, the State Water Board will process the application package in the order received and assign a (WDID) number.

Questions?

If you have any questions on completing the PRDs please email stormwater@waterboards.ca.gov or call (866) 563-3107.

ATTACHMENT C
RISK LEVEL 1 REQUIREMENTS

A. Effluent Standards

[These requirements are the same as those in the General Permit order.]

1. Narrative – Risk Level 1 dischargers shall comply with the narrative effluent standards listed below:

   a. Storm water discharges and authorized non-storm water discharges regulated by this General Permit shall not contain a hazardous substance equal to or in excess of reportable quantities established in 40 C.F.R. §§ 117.3 and 302.4, unless a separate NPDES Permit has been issued to regulate those discharges.

   b. Dischargers shall minimize or prevent pollutants in storm water discharges and authorized non-storm water discharges through the use of controls, structures, and management practices that achieve BAT for toxic and non-conventional pollutants and BCT for conventional pollutants.

2. Numeric – Risk Level 1 dischargers are not subject to a numeric effluent standard.

B. Good Site Management "Housekeeping"

1. Risk Level 1 dischargers shall implement good site management (i.e., "housekeeping") measures for construction materials that could potentially be a threat to water quality if discharged. At a minimum, Risk Level 1 dischargers shall implement the following good housekeeping measures:

   a. Conduct an inventory of the products used and/or expected to be used and the end products that are produced and/or expected to be produced. This does not include materials and equipment that are designed to be outdoors and exposed to environmental conditions (i.e. poles, equipment pads, cabinets, conductors, insulators, bricks, etc.).

   b. Cover and berm loose stockpiled construction materials that are not actively being used (i.e. soil, spoils, aggregate, fly-ash, stucco, hydrated lime, etc.).

c. Store chemicals in watertight containers (with appropriate secondary containment to prevent any spillage or leakage) or in a storage shed (completely enclosed).

d. Minimize exposure of construction materials to precipitation. This does not include materials and equipment that are designed to be outdoors and exposed to environmental conditions (i.e. poles, equipment pads, cabinets, conductors, insulators, bricks, etc.).

e. Implement BMPs to prevent the off-site tracking of loose construction and landscape materials.

2. Risk Level 1 dischargers shall implement good housekeeping measures for waste management, which, at a minimum, shall consist of the following:

a. Prevent disposal of any rinse or wash waters or materials on impervious or pervious site surfaces or into the storm drain system.

b. Ensure the containment of sanitation facilities (e.g., portable toilets) to prevent discharges of pollutants to the storm water drainage system or receiving water.

c. Clean or replace sanitation facilities and inspecting them regularly for leaks and spills.

d. Cover waste disposal containers at the end of every business day and during a rain event.

e. Prevent discharges from waste disposal containers to the storm water drainage system or receiving water.

f. Contain and securely protect stockpiled waste material from wind and rain at all times unless actively being used.

g. Implement procedures that effectively address hazardous and non-hazardous spills.

h. Develop a spill response and implementation element of the SWPPP prior to commencement of construction activities. The SWPPP shall require that:

i. Equipment and materials for cleanup of spills shall be available on site and that spills and leaks shall be cleaned up immediately and disposed of properly; and

ii. Appropriate spill response personnel are assigned and trained.

i. Ensure the containment of concrete washout areas and other washout areas that may contain additional pollutants so there is no discharge into the underlying soil and onto the surrounding areas.

3. Risk Level 1 dischargers shall implement good housekeeping for vehicle storage and maintenance, which, at a minimum, shall consist of the following:

   a. Prevent oil, grease, or fuel to leak in to the ground, storm drains or surface waters.

   b. Place all equipment or vehicles, which are to be fueled, maintained and stored in a designated area fitted with appropriate BMPs.

   c. Clean leaks immediately and disposing of leaked materials properly.

4. Risk Level 1 dischargers shall implement good housekeeping for landscape materials, which, at a minimum, shall consist of the following:

   a. Contain stockpiled materials such as mulches and topsoil when they are not actively being used.

   b. Contain fertilizers and other landscape materials when they are not actively being used.

   c. Discontinue the application of any erodible landscape material within 2 days before a forecasted rain event or during periods of precipitation.

   d. Apply erodible landscape material at quantities and application rates according to manufacture recommendations or based on written specifications by knowledgeable and experienced field personnel.

   e. Stack erodible landscape material on pallets and covering or storing such materials when not being used or applied.

5. Risk Level 1 dischargers shall conduct an assessment and create a list of potential pollutant sources and identify any areas of the site where additional BMPs are necessary to reduce or prevent pollutants in storm water discharges and authorized non-storm water discharges. This potential pollutant list shall be kept with the SWPPP and shall identify

all non-visible pollutants which are known, or should be known, to occur on the construction site. At a minimum, when developing BMPs, Risk Level 1 dischargers shall do the following:

a. Consider the quantity, physical characteristics (e.g., liquid, powder, solid), and locations of each potential pollutant source handled, produced, stored, recycled, or disposed of at the site.

b. Consider the degree to which pollutants associated with those materials may be exposed to and mobilized by contact with storm water.

c. Consider the direct and indirect pathways that pollutants may be exposed to storm water or authorized non-storm water discharges. This shall include an assessment of past spills or leaks, non-storm water discharges, and discharges from adjoining areas.

d. Ensure retention of sampling, visual observation, and inspection records.

e. Ensure effectiveness of existing BMPs to reduce or prevent pollutants in storm water discharges and authorized non-storm water discharges.

6. Risk Level 1 dischargers shall implement good housekeeping measures on the construction site to control the air deposition of site materials and from site operations. Such particulates can include, but are not limited to, sediment, nutrients, trash, metals, bacteria, oil and grease and organics.

C. Non-Storm Water Management

1. Risk Level 1 dischargers shall implement measures to control all non-storm water discharges during construction.

2. Risk Level 1 dischargers shall wash vehicles in such a manner as to prevent non-storm water discharges to surface waters or MS4 drainage systems.

3. Risk Level 1 dischargers shall clean streets in such a manner as to prevent unauthorized non-storm water discharges from reaching surface water or MS4 drainage systems.

D. Erosion Control

1. Risk Level 1 dischargers shall implement effective wind erosion control.

2. Risk Level 1 dischargers shall provide effective soil cover for inactive[1] areas and all finished slopes, open space, utility backfill, and completed lots.

3. Risk Level 1 dischargers shall limit the use of plastic materials when more sustainable, environmentally friendly alternatives exist. Where plastic materials are deemed necessary, the discharger shall consider the use of plastic materials resistant to solar degradation.

E. Sediment Controls

1. Risk Level 1 dischargers shall establish and maintain effective perimeter controls and stabilize all construction entrances and exits to sufficiently control erosion and sediment discharges from the site.

2. On sites where sediment basins are to be used, Risk Level 1 dischargers shall, at minimum, design sediment basins according to the method provided in CASQA's Construction BMP Guidance Handbook.

F. Run-on and Runoff Controls

Risk Level 1 dischargers shall effectively manage all run-on, all runoff within the site and all runoff that discharges off the site. Run-on from off site shall be directed away from all disturbed areas or shall collectively be in compliance with the effluent limitations in this General Permit.

G. Inspection, Maintenance and Repair

1. Risk Level 1 dischargers shall ensure that all inspection, maintenance repair and sampling activities at the project location shall be performed or supervised by a Qualified SWPPP Practitioner (QSP) representing the discharger. The QSP may delegate any or all of these activities to an employee trained to do the task(s) appropriately, but shall ensure adequate deployment.

2. Risk Level 1 dischargers shall perform weekly inspections and observations, and at least once each 24-hour period during extended

[1] Inactive areas of construction are areas of construction activity that have been disturbed and are not scheduled to be re-disturbed for at least 14 days.

storm events, to identify and record BMPs that need maintenance to operate effectively, that have failed, or that could fail to operate as intended. Inspectors shall be the QSP or be trained by the QSP.

3. Upon identifying failures or other shortcomings, as directed by the QSP, Risk Level 1 dischargers shall begin implementing repairs or design changes to BMPs within 72 hours of identification and complete the changes as soon as possible.

4. For each inspection required, Risk Level 1 dischargers shall complete an inspection checklist, using a form provided by the State Water Board or Regional Water Board or in an alternative format.

5. Risk Level 1 dischargers shall ensure that checklists shall remain onsite with the SWPPP and at a minimum, shall include:

   a. Inspection date and date the inspection report was written.

   b. Weather information, including presence or absence of precipitation, estimate of beginning of qualifying storm event, duration of event, time elapsed since last storm, and approximate amount of rainfall in inches.

   c. Site information, including stage of construction, activities completed, and approximate area of the site exposed.

   d. A description of any BMPs evaluated and any deficiencies noted.

   e. If the construction site is safely accessible during inclement weather, list the observations of all BMPs: erosion controls, sediment controls, chemical and waste controls, and non-storm water controls. Otherwise, list the results of visual inspections at all relevant outfalls, discharge points, downstream locations and any projected maintenance activities.

   f. Report the presence of noticeable odors or of any visible sheen on the surface of any discharges.

   g. Any corrective actions required, including any necessary changes to the SWPPP and the associated implementation dates.

   h. Photographs taken during the inspection, if any.

   i. Inspector’s name, title, and signature.

H. Rain Event Action Plan

Not required for Risk Level 1 dischargers.

I. Risk Level 1 Monitoring and Reporting Requirements

Table 1- Summary of Monitoring Requirements

Risk Level	Visual Inspections					Sample Collection	
	Quarterly Non-storm Water Discharge	Pre-storm Event		Daily Storm BMP	Post Storm	Storm Water Discharge	Receiving Water
		Baseline	REAP				
1	X	X		X	X		

1. **Construction Site Monitoring Program Requirements**

   a. Pursuant to Water Code Sections 13383 and 13267, all dischargers subject to this General Permit shall develop and implement a written site-specific Construction Site Monitoring Program (CSMP) in accordance with the requirements of this Section. The CSMP shall include all monitoring procedures and instructions, location maps, forms, and checklists as required in this section. The CSMP shall be developed prior to the commencement of construction activities, and revised as necessary to reflect project revisions. The CSMP shall be a part of the Storm Water Pollution Prevention Plan (SWPPP), included as an appendix or separate SWPPP chapter.

   b. Existing dischargers registered under the State Water Board Order No. 99-08-DWQ shall make and implement necessary revisions to their Monitoring Programs to reflect the changes in this General Permit in a timely manner, but no later than July 1, 2010. Existing dischargers shall continue to implement their existing Monitoring Programs in compliance with State Water Board Order No. 99-08-DWQ until the necessary revisions are completed according to the schedule above.

   c. When a change of ownership occurs for all or any portion of the construction site prior to completion or final stabilization, the new discharger shall comply with these requirements as of the date the ownership change occurs.

2. **Objectives**

   The CSMP shall be developed and implemented to address the following objectives:

   a. To demonstrate that the site is in compliance with the Discharge Prohibitions;

b. To determine whether non-visible pollutants are present at the construction site and are causing or contributing to exceedances of water quality objectives;

c. To determine whether immediate corrective actions, additional Best Management Practice (BMP) implementation, or SWPPP revisions are necessary to reduce pollutants in storm water discharges and authorized non-storm water discharges; and

d. To determine whether BMPs included in the SWPPP are effective in preventing or reducing pollutants in storm water discharges and authorized non-storm water discharges.

3. **Risk Level 1 - Visual Monitoring (Inspection) Requirements for Qualifying Rain Events**

a. Risk Level 1 dischargers shall visually observe (inspect) storm water discharges at all discharge locations within two business days (48 hours) after each qualifying rain event.

b. Risk Level 1 dischargers shall visually observe (inspect) the discharge of stored or contained storm water that is derived from and discharged subsequent to a qualifying rain event producing precipitation of ½ inch or more at the time of discharge. Stored or contained storm water that will likely discharge after operating hours due to anticipated precipitation shall be observed prior to the discharge during operating hours.

c. Risk Level 1 dischargers shall conduct visual observations (inspections) during business hours only.

d. Risk Level 1 dischargers shall record the time, date and rain gauge reading of all qualifying rain events.

e. Within 2 business days (48 hours) prior to each qualifying rain event, Risk Level 1 dischargers shall visually observe (inspect):

i. All storm water drainage areas to identify any spills, leaks, or uncontrolled pollutant sources. If needed, the discharger shall implement appropriate corrective actions.

ii. All BMPs to identify whether they have been properly implemented in accordance with the SWPPP. If needed, the discharger shall implement appropriate corrective actions.

iii. Any storm water storage and containment areas to detect leaks and ensure maintenance of adequate freeboard.

f. For the visual observations (inspections) described in e.i and e.iii above, Risk Level 1 dischargers shall observe the presence or absence of floating and suspended materials, a sheen on the surface, discolorations, turbidity, odors, and source(s) of any observed pollutants.

g. Within two business days (48 hours) after each qualifying rain event, Risk Level 1 dischargers shall conduct post rain event visual observations (inspections) to (1) identify whether BMPs were adequately designed, implemented, and effective, and (2) identify additional BMPs and revise the SWPPP accordingly.

h. Risk Level 1 dischargers shall maintain on-site records of all visual observations (inspections), personnel performing the observations, observation dates, weather conditions, locations observed, and corrective actions taken in response to the observations.

4. **Risk Level 1 – Visual Observation Exemptions**

a. Risk Level 1 dischargers shall be prepared to conduct visual observation (inspections) until the minimum requirements of Section I.3 above are completed. Risk Level 1 dischargers are not required to conduct visual observation (inspections) under the following conditions:

i. During dangerous weather conditions such as flooding and electrical storms.

ii. Outside of scheduled site business hours.

b. If no required visual observations (inspections) are collected due to these exceptions, Risk Level 1 dischargers shall include an explanation in their SWPPP and in the Annual Report documenting why the visual observations (inspections) were not conducted.

5. **Risk Level 1 – Monitoring Methods**

Risk Level 1 dischargers shall include a description of the visual observation locations, visual observation procedures, and visual observation follow-up and tracking procedures in the CSMP.

6. **Risk Level 1 – Non-Storm Water Discharge Monitoring Requirements**

a. Visual Monitoring Requirements:

   i. Risk Level 1 dischargers shall visually observe (inspect) each drainage area for the presence of (or indications of prior) unauthorized and authorized non-storm water discharges and their sources.

   ii. Risk Level 1 dischargers shall conduct one visual observation (inspection) quarterly in each of the following periods: January-March, April-June, July-September, and October-December. Visual observation (inspections) are only required during daylight hours (sunrise to sunset).

   iii. Risk Level 1 dischargers shall ensure that visual observations (inspections) document the presence or evidence of any non-storm water discharge (authorized or unauthorized), pollutant characteristics (floating and suspended material, sheen, discoloration, turbidity, odor, etc.), and source. Risk Level 1 dischargers shall maintain on-site records indicating the personnel performing the visual observation (inspections), the dates and approximate time each drainage area and non-storm water discharge was observed, and the response taken to eliminate unauthorized non-storm water discharges and to reduce or prevent pollutants from contacting non-storm water discharges.

7. **Risk Level 1 – Non-Visible Pollutant Monitoring Requirements**

   a. Risk Level 1 dischargers shall collect one or more samples during any breach, malfunction, leakage, or spill observed during a visual inspection which could result in the discharge of pollutants to surface waters that would not be visually detectable in storm water.

   b. Risk Level 1 dischargers shall ensure that water samples are large enough to characterize the site conditions.

   c. Risk Level 1 dischargers shall collect samples at all discharge locations that can be safely accessed.

   d. Risk Level 1 dischargers shall collect samples during the first two hours of discharge from rain events that occur during business hours and which generate runoff.

   e. Risk Level 1 dischargers shall analyze samples for all non-visible pollutant parameters (if applicable) - parameters indicating the

presence of pollutants identified in the pollutant source assessment required (Risk Level 1 dischargers shall modify their CSMPs to address these additional parameters in accordance with any updated SWPPP pollutant source assessment).

f. Risk Level 1 dischargers shall collect a sample of storm water that has not come in contact with the disturbed soil or the materials stored or used on-site (uncontaminated sample) for comparison with the discharge sample.

g. Risk Level 1 dischargers shall compare the uncontaminated sample to the samples of discharge using field analysis or through laboratory analysis.[2]

h. Risk Level 1 dischargers shall keep all field /or analytical data in the SWPPP document.

8. **Risk Level 1 – Particle Size Analysis for Project Risk Justification**

Risk Level 1 dischargers justifying an alternative project risk shall report a soil particle size analysis used to determine the RUSLE K-Factor. ASTM D-422 (Standard Test Method for Particle-Size Analysis of Soils), as revised, shall be used to determine the percentages of sand, very fine sand, silt, and clay on the site.

9. **Risk Level 1 – Records**

Risk Level 1 dischargers shall retain records of all storm water monitoring information and copies of all reports (including Annual Reports) for a period of at least three years. Risk Level 1 dischargers shall retain all records on-site while construction is ongoing. These records include:

a. The date, place, time of facility inspections, sampling, visual observation (inspections), and/or measurements, including precipitation.

b. The individual(s) who performed the facility inspections, sampling, visual observation (inspections), and or measurements.

c. The date and approximate time of analyses.

d. The individual(s) who performed the analyses.

[2] For laboratory analysis, all sampling, sample preservation, and analyses must be conducted according to test procedures under 40 CFR Part 136. Field discharge samples shall be collected and analyzed according to the specifications of the manufacturer of the sampling devices employed.

e. A summary of all analytical results from the last three years, the method detection limits and reporting units, and the analytical techniques or methods used.

f. Rain gauge readings from site inspections.

g. Quality assurance/quality control records and results.

h. Non-storm water discharge inspections and visual observation (inspections) and storm water discharge visual observation records (see Sections I.3 and I.6 above).

i. Visual observation and sample collection exception records (see Section I.4 above).

j. The records of any corrective actions and follow-up activities that resulted from analytical results, visual observation (inspections), or inspections.

ATTACHMENT D
RISK LEVEL 2 REQUIREMENTS

A. Effluent Standards

[These requirements are the same as those in the General Permit order.]

1. Narrative – Risk Level 2 dischargers shall comply with the narrative effluent standards listed below:

    a. Storm water discharges and authorized non-storm water discharges regulated by this General Permit shall not contain a hazardous substance equal to or in excess of reportable quantities established in 40 C.F.R. §§ 117.3 and 302.4, unless a separate NPDES Permit has been issued to regulate those discharges.

    b. Dischargers shall minimize or prevent pollutants in storm water discharges and authorized non-storm water discharges through the use of controls, structures, and management practices that achieve BAT for toxic and non-conventional pollutants and BCT for conventional pollutants.

2. Numeric – Risk level 2 dischargers are subject to a pH NAL of 6.5-8.5, and a turbidity NAL of 250 NTU.

B. Good Site Management "Housekeeping"

1. Risk Level 2 dischargers shall implement good site management (i.e., "housekeeping") measures for construction materials that could potentially be a threat to water quality if discharged. At a minimum, Risk Level 2 dischargers shall implement the following good housekeeping measures:

    a. Conduct an inventory of the products used and/or expected to be used and the end products that are produced and/or expected to be produced. This does not include materials and equipment that are designed to be outdoors and exposed to environmental conditions (i.e. poles, equipment pads, cabinets, conductors, insulators, bricks, etc.).

    b. Cover and berm loose stockpiled construction materials that are not actively being used (i.e. soil, spoils, aggregate, fly-ash, stucco, hydrated lime, etc.).

c. Store chemicals in watertight containers (with appropriate secondary containment to prevent any spillage or leakage) or in a storage shed (completely enclosed).

d. Minimize exposure of construction materials to precipitation. This does not include materials and equipment that are designed to be outdoors and exposed to environmental conditions (i.e. poles, equipment pads, cabinets, conductors, insulators, bricks, etc.).

e. Implement BMPs to prevent the off-site tracking of loose construction and landscape materials.

2. Risk Level 2 dischargers shall implement good housekeeping measures for waste management, which, at a minimum, shall consist of the following:

a. Prevent disposal of any rinse or wash waters or materials on impervious or pervious site surfaces or into the storm drain system.

b. Ensure the containment of sanitation facilities (e.g., portable toilets) to prevent discharges of pollutants to the storm water drainage system or receiving water.

c. Clean or replace sanitation facilities and inspecting them regularly for leaks and spills.

d. Cover waste disposal containers at the end of every business day and during a rain event.

e. Prevent discharges from waste disposal containers to the storm water drainage system or receiving water.

f. Contain and securely protect stockpiled waste material from wind and rain at all times unless actively being used.

g. Implement procedures that effectively address hazardous and non-hazardous spills.

h. Develop a spill response and implementation element of the SWPPP prior to commencement of construction activities. The SWPPP shall require:

i. Equipment and materials for cleanup of spills shall be available on site and that spills and leaks shall be cleaned up immediately and disposed of properly.

ii. Appropriate spill response personnel are assigned and trained.

i. Ensure the containment of concrete washout areas and other washout areas that may contain additional pollutants so there is no discharge into the underlying soil and onto the surrounding areas.

3. Risk Level 2 dischargers shall implement good housekeeping for vehicle storage and maintenance, which, at a minimum, shall consist of the following:

   a. Prevent oil, grease, or fuel to leak in to the ground, storm drains or surface waters.

   b. Place all equipment or vehicles, which are to be fueled, maintained and stored in a designated area fitted with appropriate BMPs.

   c. Clean leaks immediately and disposing of leaked materials properly.

4. Risk Level 2 dischargers shall implement good housekeeping for landscape materials, which, at a minimum, shall consist of the following:

   a. Contain stockpiled materials such as mulches and topsoil when they are not actively being used.

   b. Contain all fertilizers and other landscape materials when they are not actively being used.

   c. Discontinue the application of any erodible landscape material within 2 days before a forecasted rain event or during periods of precipitation.

   d. Apply erodible landscape material at quantities and application rates according to manufacture recommendations or based on written specifications by knowledgeable and experienced field personnel.

   e. Stack erodible landscape material on pallets and covering or storing such materials when not being used or applied.

5. Risk Level 2 dischargers shall conduct an assessment and create a list of potential pollutant sources and identify any areas of the site where additional BMPs are necessary to reduce or prevent pollutants in storm water discharges and authorized non-storm water discharges. This potential pollutant list shall be kept with the SWPPP and shall identify

all non-visible pollutants which are known, or should be known, to occur on the construction site. At a minimum, when developing BMPs, Risk Level 2 dischargers shall do the following:

a. Consider the quantity, physical characteristics (e.g., liquid, powder, solid), and locations of each potential pollutant source handled, produced, stored, recycled, or disposed of at the site.

b. Consider the degree to which pollutants associated with those materials may be exposed to and mobilized by contact with storm water.

c. Consider the direct and indirect pathways that pollutants may be exposed to storm water or authorized non-storm water discharges. This shall include an assessment of past spills or leaks, non-storm water discharges, and discharges from adjoining areas.

d. Ensure retention of sampling, visual observation, and inspection records.

e. Ensure effectiveness of existing BMPs to reduce or prevent pollutants in storm water discharges and authorized non-storm water discharges.

6. Risk Level 2 dischargers shall implement good housekeeping measures on the construction site to control the air deposition of site materials and from site operations. Such particulates can include, but are not limited to, sediment, nutrients, trash, metals, bacteria, oil and grease and organics.

7. **Additional Risk Level 2 Requirement:** Risk Level 2 dischargers shall document all housekeeping BMPs in the SWPPP and REAP(s) in accordance with the nature and phase of the construction project. Construction phases at traditional land development projects include Grading and Land Development Phase, Streets and Utilities, or Vertical Construction for traditional land development projects.

C. Non-Storm Water Management

1. Risk Level 2 dischargers shall implement measures to control all non-storm water discharges during construction.

2. Risk Level 2 dischargers shall wash vehicles in such a manner as to prevent non-storm water discharges to surface waters or MS4 drainage systems.

3. Risk Level 2 dischargers shall clean streets in such a manner as to prevent unauthorized non-storm water discharges from reaching surface water or MS4 drainage systems.

D. Erosion Control

1. Risk Level 2 dischargers shall implement effective wind erosion control.

2. Risk Level 2 dischargers shall provide effective soil cover for inactive[1] areas and all finished slopes, open space, utility backfill, and completed lots.

3. Risk Level 2 dischargers shall limit the use of plastic materials when more sustainable, environmentally friendly alternatives exist. Where plastic materials are deemed necessary, the discharger shall consider the use of plastic materials resistant to solar degradation.

E. Sediment Controls

1. Risk Level 2 dischargers shall establish and maintain effective perimeter controls and stabilize all construction entrances and exits to sufficiently control erosion and sediment discharges from the site.

2. On sites where sediment basins are to be used, Risk Level 2 dischargers shall, at minimum, design sediment basins according to the method provided in CASQA's Construction BMP Guidance Handbook.

3. **Additional Risk Level 2 Requirement:** Risk Level 2 dischargers shall implement appropriate erosion control BMPs (runoff control and soil stabilization) in conjunction with sediment control BMPs for areas under active[2] construction.

4. **Additional Risk Level 2 Requirement:** Risk Level 2 dischargers shall apply linear sediment controls along the toe of the slope, face of the slope, and at the grade breaks of exposed slopes to comply with sheet flow lengths[3] in accordance with Table 1.

[1] Inactive areas of construction are areas of construction activity that have been disturbed and are not scheduled to be re-disturbed for at least 14 days.
[2] Active areas of construction are areas undergoing land surface disturbance. This includes construction activity during the preliminary stage, mass grading stage, streets and utilities stage and the vertical construction stage.
[3] Sheet flow length is the length that shallow, low velocity flow travels across a site.

Table 1 - Critical Slope/Sheet Flow Length Combinations

Slope Percentage	Sheet flow length not to exceed
0-25%	20 feet
25-50%	15 feet
Over 50%	10 feet

5. **Additional Risk Level 2 Requirement:** Risk Level 2 dischargers shall ensure that construction activity traffic to and from the project is limited to entrances and exits that employ effective controls to prevent offsite tracking of sediment.

6. **Additional Risk Level 2 Requirement:** Risk Level 2 dischargers shall ensure that all storm drain inlets and perimeter controls, runoff control BMPs, and pollutant controls at entrances and exits (e.g. tire washoff locations) are maintained and protected from activities that reduce their effectiveness.

7. **Additional Risk Level 2 Requirement:** Risk Level 2 dischargers shall inspect on a daily basis all immediate access roads daily. At a minimum daily (when necessary) and prior to any rain event, the discharger shall remove any sediment or other construction activity-related materials that are deposited on the roads (by vacuuming or sweeping).

F. Run-on and Run-off Controls

Risk Level 2 dischargers shall effectively manage all run-on, all runoff within the site and all runoff that discharges off the site. Run-on from off site shall be directed away from all disturbed areas or shall collectively be in compliance with the effluent limitations in this General Permit.

G. Inspection, Maintenance and Repair

1. Risk Level 2 dischargers shall ensure that all inspection, maintenance repair and sampling activities at the project location shall be performed or supervised by a Qualified SWPPP Practitioner (QSP) representing the discharger. The QSP may delegate any or all of these activities to an employee appropriately trained to do the task(s).

2. Risk Level 2 dischargers shall perform weekly inspections and observations, and at least once each 24-hour period during extended storm events, to identify and record BMPs that need maintenance to operate effectively, that have failed, or that could fail to operate as intended. Inspectors shall be the QSP or be trained by the QSP.

3. Upon identifying failures or other shortcomings, as directed by the QSP, Risk Level 2 dischargers shall begin implementing repairs or design changes to BMPs within 72 hours of identification and complete the changes as soon as possible.

4. For each inspection required, Risk Level 2 dischargers shall complete an inspection checklist, using a form provided by the State Water Board or Regional Water Board or in an alternative format.

5. Risk Level 2 dischargers shall ensure that checklists shall remain onsite with the SWPPP and at a minimum, shall include:

   a. Inspection date and date the inspection report was written.

   b. Weather information, including presence or absence of precipitation, estimate of beginning of qualifying storm event, duration of event, time elapsed since last storm, and approximate amount of rainfall in inches.

   c. Site information, including stage of construction, activities completed, and approximate area of the site exposed.

   d. A description of any BMPs evaluated and any deficiencies noted.

   e. If the construction site is safely accessible during inclement weather, list the observations of all BMPs: erosion controls, sediment controls, chemical and waste controls, and non-storm water controls. Otherwise, list the results of visual inspections at all relevant outfalls, discharge points, downstream locations and any projected maintenance activities.

   f. Report the presence of noticeable odors or of any visible sheen on the surface of any discharges.

   g. Any corrective actions required, including any necessary changes to the SWPPP and the associated implementation dates.

   h. Photographs taken during the inspection, if any.

   i. Inspector's name, title, and signature.

H. Rain Event Action Plan

1. **Additional Risk Level 2 Requirement:** The discharger shall ensure a QSP develop a Rain Event Action Plan (REAP) 48 hours prior to any

likely precipitation event. A likely precipitation event is any weather pattern that is forecast to have a 50% or greater probability of producing precipitation in the project area. The discharger shall ensure a QSP obtain a printed copy of precipitation forecast information from the National Weather Service Forecast Office (e.g., by entering the zip code of the project's location at http://www.srh.noaa.gov/forecast).

2. **Additional Risk Level 2 Requirement:** The discharger shall ensure a QSP develop the REAPs for all phases of construction (i.e., Grading and Land Development, Streets and Utilities, Vertical Construction, Final Landscaping and Site Stabilization).

3. **Additional Risk Level 2 Requirement:** The discharger shall ensure a QSP ensure that the REAP include, at a minimum, the following site information:

    a. Site Address
    b. Calculated Risk Level (2 or 3)
    c. Site Storm Water Manager Information including the name, company, and 24-hour emergency telephone number
    d. Erosion and Sediment Control Provider information including the name, company, and 24-hour emergency telephone number
    e. Storm Water Sampling Agent information including the name, company, and 24-hour emergency telephone number

4. **Additional Risk Level 2 Requirement:** The discharger shall ensure a QSP include in the REAP, at a minimum, the following project phase information:

    a. Activities associated with each construction phase
    b. Trades active on the construction site during each construction phase
    c. Trade contractor information
    d. Suggested actions for each project phase

5. **Additional Risk Level 2 Requirement:** The discharger shall ensure a QSP develop additional REAPs for project sites where construction activities are indefinitely halted or postponed (Inactive Construction). At a minimum, Inactive Construction REAPs must include:

    a. Site Address
    b. Calculated Risk Level (2 or 3)
    c. Site Storm Water Manager Information including the name, company, and 24-hour emergency telephone number

d. Erosion and Sediment Control Provider information including the name, company, and 24-hour emergency telephone number
e. Storm Water Sampling Agent information including the name, company, and 24-hour emergency telephone number
f. Trades active on site during Inactive Construction
g. Trade contractor information
h. Suggested actions for inactive construction sites

6. **Additional Risk Level 2 Requirement:** The discharger shall ensure a QSP begin implementation and make the REAP available onsite no later than 24 hours prior to the likely precipitation event.

7. **Additional Risk Level 2 Requirement:** The discharger shall ensure a QSP maintain onsite a paper copy of each REAP onsite in compliance with the record retention requirements of the Special Provisions in this General Permit.

I. Risk Level 2 Monitoring and Reporting Requirements

Table 2- Summary of Monitoring Requirements

Risk Level	Visual Inspections					Sample Collection	
	Quarterly Non-storm Water Discharge	Pre-storm Event		Daily Storm BMP	Post Storm	Storm Water Discharge	Receiving Water
		Baseline	REAP				
2	X	X	X	X	X	X	

1. Construction Site Monitoring Program Requirements

   a. Pursuant to Water Code Sections 13383 and 13267, all dischargers subject to this General Permit shall develop and implement a written site-specific Construction Site Monitoring Program (CSMP) in accordance with the requirements of this Section. The CSMP shall include all monitoring procedures and instructions, location maps, forms, and checklists as required in this section. The CSMP shall be developed prior to the commencement of construction activities, and revised as necessary to reflect project revisions. The CSMP shall be a part of the Storm Water Pollution Prevention Plan (SWPPP), included as an appendix or separate SWPPP chapter.

   b. Existing dischargers registered under the State Water Board Order No. 99-08-DWQ shall make and implement necessary revisions to their Monitoring Program to reflect the changes in this General Permit in a timely manner, but no later than July 1, 2010. Existing dischargers shall continue to implement their existing Monitoring Programs in compliance with State Water Board Order No. 99-08-DWQ until the necessary revisions are completed according to the schedule above.

   c. When a change of ownership occurs for all or any portion of the construction site prior to completion or final stabilization, the new discharger shall comply with these requirements as of the date the ownership change occurs.

2. **Objectives**

   The CSMP shall be developed and implemented to address the following objectives:

   a. To demonstrate that the site is in compliance with the Discharge Prohibitions and applicable Numeric Action Levels (NALs).

b. To determine whether non-visible pollutants are present at the construction site and are causing or contributing to exceedances of water quality objectives.

c. To determine whether immediate corrective actions, additional Best Management Practice (BMP) implementation, or SWPPP revisions are necessary to reduce pollutants in storm water discharges and authorized non-storm water discharges.

d. To determine whether BMPs included in the SWPPP/Rain Event Action Plan (REAP) are effective in preventing or reducing pollutants in storm water discharges and authorized non-storm water discharges.

3. **Risk Level 2 – Visual Monitoring (Inspection) Requirements for Qualifying Rain Events**

a. Risk Level 2 dischargers shall visually observe (inspect) storm water discharges at all discharge locations within two business days (48 hours) after each qualifying rain event.

b. Risk Level 2 dischargers shall visually observe (inspect) the discharge of stored or contained storm water that is derived from and discharged subsequent to a qualifying rain event producing precipitation of ½ inch or more at the time of discharge. Stored or contained storm water that will likely discharge after operating hours due to anticipated precipitation shall be observed prior to the discharge during operating hours.

c. Risk Level 2 dischargers shall conduct visual observations (inspections) during business hours only.

d. Risk Level 2 dischargers shall record the time, date and rain gauge reading of all qualifying rain events.

e. Within 2 business days (48 hours) prior to each qualifying rain event, Risk Level 2 dischargers shall visually observe (inspect):

i. all storm water drainage areas to identify any spills, leaks, or uncontrolled pollutant sources. If needed, the discharger shall implement appropriate corrective actions.

ii. all BMPs to identify whether they have been properly implemented in accordance with the SWPPP/REAP. If needed, the discharger shall implement appropriate corrective actions.

iii. any storm water storage and containment areas to detect leaks and ensure maintenance of adequate freeboard.

f. For the visual observations (inspections) described in c.i and c.iii above, Risk Level 2 dischargers shall observe the presence or absence of floating and suspended materials, a sheen on the surface, discolorations, turbidity, odors, and source(s) of any observed pollutants.

g. Within two business days (48 hours) after each qualifying rain event, Risk Level 2 dischargers shall conduct post rain event visual observations (inspections) to (1) identify whether BMPs were adequately designed, implemented, and effective, and (2) identify additional BMPs and revise the SWPPP accordingly.

h. Risk Level 2 dischargers shall maintain on-site records of all visual observations (inspections), personnel performing the observations, observation dates, weather conditions, locations observed, and corrective actions taken in response to the observations.

4. **Risk Level 2 – Water Quality Sampling and Analysis**

a. Risk Level 2 dischargers shall collect storm water grab samples from sampling locations, as defined in Section I.5. The storm water grab sample(s) obtained shall be representative of the flow and characteristics of the discharge.

b. At minimum, Risk Level 2 dischargers shall collect 3 samples per day of the qualifying event.

c. Risk Level 2 dischargers shall ensure that the grab samples collected of stored or contained storm water are from discharges subsequent to a qualifying rain event (producing precipitation of ½ inch or more at the time of discharge).

<u>Storm Water Effluent Monitoring Requirements</u>

d. Risk Level 2 dischargers shall analyze their effluent samples for:

i. pH and turbidity.

ii. Any additional parameters for which monitoring is required by the Regional Water Board.

5. **Risk Level 2 – Storm Water Discharge Water Quality Sampling Locations**

Effluent Sampling Locations

a. Risk Level 2 dischargers shall perform sampling and analysis of storm water discharges to characterize discharges associated with construction activity from the entire project disturbed area.

b. Risk Level 2 dischargers shall collect effluent samples at all discharge points where storm water is discharged off-site.

c. Risk Level 2 dischargers shall ensure that storm water discharge collected and observed represent[4] the effluent in each drainage area based on visual observation of the water and upstream conditions.

d. Risk Level 2 dischargers shall monitor and report site run-on from surrounding areas if there is reason to believe run-on may contribute to an exceedance of NALs.

e. Risk Level 2 dischargers who deploy an ATS on their site, or a portion on their site, shall collect ATS effluent samples and measurements from the discharge pipe or another location representative of the nature of the discharge.

f. Risk Level 2 dischargers shall select analytical test methods from the list provided in Table 3 below.

g. All storm water sample collection preservation and handling shall be conducted in accordance with Section I.7 “Storm Water Sample Collection and Handling Instructions” below.

6. **Risk Level 2 – Visual Observation and Sample Collection Exemptions**

a. Risk Level 2 dischargers shall be prepared to collect samples and conduct visual observation (inspections) until the minimum requirements of Sections I.3 and I.4 above are completed. Risk Level 2 dischargers are not required to physically collect samples or conduct visual observation (inspections) under the following conditions:

[4] For example, if there has been concrete work recently in an area, or drywall scrap is exposed to the rain, a pH sample shall be taken of drainage from the relevant work area. Similarly, if sediment laden water is flowing through some parts of a silt fence, samples shall be taken of the sediment-laden water even if most water flowing through the fence is clear.

i. During dangerous weather conditions such as flooding and electrical storms.

ii. Outside of scheduled site business hours.

b. If no required samples or visual observation (inspections) are collected due to these exceptions, Risk Level 2 dischargers shall include an explanation in their SWPPP and in the Annual Report documenting why the sampling or visual observation (inspections) were not conducted.

7. **Risk Level 2 – Storm Water Sample Collection and Handling Instructions**

a. Risk Level 2 dischargers shall refer to Table 3 below for test methods, detection limits, and reporting units.

b. Risk Level 2 dischargers shall ensure that testing laboratories will receive samples within 48 hours of the physical sampling (unless otherwise required by the laboratory), and shall use only the sample containers provided by the laboratory to collect and store samples.

c. Risk Level 2 dischargers shall designate and train personnel to collect, maintain, and ship samples in accordance with the Surface Water Ambient Monitoring Program's (SWAMP) 2008 Quality Assurance Program Plan (QAPrP).[5]

8. **Risk Level 2 – Monitoring Methods**

a. Risk Level 2 dischargers shall include a description of the following items in the CSMP:

i. Visual observation locations, visual observation procedures, and visual observation follow-up and tracking procedures.

ii. Sampling locations, and sample collection and handling procedures. This shall include detailed procedures for sample collection, storage, preservation, and shipping to the testing lab to assure that consistent quality control and quality assurance is maintained. Dischargers shall attach to the monitoring program

[5] Additional information regarding SWAMP's QAPrP can be found at http://www.waterboards.ca.gov/water_issues/programs/swamp/. QAPrP:http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/qapp/swamp_qapp_master090108a.pdf.

an example Chain of Custody form used when handling and shipping samples.

iii. Identification of the analytical methods and related method detection limits (if applicable) for each parameter required in Section I.4 above.

b. Risk Level 2 dischargers shall ensure that all sampling and sample preservation are in accordance with the current edition of "Standard Methods for the Examination of Water and Wastewater" (American Public Health Association). All monitoring instruments and equipment (including a discharger's own field instruments for measuring pH and turbidity) should be calibrated and maintained in accordance with manufacturers' specifications to ensure accurate measurements. Risk Level 2 dischargers shall ensure that all laboratory analyses are conducted according to test procedures under 40 CFR Part 136, unless other test procedures have been specified in this General Permit or by the Regional Water Board. With the exception of field analysis conducted by the discharger for turbidity and pH, all analyses should be sent to and conducted at a laboratory certified for such analyses by the State Department of Health Services. Risk Level 2 dischargers shall conduct their own field analysis of pH and may conduct their own field analysis of turbidity if the discharger has sufficient capability (qualified and trained employees, properly calibrated and maintained field instruments, etc.) to adequately perform the field analysis.

9. **Risk Level 2 – Analytical Methods**

a. Risk Level 2 dischargers shall refer to Table 3 below for test methods, detection limits, and reporting units.

b. **pH**: Risk Level 2 dischargers shall perform pH analysis on-site with a calibrated pH meter or a pH test kit. Risk Level 2 dischargers shall record pH monitoring results on paper and retain these records in accordance with Section I.14, below.

c. **Turbidity**: Risk Level 2 dischargers shall perform turbidity analysis using a calibrated turbidity meter (turbidimeter), either on-site or at an accredited lab. Acceptable test methods include Standard Method 2130 or USEPA Method 180.1. The results will be recorded in the site log book in Nephelometric Turbidity Units (NTU).

10. **Risk Level 2 - Non-Storm Water Discharge Monitoring Requirements**

a. Visual Monitoring Requirements:

i. Risk Level 2 dischargers shall visually observe (inspect) each drainage area for the presence of (or indications of prior) unauthorized and authorized non-storm water discharges and their sources.

ii. Risk Level 2 dischargers shall conduct one visual observation (inspection) quarterly in each of the following periods: January-March, April-June, July-September, and October-December. Visual observation (inspections) are only required during daylight hours (sunrise to sunset).

iii. Risk Level 2 dischargers shall ensure that visual observations (inspections) document the presence or evidence of any non-storm water discharge (authorized or unauthorized), pollutant characteristics (floating and suspended material, sheen, discoloration, turbidity, odor, etc.), and source. Risk Level 2 dischargers shall maintain on-site records indicating the personnel performing the visual observation (inspections), the dates and approximate time each drainage area and non-storm water discharge was observed, and the response taken to eliminate unauthorized non-storm water discharges and to reduce or prevent pollutants from contacting non-storm water discharges.

b. Effluent Sampling Locations:

i. Risk Level 2 dischargers shall sample effluent at all discharge points where non-storm water and/or authorized non-storm water is discharged off-site.

ii. Risk Level 2 dischargers shall send all non-storm water sample analyses to a laboratory certified for such analyses by the State Department of Health Services.

iii. Risk Level 2 dischargers shall monitor and report run-on from surrounding areas if there is reason to believe run-on may contribute to an exceedance of NALs.

11. **Risk Level 2 – Non-Visible Pollutant Monitoring Requirements**

a. Risk Level 2 dischargers shall collect one or more samples during any breach, malfunction, leakage, or spill observed during a visual

inspection which could result in the discharge of pollutants to surface waters that would not be visually detectable in storm water.

b. Risk Level 2 dischargers shall ensure that water samples are large enough to characterize the site conditions.

c. Risk Level 2 dischargers shall collect samples at all discharge locations that can be safely accessed.

d. Risk Level 2 dischargers shall collect samples during the first two hours of discharge from rain events that occur during business hours and which generate runoff.

e. Risk Level 2 dischargers shall analyze samples for all non-visible pollutant parameters (if applicable) - parameters indicating the presence of pollutants identified in the pollutant source assessment required (Risk Level 2 dischargers shall modify their CSMPs to address these additional parameters in accordance with any updated SWPPP pollutant source assessment).

f. Risk Level 2 dischargers shall collect a sample of storm water that has not come in contact with the disturbed soil or the materials stored or used on-site (uncontaminated sample) for comparison with the discharge sample.

g. Risk Level 2 dischargers shall compare the uncontaminated sample to the samples of discharge using field analysis or through laboratory analysis.[6]

h. Risk Level 2 dischargers shall keep all field /or analytical data in the SWPPP document.

12. **Risk Level 2 – Watershed Monitoring Option**

Risk Level 2 dischargers who are part of a qualified regional watershed-based monitoring program may be eligible for relief from the requirements in Sections I.5. The Regional Water Board may approve proposals to substitute an acceptable watershed-based monitoring program by determining if the watershed-based monitoring program will provide substantially similar monitoring information in evaluating discharger compliance with the requirements of this General Permit.

[6] For laboratory analysis, all sampling, sample preservation, and analyses must be conducted according to test procedures under 40 CFR Part 136. Field discharge samples shall be collected and analyzed according to the specifications of the manufacturer of the sampling devices employed.

13. **Risk Level 2 – Particle Size Analysis for Project Risk Justification**

Risk Level 2 dischargers justifying an alternative project risk shall report a soil particle size analysis used to determine the RUSLE K-Factor. ASTM D-422 (Standard Test Method for Particle-Size Analysis of Soils), as revised, shall be used to determine the percentages of sand, very fine sand, silt, and clay on the site.

14. **Risk Level 2 – Records**

Risk Level 2 dischargers shall retain records of all storm water monitoring information and copies of all reports (including Annual Reports) for a period of at least three years. Risk Level 2 dischargers shall retain all records on-site while construction is ongoing. These records include:

a. The date, place, time of facility inspections, sampling, visual observation (inspections), and/or measurements, including precipitation.

b. The individual(s) who performed the facility inspections, sampling, visual observation (inspections), and or measurements.

c. The date and approximate time of analyses.

d. The individual(s) who performed the analyses.

e. A summary of all analytical results from the last three years, the method detection limits and reporting units, the analytical techniques or methods used, and the chain of custody forms.

f. Rain gauge readings from site inspections;

g. Quality assurance/quality control records and results.

h. Non-storm water discharge inspections and visual observation (inspections) and storm water discharge visual observation records (see Sections I.3 and I.10 above).

i. Visual observation and sample collection exception records (see Section I.6 above).

j. The records of any corrective actions and follow-up activities that resulted from analytical results, visual observation (inspections), or inspections.

15. **Risk Level 2 – NAL Exceedance Report**

a. In the event that any effluent sample exceeds an applicable NAL, Risk Level 2 dischargers shall electronically submit all storm event sampling results to the State Water Board no later than 10 days after the conclusion of the storm event. The Regional Boards have the authority to require the submittal of an NAL Exceedance Report.

b. Risk Level 2 dischargers shall certify each NAL Exceedance Report in accordance with the Special Provisions for Construction Activity.

c. Risk Level 2 dischargers shall retain an electronic or paper copy of each NAL Exceedance Report for a minimum of three years after the date the annual report is filed.

d. Risk Level 2 dischargers shall include in the NAL Exceedance Report:

i. The analytical method(s), method reporting unit(s), and method detection limit(s) of each analytical parameter (analytical results that are less than the method detection limit shall be reported as “less than the method detection limit”).

ii. The date, place, time of sampling, visual observation (inspections), and/or measurements, including precipitation.

iii. A description of the current BMPs associated with the effluent sample that exceeded the NAL and the proposed corrective actions taken.

Table 3 – Risk Level 2 Test Methods, Detection Limits, Reporting Units and Applicable NALs/NELs

Parameter	Test Method / Protocol	Discharge Type	Min. Detection Limit	Reporting Units	Numeric Action Level
pH	Field test with calibrated portable instrument	Risk Level 2 Discharges	0.2	pH units	lower NAL = 6.5 upper NAL = 8.5
Turbidity	EPA 0180.1 and/or field test with calibrated portable instrument	Risk Level 2 Discharges other than ATS	1	NTU	250 NTU
		For ATS discharges	1	NTU	N/A

ATTACHMENT E
RISK LEVEL 3 REQUIREMENTS

A. Effluent Standards

[These requirements are the same as those in the General Permit order.]

1. Narrative – Risk Level 3 dischargers shall comply with the narrative effluent standards listed below:

   a. Storm water discharges and authorized non-storm water discharges regulated by this General Permit shall not contain a hazardous substance equal to or in excess of reportable quantities established in 40 C.F.R. §§ 117.3 and 302.4, unless a separate NPDES Permit has been issued to regulate those discharges.

   b. Dischargers shall minimize or prevent pollutants in storm water discharges and authorized non-storm water discharges through the use of controls, structures, and management practices that achieve BAT for toxic and non-conventional pollutants and BCT for conventional pollutants.

2. Numeric –Risk Level 3 dischargers are subject to a pH NAL of 6.5-8.5, and a turbidity NAL of 250 NTU.

B. Good Site Management "Housekeeping"

1. Risk Level 3 dischargers shall implement good site management (i.e., "housekeeping") measures for construction materials that could potentially be a threat to water quality if discharged. At a minimum, Risk Level 3 dischargers shall implement the following good housekeeping measures:

   a. Conduct an inventory of the products used and/or expected to be used and the end products that are produced and/or expected to be produced. This does not include materials and equipment that are designed to be outdoors and exposed to environmental conditions (i.e. poles, equipment pads, cabinets, conductors, insulators, bricks, etc.).

   b. Cover and berm loose stockpiled construction materials that are not actively being used (i.e. soil, spoils, aggregate, fly-ash, stucco, hydrated lime, etc.).

c. Store chemicals in watertight containers (with appropriate secondary containment to prevent any spillage or leakage) or in a storage shed (completely enclosed).

d. Minimize exposure of construction materials to precipitation. This does not include materials and equipment that are designed to be outdoors and exposed to environmental conditions (i.e. poles, equipment pads, cabinets, conductors, insulators, bricks, etc.).

e. Implement BMPs to prevent the off-site tracking of loose construction and landscape materials.

2. Risk Level 3 dischargers shall implement good housekeeping measures for waste management, which, at a minimum, shall consist of the following:

a. Prevent disposal of any rinse or wash waters or materials on impervious or pervious site surfaces or into the storm drain system.

b. Ensure the containment of sanitation facilities (e.g., portable toilets) to prevent discharges of pollutants to the storm water drainage system or receiving water.

c. Clean or replace sanitation facilities and inspecting them regularly for leaks and spills.

d. Cover waste disposal containers at the end of every business day and during a rain event.

e. Prevent discharges from waste disposal containers to the storm water drainage system or receiving water.

f. Contain and securely protecting stockpiled waste material from wind and rain at all times unless actively being used.

g. Implement procedures that effectively address hazardous and non-hazardous spills.

h. Develop a spill response and implementation element of the SWPPP prior to commencement of construction activities. The SWPPP shall require that:

i. Equipment and materials for cleanup of spills shall be available on site and that spills and leaks shall be cleaned up immediately and disposed of properly; and

ii. Appropriate spill response personnel are assigned and trained.

i. Ensure the containment of concrete washout areas and other washout areas that may contain additional pollutants so there is no discharge into the underlying soil and onto the surrounding areas.

3. Risk Level 3 dischargers shall implement good housekeeping for vehicle storage and maintenance, which, at a minimum, shall consist of the following:

   a. Prevent oil, grease, or fuel to leak in to the ground, storm drains or surface waters.

   b. Place all equipment or vehicles, which are to be fueled, maintained and stored in a designated area fitted with appropriate BMPs.

   c. Clean leaks immediately and disposing of leaked materials properly.

4. Risk Level 3 dischargers shall implement good housekeeping for landscape materials, which, at a minimum, shall consist of the following:

   a. Contain stockpiled materials such as mulches and topsoil when they are not actively being used.

   b. Contain fertilizers and other landscape materials when they are not actively being used.

   c. Discontinuing the application of any erodible landscape material within 2 days before a forecasted rain event or during periods of precipitation.

   d. Applying erodible landscape material at quantities and application rates according to manufacture recommendations or based on written specifications by knowledgeable and experienced field personnel.

   e. Stacking erodible landscape material on pallets and covering or storing such materials when not being used or applied.

5. Risk Level 3 dischargers shall conduct an assessment and create a list of potential pollutant sources and identify any areas of the site where additional BMPs are necessary to reduce or prevent pollutants in storm water discharges and authorized non-storm water discharges. This potential pollutant list shall be kept with the SWPPP and shall identify

all non-visible pollutants which are known, or should be known, to occur on the construction site. At a minimum, when developing BMPs, Risk Level 3 dischargers shall do the following:

a. Consider the quantity, physical characteristics (e.g., liquid, powder, solid), and locations of each potential pollutant source handled, produced, stored, recycled, or disposed of at the site.

b. Consider the degree to which pollutants associated with those materials may be exposed to and mobilized by contact with storm water.

c. Consider the direct and indirect pathways that pollutants may be exposed to storm water or authorized non-storm water discharges. This shall include an assessment of past spills or leaks, non-storm water discharges, and discharges from adjoining areas.

d. Ensure retention of sampling, visual observation, and inspection records.

e. Ensure effectiveness of existing BMPs to reduce or prevent pollutants in storm water discharges and authorized non-storm water discharges.

6. Risk Level 3 dischargers shall implement good housekeeping measures on the construction site to control the air deposition of site materials and from site operations. Such particulates can include, but are not limited to, sediment, nutrients, trash, metals, bacteria, oil and grease and organics.

7. **Additional Risk Level 3 Requirement:** Risk Level 3 dischargers shall document all housekeeping BMPs in the SWPPP and REAP(s) in accordance with the nature and phase of the construction project. Construction phases at traditional land development projects include Grading and Land Development Phase, Streets and Utilities, or Vertical Construction for traditional land development projects.

C. Non-Storm Water Management

1. Risk Level 3 dischargers shall implement measures to control all non-storm water discharges during construction.

2. Risk Level 3 dischargers shall wash vehicles in such a manner as to prevent non-storm water discharges to surface waters or MS4 drainage systems.

3. Risk Level 3 dischargers shall clean streets in such a manner as to prevent unauthorized non-storm water discharges from reaching surface water or MS4 drainage systems.

D. Erosion Control

1. Risk Level 3 dischargers shall implement effective wind erosion control.

2. Risk Level 3 dischargers shall provide effective soil cover for inactive[1] areas and all finished slopes, open space, utility backfill, and completed lots.

3. Dischargers shall limit the use of plastic materials when more sustainable, environmentally friendly alternatives exist. Where plastic materials are deemed necessary, the discharger shall consider the use of plastic materials resistant to solar degradation.

E. Sediment Controls

1. Risk Level 3 dischargers shall establish and maintain effective perimeter controls and stabilize all construction entrances and exits to sufficiently control erosion and sediment discharges from the site.

2. On sites where sediment basins are to be used, Risk Level 3 dischargers shall, at minimum, design sediment basins according to the method provided in CASQA's Construction BMP Guidance Handbook.

3. **Additional Risk Level 3 Requirement:** Risk Level 3 dischargers shall implement appropriate erosion control BMPs (runoff control and soil stabilization) in conjunction with sediment control BMPs for areas under active[2] construction.

4. **Additional Risk Level 3 Requirement:** Risk Level 3 dischargers shall apply linear sediment controls along the toe of the slope, face of the slope, and at the grade breaks of exposed slopes to comply with sheet flow lengths[3] in accordance with Table 1.

[1] Inactive areas of construction are areas of construction activity that have been disturbed and are not scheduled to be re-disturbed for at least 14 days.
[2] Active areas of construction are areas undergoing land surface disturbance. This includes construction activity during the preliminary stage, mass grading stage, streets and utilities stage and the vertical construction stage
[3] Sheet flow length is the length that shallow, low velocity flow travels across a site.

Table 1 - Critical Slope/Sheet Flow Length Combinations

Slope Percentage	Sheet flow length not to exceed
0-25%	20 feet
25-50%	15 feet
Over 50%	10 feet

5. **Additional Risk Level 3 Requirement:** Risk Level 3 dischargers shall ensure that construction activity traffic to and from the project is limited to entrances and exits that employ effective controls to prevent offsite tracking of sediment.

6. **Additional Risk Level 3 Requirement:** Risk Level 3 dischargers shall ensure that all storm drain inlets and perimeter controls, runoff control BMPs, and pollutant controls at entrances and exits (e.g. tire washoff locations) are maintained and protected from activities that reduce their effectiveness.

7. **Additional Risk Level 3 Requirement:** Risk Level 3 dischargers shall inspect on a daily basis all immediate access roads daily. At a minimum daily (when necessary) and prior to any rain event, the discharger shall remove any sediment or other construction activity-related materials that are deposited on the roads (by vacuuming or sweeping).

8. **Additional Risk Level 3 Requirement:** The Regional Water Board may require Risk Level 3 dischargers to implement additional site-specific sediment control requirements if the implementation of the other requirements in this section are not adequately protecting the receiving waters.

F. Run-on and Run-off Controls

Risk Level 3 dischargers shall effectively manage all run-on, all runoff within the site and all runoff that discharges off the site. Run-on from off site shall be directed away from all disturbed areas or shall collectively be in compliance with the effluent limitations in this General Permit.

G. Inspection, Maintenance and Repair

1. Risk Level 3 dischargers shall ensure that all inspection, maintenance repair and sampling activities at the project location shall be performed or supervised by a Qualified SWPPP Practitioner (QSP) representing the discharger. The QSP may delegate any or all of these activities to an employee appropriately trained to do the task(s).

2. Risk Level 3 dischargers shall perform weekly inspections and observations, and at least once each 24-hour period during extended storm events, to identify and record BMPs that need maintenance to operate effectively, that have failed, or that could fail to operate as intended. Inspectors shall be the QSP or be trained by the QSP.

3. Upon identifying failures or other shortcomings, as directed by the QSP, Risk Level 3 dischargers shall begin implementing repairs or design changes to BMPs within 72 hours of identification and complete the changes as soon as possible.

4. For each inspection required, Risk Level 3 dischargers shall complete an inspection checklist, using a form provided by the State Water Board or Regional Water Board or in an alternative format.

5. Risk Level 3 dischargers shall ensure that checklists shall remain onsite with the SWPPP and at a minimum, shall include:

    a. Inspection date and date the inspection report was written.

    b. Weather information, including presence or absence of precipitation, estimate of beginning of qualifying storm event, duration of event, time elapsed since last storm, and approximate amount of rainfall in inches.

    c. Site information, including stage of construction, activities completed, and approximate area of the site exposed.

    d. A description of any BMPs evaluated and any deficiencies noted.

    e. If the construction site is safely accessible during inclement weather, list the observations of all BMPs: erosion controls, sediment controls, chemical and waste controls, and non-storm water controls. Otherwise, list the results of visual inspections at all relevant outfalls, discharge points, downstream locations and any projected maintenance activities.

    f. Report the presence of noticeable odors or of any visible sheen on the surface of any discharges.

    g. Any corrective actions required, including any necessary changes to the SWPPP and the associated implementation dates.

    h. Photographs taken during the inspection, if any.

i. Inspector's name, title, and signature.

H. Rain Event Action Plan

1. **Additional Risk Level 3 Requirement:** The discharger shall ensure a QSP develop a Rain Event Action Plan (REAP) 48 hours prior to any likely precipitation event. A likely precipitation event is any weather pattern that is forecast to have a 50% or greater probability of producing precipitation in the project area. The QSP shall obtain a printed copy of precipitation forecast information from the National Weather Service Forecast Office (e.g., by entering the zip code of the project's location at http://www.srh.noaa.gov/forecast).

2. **Additional Risk Level 3 Requirement:** The discharger shall ensure a QSP develop the REAPs for all phases of construction (i.e., Grading and Land Development, Streets and Utilities, Vertical Construction, Final Landscaping and Site Stabilization).

3. **Additional Risk Level 3 Requirement:** The discharger shall ensure a QSP ensure that the REAP include, at a minimum, the following site information:

   a. Site Address.
   b. Calculated Risk Level (2 or 3).
   c. Site Storm Water Manager Information including the name, company, and 24-hour emergency telephone number.
   d. Erosion and Sediment Control Provider information including the name, company, and 24-hour emergency telephone number.
   e. Storm Water Sampling Agent information including the name, company, and 24-hour emergency telephone number.

4. **Additional Risk Level 3 Requirement:** The QSP shall include in the REAP, at a minimum, the following project phase information:

   a. Activities associated with each construction phase.
   b. Trades active on the construction site during each construction phase.
   c. Trade contractor information.
   d. Suggested actions for each project phase.

5. **Additional Risk Level 3 Requirement:** The QSP shall develop additional REAPs for project sites where construction activities are indefinitely halted or postponed (Inactive Construction). At a minimum, Inactive Construction REAPs must include:

a. Site Address.
b. Calculated Risk Level (2 or 3).
c. Site Storm Water Manager Information including the name, company, and 24-hour emergency telephone number.
d. Erosion and Sediment Control Provider information including the name, company, and 24-hour emergency telephone number.
e. Storm Water Sampling Agent information including the name, company, and 24-hour emergency telephone number.
f. Trades active on site during Inactive Construction.
g. Trade contractor information.
h. Suggested actions for inactive construction sites.

6. **Additional Risk Level 3 Requirement:** The discharger shall ensure a QSP begin implementation and make the REAP available onsite no later than 24 hours prior to the likely precipitation event.

7. **Additional Risk Level 3 Requirement:** The discharger shall ensure a QSP maintain onsite a paper copy of each REAP onsite in compliance with the record retention requirements of the Special Provisions in this General Permit.

I. Risk Level 3 Monitoring and Reporting Requirements

Table 2- Summary of Monitoring Requirements

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	Quarterly Non-storm Water Discharge	Pre-storm Event		Daily Storm BMP	Post Storm	Storm Water Discharge	Receiving Water
		Baseline	REAP				
3	X	X	X	X	X	X	X[4]

1. Construction Site Monitoring Program Requirements

   a. Pursuant to Water Code Sections 13383 and 13267, all dischargers subject to this General Permit shall develop and implement a written site-specific Construction Site Monitoring Program (CSMP) in accordance with the requirements of this Section. The CSMP shall include all monitoring procedures and instructions, location maps, forms, and checklists as required in this section. The CSMP shall be developed prior to the commencement of construction activities, and revised as necessary to reflect project revisions. The CSMP shall be a part of the Storm Water Pollution Prevention Plan (SWPPP), included as an appendix or separate SWPPP chapter.

   b. Existing dischargers registered under the State Water Board Order No. 99-08-DWQ shall make and implement necessary revisions to their Monitoring Program to reflect the changes in this General Permit in a timely manner, but no later than July 1, 2010. Existing dischargers shall continue to implement their existing Monitoring Program in compliance with State Water Board Order No. 99-08-DWQ until the necessary revisions are completed according to the schedule above.

   c. When a change of ownership occurs for all or any portion of the construction site prior to completion or final stabilization, the new discharger shall comply with these requirements as of the date the ownership change occurs.

2. **Objectives**

   The CSMP shall be developed and implemented to address the following objectives:

[4] When receiving water monitoring trigger is exceeded

a. To demonstrate that the site is in compliance with the Discharge Prohibitions and applicable Numeric Action Levels (NALs) of this General Permit.

b. To determine whether non-visible pollutants are present at the construction site and are causing or contributing to exceedances of water quality objectives.

c. To determine whether immediate corrective actions, additional Best Management Practice (BMP) implementation, or SWPPP revisions are necessary to reduce pollutants in storm water discharges and authorized non-storm water discharges.

d. To determine whether BMPs included in the SWPPP/Rain Event Action Plan (REAP) are effective in preventing or reducing pollutants in storm water discharges and authorized non-storm water discharges.

3. **Risk Level 3 – Visual Monitoring (Inspection) Requirements for Qualifying Rain Events**

a. Risk Level 3 dischargers shall visually observe (inspect) storm water discharges at all discharge locations within two business days (48 hours) after each qualifying rain event.

b. Risk Level 3 dischargers shall visually observe (inspect) the discharge of stored or contained storm water that is derived from and discharged subsequent to a qualifying rain event producing precipitation of ½ inch or more at the time of discharge. Stored or contained storm water that will likely discharge after operating hours due to anticipated precipitation shall be observed prior to the discharge during operating hours.

c. Risk Level 3 dischargers shall conduct visual observations (inspections) during business hours only.

d. Risk Level 3 dischargers shall record the time, date and rain gauge reading of all qualifying rain events.

e. Within 2 business days (48 hours) prior to each qualifying rain event, Risk Level 3 dischargers shall visually observe (inspect):

i. all storm water drainage areas to identify any spills, leaks, or uncontrolled pollutant sources. If needed, the discharger shall implement appropriate corrective actions.

ii. all BMPs to identify whether they have been properly implemented in accordance with the SWPPP/REAP. If needed, the discharger shall implement appropriate corrective actions.

iii. any storm water storage and containment areas to detect leaks and ensure maintenance of adequate freeboard.

f. For the visual observations (inspections) described in c.i. and c.iii above, Risk Level 3 dischargers shall observe the presence or absence of floating and suspended materials, a sheen on the surface, discolorations, turbidity, odors, and source(s) of any observed pollutants.

g. Within two business days (48 hours) after each qualifying rain event, Risk Level 3 dischargers shall conduct post rain event visual observations (inspections) to (1) identify whether BMPs were adequately designed, implemented, and effective, and (2) identify additional BMPs and revise the SWPPP accordingly.

h. Risk Level 3 dischargers shall maintain on-site records of all visual observations (inspections), personnel performing the observations, observation dates, weather conditions, locations observed, and corrective actions taken in response to the observations.

4. **Risk Level 3 – Water Quality Sampling and Analysis**

a. Risk Level 3 dischargers shall collect storm water grab samples from sampling locations, as defined in Section I.5. The storm water grab sample(s) obtained shall be representative of the flow and characteristics of the discharge.

b. At minimum, Risk Level 3 dischargers shall collect 3 samples per day of the qualifying event.

c. Risk Level 3 dischargers shall ensure that the grab samples collected of stored or contained storm water are from discharges subsequent to a qualifying rain event (producing precipitation of ½ inch or more at the time of discharge).

<u>Storm Water Effluent Monitoring Requirements</u>

d. Risk Level 3 dischargers shall analyze their effluent samples for:

i. pH and turbidity.

ii. Any additional parameters for which monitoring is required by the Regional Water Board.

e. Risk 3 dischargers shall electronically submit all storm event sampling results to the State Water Board no later than 10 days after the conclusion of the storm event.

Receiving Water Monitoring Requirements

f. In the event that a Risk Level 3 discharger's effluent exceeds the daily average receiving water monitoring trigger of 500 NTU turbidity or the daily average pH range 6.0-9.0 contained in this General Permit and has a direct discharge into receiving waters, the Risk Level 3 discharger shall subsequently sample receiving waters (RWs) for turbidity, pH (if applicable), and SSC for the duration of coverage under this General Permit. If a Risk Level 3 discharger utilizing ATS with direct discharges into receiving waters discharges effluent that exceeds the NELs in this permit, the discharger shall subsequently sample RWs for turbidity, pH (if applicable), and SSC for the duration of coverage under this General Permit.

g. Risk Level 3 dischargers disturbing 30 acres or more of the landscape and with direct discharges into receiving waters shall conduct or participate in benthic macroinvertebrate bioassessment of RWs prior to commencement of construction activity (See Appendix 3).

h. Risk Level 3 dischargers shall obtain RW samples in accordance with the Receiving Water sampling location section (Section I.5), below.

5. **Risk Level 3 – Storm Water Discharge Water Quality Sampling Locations**

Effluent Sampling Locations

a. Risk Level 3 dischargers shall perform sampling and analysis of storm water discharges to characterize discharges associated with construction activity from the entire project disturbed area.

b. Risk Level 3 dischargers shall collect effluent samples at all discharge points where storm water is discharged off-site.

c. Risk Level 3 dischargers shall ensure that storm water discharge collected and observed represent[5] the effluent in each drainage area based on visual observation of the water and upstream conditions.

d. Risk Level 3 dischargers shall monitor and report site run-on from surrounding areas if there is reason to believe run-on may contribute to an exceedance of NALs.

e. Risk Level 3 dischargers who deploy an ATS on their site, or a portion on their site, shall collect ATS effluent samples and measurements from the discharge pipe or another location representative of the nature of the discharge.

f. Risk Level 3 dischargers shall select analytical test methods from the list provided in Table 3 below.

g. All storm water sample collection preservation and handling shall be conducted in accordance with Section I.7 "Storm Water Sample Collection and Handling Instructions" below.

Receiving Water Sampling Locations

h. **Upstream/up-gradient RW samples**: Risk Level 3 dischargers shall obtain any required upstream/up-gradient receiving water samples from a representative and accessible location as close as possible and upstream from the effluent discharge point.

i. **Downstream/down-gradient RW samples**: Risk Level 3 dischargers shall obtain any required downstream/down-gradient receiving water samples from a representative and accessible location as close as possible and downstream from the effluent discharge point.

j. If two or more discharge locations discharge to the same receiving water, Risk Level 3 dischargers may sample the receiving water at a single upstream and downstream location.

[5] For example, if there has been concrete work recently in an area, or drywall scrap is exposed to the rain, a pH sample shall be taken of drainage from the relevant work area. Similarly, if sediment-laden water is flowing through some parts of a silt fence, samples shall be taken of the sediment laden water even if most water flowing through the fence is clear.

6. **Risk Level 3 – Visual Observation and Sample Collection Exemptions**

   a. Risk Level 3 dischargers shall be prepared to collect samples and conduct visual observation (inspections) until the minimum requirements of Sections I.3 and I.4 above are completed. Risk Level 3 dischargers are not required to physically collect samples or conduct visual observation (inspections) under the following conditions:

      i. During dangerous weather conditions such as flooding and electrical storms.

      ii. Outside of scheduled site business hours.

   b. If no required samples or visual observation (inspections) are collected due to these exceptions, Risk Level 3 dischargers shall include an explanation in their SWPPP and in the Annual Report documenting why the sampling or visual observation (inspections) were not conducted.

7. **Risk Level 3 – Storm Water Sample Collection and Handling Instructions**

   a. Risk Level 3 dischargers shall refer to Table 3 below for test methods, detection limits, and reporting units.

   b. Risk Level 3 dischargers shall ensure that testing laboratories will receive samples within 48 hours of the physical sampling (unless otherwise required by the laboratory), and shall use only the sample containers provided by the laboratory to collect and store samples.

   c. Risk Level 3 dischargers shall designate and train personnel to collect, maintain, and ship samples in accordance with the Surface Water Ambient Monitoring Program's (SWAMP) 2008 Quality Assurance Program Plan (QAPrP).[6]

[6] Additional information regarding SWAMP's QAPrP can be found at http://www.waterboards.ca.gov/water_issues/programs/swamp/.
QAPrP:http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/qapp/swamp_qapp_master090108a.pdf

8. **Risk Level 3 – Monitoring Methods**

   a. Risk Level 3 dischargers shall include a description of the following items in the CSMP:

      i. Visual observation locations, visual observation procedures, and visual observation follow-up and tracking procedures.

      ii. Sampling locations, and sample collection and handling procedures. This shall include detailed procedures for sample collection, storage, preservation, and shipping to the testing lab to assure that consistent quality control and quality assurance is maintained. Dischargers shall attach to the monitoring program an example Chain of Custody form used when handling and shipping samples.

      iii. Identification of the analytical methods and related method detection limits (if applicable) for each parameter required in Section I.4 above.

   b. Risk Level 3 dischargers shall ensure that all sampling and sample preservation are in accordance with the current edition of "Standard Methods for the Examination of Water and Wastewater" (American Public Health Association). All monitoring instruments and equipment (including a discharger's own field instruments for measuring pH and turbidity) should be calibrated and maintained in accordance with manufacturers' specifications to ensure accurate measurements. Risk Level 3 dischargers shall ensure that all laboratory analyses are conducted according to test procedures under 40 CFR Part 136, unless other test procedures have been specified in this General Permit or by the Regional Water Board. With the exception of field analysis conducted by the discharger for turbidity and pH, all analyses should be sent to and conducted at a laboratory certified for such analyses by the State Department of Health Services (SSC exception). Risk Level 3 dischargers shall conduct their own field analysis of pH and may conduct their own field analysis of turbidity if the discharger has sufficient capability (qualified and trained employees, properly calibrated and maintained field instruments, etc.) to adequately perform the field analysis.

9. **Risk Level 3 – Analytical Methods**

   a. Risk Level 3 dischargers shall refer to Table 3 below for test methods, detection limits, and reporting units.

b. **pH**: Risk Level 3 dischargers shall perform pH analysis on-site with a calibrated pH meter or a pH test kit. Risk Level 3 dischargers shall record pH monitoring results on paper and retain these records in accordance with Section I.14, below.

c. **Turbidity**: Risk Level 3 dischargers shall perform turbidity analysis using a calibrated turbidity meter (turbidimeter), either on-site or at an accredited lab. Acceptable test methods include Standard Method 2130 or USEPA Method 180.1. The results will be recorded in the site log book in Nephelometric Turbidity Units (NTU).

d. **Suspended sediment concentration (SSC)**: Risk Level 3 dischargers that exceed the turbidity Receiving Water Monitoring Trigger shall perform SSC analysis using ASTM Method D3977-97.

e. **Bioassessment**: Risk Level 3 dischargers shall perform bioassessment sampling and analysis according to Appendix 3 of this General Permit.

10. **Risk Level 3 - Non-Storm Water Discharge Monitoring Requirements**

a. Visual Monitoring Requirements:

i. Risk Level 3 dischargers shall visually observe (inspect) each drainage area for the presence of (or indications of prior) unauthorized and authorized non-storm water discharges and their sources.

ii. Risk Level 3 dischargers shall conduct one visual observation (inspection) quarterly in each of the following periods: January-March, April-June, July-September, and October-December. Visual observation (inspections) are only required during daylight hours (sunrise to sunset).

iii. Risk Level 3 dischargers shall ensure that visual observations (inspections) document the presence or evidence of any non-storm water discharge (authorized or unauthorized), pollutant characteristics (floating and suspended material, sheen, discoloration, turbidity, odor, etc.), and source. Risk Level 3 dischargers shall maintain on-site records indicating the personnel performing the visual observation (inspections), the dates and approximate time each drainage area and non-storm water discharge was observed, and the response taken to eliminate unauthorized non-storm water discharges and to

reduce or prevent pollutants from contacting non-storm water discharges.

b. Effluent Sampling Locations:

i. Risk Level 3 dischargers shall sample effluent at all discharge points where non-storm water and/or authorized non-storm water is discharged off-site.

ii. Risk Level 3 dischargers shall send all non-storm water sample analyses to a laboratory certified for such analyses by the State Department of Health Services.

iii. Risk Level 3 dischargers shall monitor and report run-on from surrounding areas if there is reason to believe run-on may contribute to an exceedance of NALs.

11. **Risk Level 3 – Non-Visible Pollutant Monitoring Requirements**

a. Risk Level 3 dischargers shall collect one or more samples during any breach, malfunction, leakage, or spill observed during a visual inspection which could result in the discharge of pollutants to surface waters that would not be visually detectable in storm water.

b. Risk Level 3 dischargers shall ensure that water samples are large enough to characterize the site conditions.

c. Risk Level 3 dischargers shall collect samples at all discharge locations that can be safely accessed.

d. Risk Level 3 dischargers shall collect samples during the first two hours of discharge from rain events that occur during business hours and which generate runoff.

e. Risk Level 3 dischargers shall analyze samples for all non-visible pollutant parameters (if applicable) - parameters indicating the presence of pollutants identified in the pollutant source assessment required (Risk Level 3 dischargers shall modify their CSMPs to address these additional parameters in accordance with any updated SWPPP pollutant source assessment).

f. Risk Level 3 dischargers shall collect a sample of storm water that has not come in contact with the disturbed soil or the materials stored or used on-site (uncontaminated sample) for comparison with the discharge sample.

g. Risk Level 3 dischargers shall compare the uncontaminated sample to the samples of discharge using field analysis or through laboratory analysis.[7]

h. Risk Level 3 dischargers shall keep all field /or analytical data in the SWPPP document.

12. **Risk Level 3 – Watershed Monitoring Option**

Risk Level 3 dischargers who are part of a qualified regional watershed-based monitoring program may be eligible for relief from the requirements in Sections I.5. The Regional Water Board may approve proposals to substitute an acceptable watershed-based monitoring program by determining if the watershed-based monitoring program will provide substantially similar monitoring information in evaluating discharger compliance with the requirements of this General Permit.

13. **Risk Level 3 – Particle Size Analysis for Project Risk Justification**

Risk Level 3 dischargers justifying an alternative project risk shall report a soil particle size analysis used to determine the RUSLE K-Factor. ASTM D-422 (Standard Test Method for Particle-Size Analysis of Soils), as revised, shall be used to determine the percentages of sand, very fine sand, silt, and clay on the site.

14. **Risk Level 3 – Records**

Risk Level 3 dischargers shall retain records of all storm water monitoring information and copies of all reports (including Annual Reports) for a period of at least three years. Risk Level 3 dischargers shall retain all records on-site while construction is ongoing. These records include:

a. The date, place, time of facility inspections, sampling, visual observation (inspections), and/or measurements, including precipitation.

b. The individual(s) who performed the facility inspections, sampling, visual observation (inspections), and or measurements.

c. The date and approximate time of analyses.

[7] For laboratory analysis, all sampling, sample preservation, and analyses must be conducted according to test procedures under 40 CFR Part 136. Field discharge samples shall be collected and analyzed according to the specifications of the manufacturer of the sampling devices employed.

d. The individual(s) who performed the analyses.

e. A summary of all analytical results from the last three years, the method detection limits and reporting units, the analytical techniques or methods used, and the chain of custody forms.

f. Rain gauge readings from site inspections.

g. Quality assurance/quality control records and results.

h. Non-storm water discharge inspections and visual observation (inspections) and storm water discharge visual observation records (see Sections I.3 and I.10 above).

i. Visual observation and sample collection exception records (see Section I.6 above).

j. The records of any corrective actions and follow-up activities that resulted from analytical results, visual observation (inspections), or inspections.

15. **Risk Level 3 – NAL Exceedance Report**

a. Risk Level 3 dischargers shall electronically submit all storm event sampling results to the State Water Board no later than 10 days after the conclusion of the storm event. The Regional Boards have the authority to require the submittal of an NAL Exceedance Report.

b. Risk Level 3 dischargers shall certify each NAL Exceedance Report in accordance with the Special Provisions for Construction Activity In this General Permit.

c. Risk Level 3 dischargers shall retain an electronic or paper copy of each NAL Exceedance Report for a minimum of three years after the date the annual report is filed.

d. Risk Level 3 dischargers shall include in the NAL Exceedance Report:

i. The analytical method(s), method reporting unit(s), and method detection limit(s) of each analytical parameter (analytical results that are less than the method detection limit shall be reported as “less than the method detection limit”).

ii. The date, place, time of sampling, visual observation (inspections), and/or measurements, including precipitation.

iii. A description of the current BMPs associated with the effluent sample that exceeded the NAL and the proposed corrective actions taken.

16. **Risk Level 3 – Bioassessment**

a. Risk Level 3 dischargers with a total project-related ground disturbance exceeding 30 acres shall:

i. Conduct bioassessment monitoring, as described in Appendix 3.

ii. Include the collection and reporting of specified in stream biological data and physical habitat.

iii. Use the bioassessment sample collection and Quality Assurance & Quality Control (QA/QC) protocols developed by the State of California's Surface Water Ambient Monitoring Program (SWAMP).[8]

b. Risk Level 3 dischargers qualifying for bioassessment, where construction commences out of an index period for the site location shall:

i. Receive Regional Board approval for the sampling exception.

ii. Conduct bioassessment monitoring, as described in Appendix 3.

iii. Include the collection and reporting of specified instream biological data and physical habitat.

iv. Use the bioassessment sample collection and Quality Assurance & Quality Control (QA/QC) protocols developed by the State of California's Surface Water Ambient Monitoring Program (SWAMP).

OR

v. Make a check payable to: Cal State Chico Foundation (SWAMP Bank Account) or San Jose State Foundation (SWAMP Bank Account) and include the WDID# on the check for the amount calculated for the exempted project.

[8] http://www.waterboards.ca.gov/water_issues/programs/swamp/.

vi. Send a copy of the check to the Regional Water Board office for the site's region.

vii. Invest $**7,500.00 X The number of samples required** into the SWAMP program as compensation (upon regional board approval).

Table 3 – Risk Level 3 Test Methods, Detection Limits, Reporting Units and Applicable NALs

Parameter	Test Method / Protocol	Discharge Type	Min. Detection Limit	Reporting Units	Numeric Action Level	Numeric Effluent Limitation	Receiving Water Monitoring Trigger
pH	Field test with calibrated portable instrument	Risk Level 3 Discharges	0.2	pH units	lower NAL = 6.5 upper NAL = 8.5	N/A	lower limit = 6.0 upper limit = 9.0
Turbidity	EPA 0180.1 and/or field test with calibrated portable instrument	Risk Level 3 Discharges other than ATS	1	NTU	250 NTU	N/A	500 NTU
		For ATS discharges	1	NTU	N/A	10 NTU for Daily Weighted Average & 20 NTU for Any Single Sample	10 NTU for Daily Weighted Average & 20 NTU for Any Single Sample
SSC	ASTM Method D 3977-97[9]	Risk Level 3 (if Receiving Water Monitoring Trigger exceeded)	5	mg/L	N/A	N/A	N/A
Bioassessment	(STE) Level I of (SAFIT),[10] fixed-count of 600 org/sample	Risk Level 3 projects> 30 acres	N/A	N/A	N/A	N/A	N/A

[9] ASTM, 1999, Standard Test Method for Determining Sediment Concentration in Water Samples: American Society of Testing and Materials, D 3977-97, Vol. 11.02, pp. 389-394.

[10] The current SAFIT STEs (28 November 2006) list requirements for both the Level I and Level II taxonomic effort, and are located at: http://www.swrcb.ca.gov/swamp/docs/safit/ste_list.pdf. When new editions are published by SAFIT, they will supersede all previous editions. All editions will be posted at the State Water Board's SWAMP website.

ATTACHMENT F:
Active Treatment System (ATS) Requirements

Table 1 – Numeric Effluent Limitations, Numeric Action Levels, Test Methods, Detection Limits, and Reporting Units

Parameter	Test Method	Discharge Type	Min. Detection Limit	Units	Numeric Action Level	Numeric Effluent Limitation
Turbidity	EPA 0180.1 and/or field test with a calibrated portable instrument	For ATS discharges	1	NTU	N/A	10 NTU for Daily Flow-Weighted Average & 20 NTU for Any Single Sample

A. Dischargers choosing to implement an Active Treatment System (ATS) on their site shall comply with all of the requirements in this Attachment.

B. The discharger shall maintain a paper copy of each ATS specification onsite in compliance with the record retention requirements in the Special Provisions of this General Permit.

C. ATS Design, Operation and Submittals

1. The ATS shall be designed and approved by a Certified Professional in Erosion and Sediment Control (CPESC), a Certified Professional in Storm Water Quality (CPSWQ); a California registered civil engineer; or any other California registered engineer.

2. The discharger shall ensure that the ATS is designed in a manner to preclude the accidental discharge of settled floc[1] during floc pumping or related operations.

3. The discharger shall design outlets to dissipate energy from concentrated flows.

4. The discharger shall install and operate an ATS by assigning a lead person (or project manager) who has either a minimum of five years construction storm

[1] Floc is defined as a clump of solids formed by the chemical action in ATS systems.

water experience or who is a licensed contractors specifically holding a California Class A Contractors license.[2]

5. The discharger shall prepare an ATS Plan that combines the site-specific data and treatment system information required to safely and efficiently operate an ATS. The ATS Plan shall be electronically submitted to the State Water Board at least 14 days prior to the planned operation of the ATS and a paper copy shall be available onsite during ATS operation. At a minimum, the ATS Plan shall include:

   a. ATS Operation and Maintenance Manual for All Equipment.

   b. ATS Monitoring, Sampling & Reporting Plan, including Quality Assurance/Quality Control (QA/QC).

   c. ATS Health and Safety Plan.

   d. ATS Spill Prevention Plan.

6. The ATS shall be designed to capture and treat (within a 72-hour period) a volume equivalent to the runoff from a 10-year, 24-hour storm event using a watershed runoff coefficient of 1.0.

D. Treatment – Chemical Coagulation/Flocculation

1. Jar tests shall be conducted using water samples selected to represent typical site conditions and in accordance with ASTM D2035-08 (2003).

2. The discharger shall conduct, at minimum, six site-specific jar tests (per polymer with one test serving as a control) for each project to determine the proper polymer and dosage levels for their ATS.

3. Single field jar tests may also be conducted during a project if conditions warrant, for example if construction activities disturb changing types of soils, which consequently cause change in storm water and runoff characteristics.

E. Residual Chemical and Toxicity Requirements

1. The discharger shall utilize a residual chemical test method that has a method detection limit (MDL) of 10% or less than the maximum allowable threshold

[2] Business and Professions Code Division 3, Chapter 9, Article 4, Class A Contractor: A general engineering contractor is a contractor whose principal contracting business is in connection with fixed works requiring specialized engineering knowledge and skill. [http://www.cslb.ca.gov/General-Information/library/licensing-classifications.asp].

concentration[3] (MATC) for the specific coagulant in use and for the most sensitive species of the chemical used.

2. The discharger shall utilize a residual chemical test method that produces a result within one hour of sampling.

3. The discharger shall have a California State certified laboratory validate the selected residual chemical test. Specifically the lab will review the test protocol, test parameters, and the detection limit of the coagulant. The discharger shall electronically submit this documentation as part of the ATS Plan.

4. If the discharger cannot utilize a residual chemical test method that meets the requirements above, the discharger shall operate the ATS in Batch Treatment[4] mode.

5. A discharger planning to operate in Batch Treatment mode shall perform toxicity testing in accordance with the following:

   a. The discharger shall initiate acute toxicity testing on effluent samples representing effluent from each batch prior to discharge[5]. All bioassays shall be sent to a laboratory certified by the Department of Health Services (DHS) Environmental Laboratory Accreditation Program (ELAP). The required field of testing number for Whole Effluent Toxicity (WET) testing is E113.[6]

   b. Acute toxicity tests shall be conducted with the following species and protocols. The methods to be used in the acute toxicity testing shall be those outlined for a 96-hour acute test in "Methods for Measuring the Acute Toxicity of Effluents and Receiving Water to Freshwater and Marine Organisms, USEPA-841-R-02-012" for Fathead minnow, *Pimephales promelas* (fathead minnow). Acute toxicity for *Oncorhynchus mykiss* (Rainbow Trout) may be used as a substitute for testing fathead minnows.

   c. All toxicity tests shall meet quality assurance criteria and test acceptability criteria in the most recent versions of the EPA test method for WET testing.

   d. The discharger shall electronically report all acute toxicity testing.

[3] The Maximum Allowable Threshold Concentration (MATC) is the allowable concentration of residual, or dissolved, coagulant/flocculant in effluent. The MATC shall be coagulant/flocculant-specific, and based on toxicity testing conducted by an independent, third-party laboratory. A typical MATC would be:
The MATC is equal to the geometric mean of the NOEC (No Observed Effect Concentration) and LOEC (Lowest Observed Effect Concentration) Acute and Chronic toxicity results for most sensitive species determined for the specific coagulant. The most sensitive species test shall be used to determine the MATC.

[4] Batch Treatment mode is defined as holding or recirculating the treated water in a holding basin or tank(s) until treatment is complete or the basin or storage tank(s) is full.

[5] This requirement only requires that the test be initiated prior to discharge.

[6] http://www.dhs.ca.gov/ps/ls/elap/pdf/FOT_Desc.pdf.

F. Filtration

1. The ATS shall include a filtration step between the coagulant treatment train and the effluent discharge. This is commonly provided by sand, bag, or cartridge filters, which are sized to capture suspended material that might pass through the clarifier tanks.

2. Differential pressure measurements shall be taken to monitor filter loading and confirm that the final filter stage is functioning properly.

G. Residuals Management

1. Sediment shall be removed from the storage or treatment cells as necessary to ensure that the cells maintain their required water storage (i.e., volume) capability.

2. Handling and disposal of all solids generated during ATS operations shall be done in accordance with all local, state, and federal laws and regulations.

H. ATS Instrumentation

1. The ATS shall be equipped with instrumentation that automatically measures and records effluent water quality data and flow rate.

2. The minimum data recorded shall be consistent with the Monitoring and Reporting requirements below, and shall include:

    a. Influent Turbidity

    b. Effluent Turbidity

    c. Influent pH

    d. Effluent pH

    e. Residual Chemical

    f. Effluent Flow rate

    g. Effluent Flow volume

3. Systems shall be equipped with a data recording system, such as data loggers or webserver-based systems, which records each measurement on a frequency no longer than once every 15 minutes.

4. Cumulative flow volume shall be recorded daily. The data recording system shall have the capacity to record a minimum of seven days continuous data.

5. Instrumentation systems shall be interfaced with system control to provide auto shutoff or recirculation in the event that effluent measurements exceed turbidity or pH.

6. The system shall also assure that upon system upset, power failure, or other catastrophic event, the ATS will default to a recirculation mode or safe shut down.

7. Instrumentation (flow meters, probes, valves, streaming current detectors, controlling computers, etc.) shall be installed and maintained per manufacturer's recommendations, which shall be included in the QA/QC plan.

8. The QA/QC plan shall also specify calibration procedures and frequencies, instrument method detection limit or sensitivity verification, laboratory duplicate procedures, and other pertinent procedures.

9. The instrumentation system shall include a method for controlling coagulant dose, to prevent potential overdosing. Available technologies include flow/turbidity proportional metering, periodic jar testing and metering pump adjustment, and ionic charge measurement controlling the metering pump.

I. ATS Effluent Discharge

1. ATS effluent shall comply with all provisions and prohibitions in this General Permit, specifically the NELs.

2. NELs for discharges from an ATS:

   a. Turbidity of all ATS discharges shall be less than 10 NTU for daily flow-weighted average of all samples and 20 NTU for any single sample.

   b. Residual Chemical shall be < 10% of MATC[7] for the most sensitive species of the chemical used.

[7] The Maximum Allowable Threshold Concentration (MATC) is the allowable concentration of residual, or dissolved, coagulant/flocculant in effluent. The MATC shall be coagulant/flocculant-specific, and based on toxicity testing conducted by an independent, third-party laboratory. The MATC is equal to the geometric mean of the NOEC (No Observed Effect Concentration) and LOEC (Lowest Observed Effect Concentration) Acute and Chronic toxicity results for most sensitive species determined for the specific coagulant. The most sensitive species test shall be used to determine the MATC.

3. If an analytical effluent sampling result exceeds the turbidity NEL (as listed in Table 1), the discharger is in violation of this General Permit and shall electronically file the results in violation within 24-hours of obtaining the results.

4. If ATS effluent is authorized to discharge into a sanitary sewer system, the discharger shall comply with any pre-treatment requirements applicable for that system. The discharger shall include any specific criteria required by the municipality in the ATS Plan.

5. Compliance Storm Event:

   Discharges of storm water from ATS shall comply with applicable NELs (above) unless the storm event causing the discharges is determined after the fact to be equal to or larger than the Compliance Storm Event (expressed in inches of rainfall). The Compliance Storm Event for ATS discharges is the 10 year, 24 hour storm, as determined using these maps:

   http://www.wrcc.dri.edu/pcpnfreq/nca10y24.gif
   http://www.wrcc.dri.edu/pcpnfreq/sca10y24.gif

   This exemption is dependent on the submission of rain gauge data verifying the storm event is equal to or larger than the Compliance Storm.

J. Operation and Maintenance Plan

1. Each Project shall have a site-specific Operation and Maintenance (O&M) Manual covering the procedures required to install, operate and maintain the ATS.[8]

2. The O&M Manual shall only be used in conjunction with appropriate project-specific design specifications that describe the system configuration and operating parameters.

3. The O&M Manual shall have operating manuals for specific pumps, generators, control systems,and other equipment.

K. Sampling and Reporting Quality Assurance/ Quality Check (QA/QC) Plan

4. A project-specific QA/QC Plan shall be developed for each project. The QA/QC Plan shall include at a minimum:

   a. Calibration – Calibration methods and frequencies for all system and field instruments shall be specified.

[8] The manual is typically in a modular format covering generalized procedures for each component that is utilized in a particular system.

b. Method Detection Limits (MDLs) – The methods for determining MDLs shall be specified for each residual coagulant measurement method. Acceptable minimum MDLs for each method, specific to individual coagulants, shall be specified.

c. Laboratory Duplicates – Requirements for monthly laboratory duplicates for residual coagulant analysis shall be specified.

L. Personnel Training

1. Operators shall have training specific to using an ATS and liquid coagulants for storm water discharges in California.

2. The training shall be in the form of a formal class with a certificate and requirements for testing and certificate renewal.

3. Training shall include a minimum of eight hours classroom and 32 hours field training. The course shall cover the following topics:

   a. Coagulation Basics –Chemistry and physical processes

   b. ATS System Design and Operating Principles

   c. ATS Control Systems

   d. Coagulant Selection – Jar testing, dose determination, etc.

   e. Aquatic Safety/Toxicity of Coagulants, proper handling and safety

   f. Monitoring, Sampling, and Analysis

   g. Reporting and Recordkeeping

   h. Emergency Response

M. Active Treatment System (ATS) Monitoring Requirements

Any discharger who deploys an ATS on their site shall conduct the following:

1. Visual Monitoring

   a. A designated responsible person shall be on site daily at all times during treatment operations.

b. Daily on-site visual monitoring of the system for proper performance shall be conducted and recorded in the project data log.

   i. The log shall include the name and phone number of the person responsible for system operation and monitoring.

   ii. The log shall include documentation of the responsible person's training.

2. Operational and Compliance Monitoring

   a. Flow shall be continuously monitored and recorded at not greater than 15-minute intervals for total volume treated and discharged.

   b. Influent and effluent pH must be continuously monitored and recorded at not greater than 15-minute intervals.

   c. Influent and effluent turbidity (expressed in NTU) must be continuously monitored and recorded at not greater than 15-minute intervals.

   d. The type and amount of chemical used for pH adjustment, if any, shall be monitored and recorded.

   e. Dose rate of chemical used in the ATS system (expressed in mg/L) shall be monitored and reported 15-minutes after startup and every 8 hours of operation.

   f. Laboratory duplicates – monthly laboratory duplicates for residual coagulant analysis must be performed and records shall be maintained onsite.

   g. Effluent shall be monitored and recorded for residual chemical/additive levels.

   h. If a residual chemical/additive test does not exist and the ATS is operating in a batch treatment mode of operation refer to the toxicity monitoring requirements below.

3. Toxicity Monitoring

   A discharger operating in batch treatment mode shall perform toxicity testing in accordance with the following:

   a. The discharger shall initiate acute toxicity testing on effluent samples representing effluent from each batch prior to discharge.[9] All bioassays shall be sent to a laboratory certified by the Department of Health Services (DHS)

[9] This requirement only requires that the test be initiated prior to discharge.

Environmental Laboratory Accreditation Program (ELAP). The required field of testing number for Whole Effluent Toxicity (WET) testing is E113.[10]

b. Acute toxicity tests shall be conducted with the following species and protocols. The methods to be used in the acute toxicity testing shall be those outlined for a 96-hour acute test in "Methods for Measuring the Acute Toxicity of Effluents and Receiving Water to Freshwater and Marine Organisms, USEPA-841-R-02-012" for Fathead minnow, *Pimephales promelas or* Rainbow trout *Oncorhynchus mykiss* may be used as a substitute for fathead minnow.

c. All toxicity tests shall meet quality assurance criteria and test acceptability criteria in the most recent versions of the EPA test method for WET testing.[11]

4. Reporting and Recordkeeping

At a minimum, every 30 days a LRP representing the discharger shall access the State Water Boards Storm Water Mulit-Application and Report Tracking system (SMARTS) and electronically upload field data from the ATS. Records must be kept for three years after the project is completed .

5. Non-compliance Reporting

a. Any indications of toxicity or other violations of water quality objectives shall be reported to the appropriate regulatory agency as required by this General Permit.

b. Upon any measurements that exceed water quality standards, the system operator shall immediately notify his supervisor or other responsible parties, who shall notify the Regional Water Board.

c. If any monitoring data exceeds any applicable NEL in this General Permit, the discharger shall electronically submit a NEL Violation Report to the State Water Board within 24 hours after the NEL exceedance has been identified.

i. ATS dischargers shall certify each NEL Violation Report in accordance with the Special Provisions for Construction Activity in this General Permit.

ii. ATS dischargers shall retain an electronic or paper copy of each NEL Violation Report for a minimum of three years after the date the annual report is filed.

iii. ATS dischargers shall include in the NEL Violation Report:

[10] http://www.dhs.ca.gov/ps/ls/elap/pdf/FOT_Desc.pdf.
[11] http://www.epa.gov/waterscience/methods/wet/.

(1) The analytical method(s), method reporting unit(s), and method detection limit(s) of each analytical parameter (analytical results that are less than the method detection limit shall be reported as “less than the method detection limit”);

(2) The date, place, time of sampling, visual observation (inspections), and/or measurements, including precipitation; and

(3) A description of the current onsite BMPs, and the proposed corrective actions taken to manage the NEL exceedance.

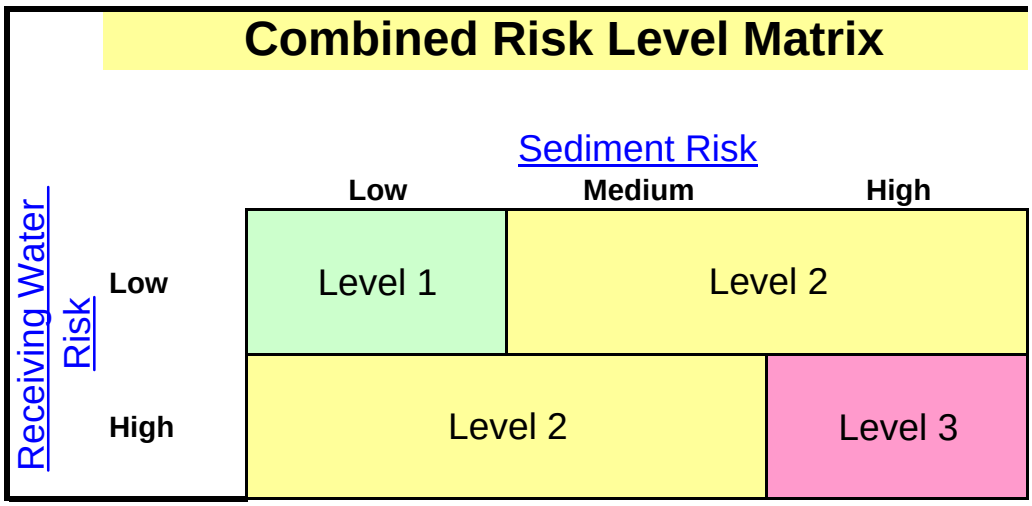
iv. Compliance Storm Exemption - In the event that an applicable NEL has been exceeded during a storm event equal to or larger than the Compliance Storm Event, ATS dischargers shall report the on-site rain gauge reading and nearby governmental rain gauge readings for verification.

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Version 8/17/2011												
2		**Risk Determination Worksheet**											
3													
4			**Step 1**	Determine Sediment Risk via one of the options listed:									
5				1. GIS Map Method - EPA Rainfall Erosivity Calculator & GIS map									
6				2. Individual Method - EPA Rainfall Erosivity Calculator & Individual Data									
7			**Step 2**	Determine Receiving Water Risk via one of the options listed:									
8				1. GIS map of Sediment Sensitive Watersheds provided									
9				2. Site Specific Analysis (support documentation required)									
10			**Step 3**	Determine Combined Risk Level									
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

	A	B	C
1	**Sediment Risk Factor Worksheet**		**Entry**
2	**A) R Factor**		
3	Analyses of data indicated that when factors other than rainfall are held constant, soil loss is directly proportional to a rainfall factor composed of total storm kinetic energy (E) times the maximum 30-min intensity (I30) (Wischmeier and Smith, 1958). The numerical value of R is the average annual sum of EI30 for storm events during a rainfall record of at least 22 years. "Isoerodent" maps were developed based on R values calculated for more than 1000 locations in the Western U.S. Refer to the link below to determine the R factor for the project site.		
4	http://cfpub.epa.gov/npdes/stormwater/LEW/lewCalculator.cfm		
5	**R Factor Value**		0
6	**B) K Factor (weighted average, by area, for all site soils)**		
7	The soil-erodibility factor K represents: (1) susceptibility of soil or surface material to erosion, (2) transportability of the sediment, and (3) the amount and rate of runoff given a particular rainfall input, as measured under a standard condition Fine-textured soils that are high in clay have low K values (about 0.05 to 0.15) because the particles are resistant to detachment. Coarse-textured soils, such as sandy soils, also have low K values (about 0.05 to 0.2) because of high infiltration resulting in low runoff even though these particles are easily detached. Medium-textured soils, such as a silt loam, have moderate K values (about 0.25 to 0.45) because they are moderately susceptible to particle detachment and they produce runoff at moderate rates. Soils having a high silt content are especially susceptible to erosion and have high K values, which can exceed 0.45 and can be as large as 0.65. Silt-size particles are easily detached and tend to crust, producing high rates and large volumes of runoff. Use Site-specific data must be submitted.		
8	Site-specific K factor guidance		
9	**K Factor Value**		0
10	**C) LS Factor (weighted average, by area, for all slopes)**		
11	The effect of topography on erosion is accounted for by the LS factor, which combines the effects of a hillslope-length factor, L, and a hillslope-gradient factor, S. Generally speaking, as hillslope length and/or hillslope gradient increase, soil loss increases. As hillslope length increases, total soil loss and soil loss per unit area increase due to the progressive accumulation of runoff in the downslope direction. As the hillslope gradient increases, the velocity and erosivity of runoff increases. Use the LS table located in separate tab of this spreadsheet to determine LS factors. Estimate the weighted LS for the site prior to construction.		
12	LS Table		
13	**LS Factor Value**		0
14			
15	**Watershed Erosion Estimate (=RxKxLS) in tons/acre**	0	
16	**Site Sediment Risk Factor**	**Low**	
17	Low Sediment Risk: < 15 tons/acre		
18	Medium Sediment Risk: >=15 and <75 tons/acre		
19	High Sediment Risk: >= 75 tons/acre		
20			
21			
22			
23	**GIS Map Method:**		
24	**1.** The R factor for the project is calculated using the online calculator at:		
25	http://cfpub.epa.gov/npdes/stormwater/LEW/lewCalculator.cfm		
26			
27	**2.** The K and LS factors may be obtained by accessing the GIS maps located on the State Water Board FTP website at:		
28	ftp://swrcb2a.waterboards.ca.gov/pub/swrcb/dwq/cgp/Risk/		
29			

Receiving Water (RW) Risk Factor Worksheet	Entry	Score
A. Watershed Characteristics	**yes/no**	
A.1. Does the disturbed area discharge (either directly or indirectly) to a **303(d)-listed waterbody impaired by sediment** (For help with impaired waterbodies please visit the link below) or has a **USEPA approved TMDL implementation plan for sediment**?:	**no**	**Low**
http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml		
OR		
A.2. Does the disturbed area discharge to a waterbody with designated beneficial uses of SPAWN & COLD & MIGRATORY? (For help please review the appropriate Regional Board Basin Plan)		
http://www.waterboards.ca.gov/waterboards_map.shtml		
Region 1 Basin Plan		
Region 2 Basin Plan		
Region 3 Basin Plan		
Region 4 Basin Plan		
Region 5 Basin Plan		
Region 6 Basin Plan		
Region 7 Basin Plan		
Region 8 Basin Plan		
Region 9 Basin Plan		

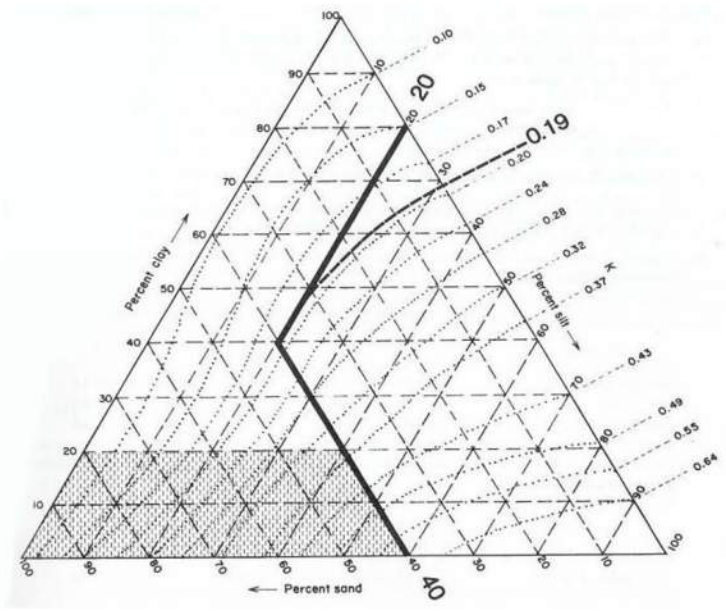
Combined Risk Level Matrix



Project Sediment Risk:	**Low**
Project RW Risk:	**Low**
Project Combined Risk:	**Level 1**

Soil Erodibility Factor (K)

The K factor can be determined by using the nomograph method, which requires that a particle size analysis (ASTM D-422) be done to determine the percentages of sand, very fine sand, silt and clay. Use the figure below to determine appropriate K value.



Erickson triangular nomograph used to estimate soil erodibility (K) factor.
The figure above is the USDA nomograph used to determine the K factor for a soil, based on its texture (% silt plus very fine sand, % sand, % organic matter, soil structure, and permeability). *Nomograph from Erickson 1977 as referenced in Goldman et. al., 1986.*

Sheet Flow Length (ft)	Average Watershed Slope (%)																		
	0.2	**0.5**	**1.0**	**2.0**	**3.0**	**4.0**	**5.0**	**6.0**	**8.0**	**10.0**	**12.0**	**14.0**	**16.0**	**20.0**	**25.0**	**30.0**	**40.0**	**50.0**	**60.0**
<3	0.05	0.07	0.09	0.13	0.17	0.20	0.23	0.26	0.32	0.35	0.36	0.38	0.39	0.41	0.45	0.48	0.53	0.58	0.63
6	0.05	0.07	0.09	0.13	0.17	0.20	0.23	0.26	0.32	0.37	0.41	0.45	0.49	0.56	0.64	0.72	0.85	0.97	1.07
9	0.05	0.07	0.09	0.13	0.17	0.20	0.23	0.26	0.32	0.38	0.45	0.51	0.56	0.67	0.80	0.91	1.13	1.31	1.47
12	0.05	0.07	0.09	0.13	0.17	0.20	0.23	0.26	0.32	0.39	0.47	0.55	0.62	0.76	0.93	1.08	1.37	1.62	1.84
15	0.05	0.07	0.09	0.13	0.17	0.20	0.23	0.26	0.32	0.40	0.49	0.58	0.67	0.84	1.04	1.24	1.59	1.91	2.19
25	0.05	0.07	0.10	0.16	0.21	0.26	0.31	0.36	0.45	0.57	0.71	0.85	0.98	1.24	1.56	1.86	2.41	2.91	3.36
50	0.05	0.08	0.13	0.21	0.30	0.38	0.46	0.54	0.70	0.91	1.15	1.40	1.64	2.10	2.67	3.22	4.24	5.16	5.97
75	0.05	0.08	0.14	0.25	0.36	0.47	0.58	0.69	0.91	1.20	1.54	1.87	2.21	2.86	3.67	4.44	5.89	7.20	8.37
100	0.05	0.09	0.15	0.28	0.41	0.55	0.68	0.82	1.10	1.46	1.88	2.31	2.73	3.57	4.59	5.58	7.44	9.13	10.63
150	0.05	0.09	0.17	0.33	0.50	0.68	0.86	1.05	1.43	1.92	2.51	3.09	3.68	4.85	6.30	7.70	10.35	12.75	14.89
200	0.06	0.10	0.18	0.37	0.57	0.79	1.02	1.25	1.72	2.34	3.07	3.81	4.56	6.04	7.88	9.67	13.07	16.16	18.92
250	0.06	0.10	0.19	0.40	0.64	0.89	1.16	1.43	1.99	2.72	3.60	4.48	5.37	7.16	9.38	11.55	15.67	19.42	22.78
300	0.06	0.10	0.20	0.43	0.69	0.98	1.28	1.60	2.24	3.09	4.09	5.11	6.15	8.23	10.81	13.35	18.17	22.57	26.51
400	0.06	0.11	0.22	0.48	0.80	1.14	1.51	1.90	2.70	3.75	5.01	6.30	7.60	10.24	13.53	16.77	22.95	28.60	33.67
600	0.06	0.12	0.24	0.56	0.96	1.42	1.91	2.43	3.52	4.95	6.67	8.45	10.26	13.94	18.57	23.14	31.89	39.95	47.18
800	0.06	0.12	0.26	0.63	1.10	1.65	2.25	2.89	4.24	6.03	8.17	10.40	12.69	17.35	23.24	29.07	40.29	50.63	59.93
1000	0.06	0.13	0.27	0.69	1.23	1.86	2.55	3.30	4.91	7.02	9.57	12.23	14.96	20.57	27.66	34.71	48.29	60.84	72.15

LS Factors for Construction Sites. *Table from Renard et. al., 1997.*

APPENDIX 2:
Post-Construction Water Balance Performance Standard Spreadsheet

The discharger shall submit with their Notice of Intent (NOI) the following information to demonstrate compliance with the New and Re-Development Water Balance Performance Standard.

Map Instructions

The discharger must submit a small-scale topographic map of the site to show the existing contour elevations, pre- and post-construction drainage divides, and the total length of stream in each watershed area. Recommended scales include 1 in. = 20 ft., 1 in. = 30 ft., 1 in. = 40 ft., or 1 in = 50 ft. The suggested contour interval is usually 1 to 5 feet, depending upon the slope of the terrain. The contour interval may be increased on steep slopes. Other contour intervals and scales may be appropriate given the magnitude of land disturbance.

Spreadsheet Instructions

The intent of the spreadsheet is to help dischargers calculate the project-related increase in runoff volume and select impervious area and runoff reduction credits to reduce the project-related increase in runoff volume to pre-project levels.

The discharger has the option of using the spreadsheet (**Appendix 2.1)** or a more sophisticated, watershed process-based model (e.g. Storm Water Management Model, Hydrological Simulation Program Fortran) to determine the project-related increase in runoff volume.

In* Appendix 4.1**, ***you must complete the worksheet for each land use/soil type combination for each project sub-watershed.

Steps 1 through 9 pertain specifically to the Runoff Volume Calculator:

Step 1: Enter the county where the project is located in cell H3.

Step 2: Enter the soil type in cell H6.

Step 3: Enter the existing pervious (dominant) land use type in cell H7.

Step 4: Enter the proposed pervious (dominant) land use type in cell H8.

Step 5: Enter the total project site area in cell H11 or J11.

Step 6: Enter the sub-watershed area in cell H12 or J12.

Step 7: Enter the existing rooftop area in cell H17 or J17, the existing non-rooftop impervious area in cell H18 or J18, the proposed rooftop area in cell H19 or J19, and the proposed non-rooftop impervious area in cell H20 or J20

Step 8: Work through each of the impervious area reduction credits and claim credits where applicable. Volume that cannot be addressed using non-structural practices must be captured in structural practices and approved by the Regional Water Board.

Step 9: Work through each of the impervious volume reduction credits and claim credits where applicable. Volume that cannot be addressed using non-structural practices must be captured in structural practices and approved by the Regional Water Board.

Non-structural Practices Available for Crediting

- ***Porous Pavement***
- ***Tree Planting***
- ***Downspout Disconnection***
- ***Impervious Area Disconnection***
- ***Green Roof***
- ***Stream Buffer***
- ***Vegetated Swales***
- ***Rain Barrels and Cisterns***
- ***Landscaping Soil Quality***

Post-Construction Water Balance Calculator

User may make changes from any cell that is orange or brown in color (similar to the cells to the immediate right). Cells in green are calculated for you.

(Step 1a) If you know the 85th percentile storm event for your location enter it in the box below

(Step 1b) If you can not answer 1a then select the county where the project is located (click on the cell to the right for drop-down): This will determine the average 85th percentile 24 hr. storm event for your site, which will appear under precipitation to left.

SACRAMENTO

(Step 1c) If you would like a more percise value select the location closest to your site. If you do not recgonize any of these locations, leave this drop-down menu at location. The average value for the County will be used.

SACRAMENTO FAA ARPT

Project Information

Project Name:	***Optional***
Waste Discharge Identification (WDID):	***Optional***
Date:	***Optional***
Sub Drainage Area Name (from map):	***Optional***

Runoff Curve Numbers

Existing Pervious Runoff Curve Number	**82**
Proposed Development Pervious Runoff Curve Number	**74**

Design Storm

Based on the County you indicated above, we have included the 85 percentile average 24 hr event - P85 (in)^ for your area.	**0.62**	**in**
The Amount of rainfall needed for runoff to occur (Existing runoff curve number -P from existing RCN (in)^)	**0.44**	**In**
P used for calculations (in) (the greater of the above two criteria)	**0.62**	**In**

^Available at www.cabmphandbooks.com

Pre-Project Runoff Volume (cu ft)	**247**	**Cu.Ft.**
Project-Related Runoff Volume Increase w/o credits (cu ft)	**0**	**Cu.Ft.**
Project-Related Volume Increase with Credits (cu ft)	**0**	**Cu.Ft.**

You have achieved your minimum requirements

Runoff Calculations

(Step 2) Indicate the Soil Type (dropdown menu to right): ***Group C Soils*** — **Low infiltration. Sandy clay loam. Infiltration rate 0.05 to 0.15 inch/hr when wet.**

(Step 3) Indicate the existing **dominant** non-built land Use Type (dropdown menu to right): ***Wood & Grass: <50% ground cover***

(Step 4) Indicate the proposed **dominant** non-built land Use Type (dropdown menu to right): ***Lawn, Grass, or Pasture covering more than 75% of the open space***

	Complete Either Sq Ft	Acres	Acres
(Step 5) Total Project Site Area:		5.00	5.00
(Step 6) Sub-watershed Area:		5.00	5.00
Percent of total project :		100%	

(Step 7) Sub-watershed Conditions	Complete Either Sq Ft	Acres	Calculated Acres
Sub-watershed Area (acres)			5.00
Existing Rooftop Impervious Coverage		0	0.00
Existing Non-Rooftop Impervious Coverage		0	0.00
Proposed Rooftop Impervious Coverage		0	0.00
Proposed Non-Rooftop Impervious Coverage		0	0.00

Credits	Acres	Square Feet
Porous Pavement	0.00	0
Tree Planting	0.00	0
Downspout Disconnection	0.00	0
Impervious Area Disconnection	0.00	0
Green Roof	0.00	0
Stream Buffer	0.00	0
Vegetated Swales	0.00	0
Subtotal	0.00	0
Subtotal Runoff Volume Reduction Credit	0 Cu. Ft.	

(Step 9) Impervious Volume Reduction Credits	Volume (cubic feet)
Rain Barrels/Cisterns	0 Cu. Ft.
Soil Quality	0 Cu. Ft.
Subtotal Runoff Volume Reduction	0 Cu. Ft.
Total Runoff Volume Reduction Credit	0 Cu. Ft.

Porous Pavement Credit Worksheet

Please fill out a porous pavement credit worksheet for each project sub-watershed.

For the PROPOSED Development:

Proposed Porous Pavement	Runoff Reduction*	Fill in either Acres or SqFt		Equivalent Acres
		In SqFt.	In Acres	
Area of **Brick without Grout** on less than 12 inches of base with at least 20% void space over soil	0.45			0.00
Area of **Brick without Grout** on more than 12 inches of base with at least 20% void space over soil	0.90			0.00
Area of **Cobbles** less than 12 inches deep and over soil	0.30			0.00
Area of **Cobbles** less than 12 inches deep and over soil	0.60			0.00
Area of **Reinforced Grass Pavement** on less than 12 inches of base with at least 20% void space over soil	0.45			0.00
Area of **Reinforced Grass Pavement** on at least 12 inches of base with at least 20% void space over soil	0.90			0.00
Area of **Porous Gravel Pavement** on less than 12 inches of base with at least 20% void space over soil	0.38			0.00
Area of **Porous Gravel Pavement** on at least 12 inches of base with at least 20% void space over soil	0.75			0.00
Area of **Poured Porous Concrete or Asphalt Pavement** with less than 4 inches of gravel base (washed stone)	0.40			0.00
Area of **Poured Porous Concrete or Asphalt Pavement** with 4 to 8 inches of gravel base (washed stone)	0.60			0.00
Area of **Poured Porous Concrete or Asphalt Pavement** with 8 to 12 inches of gravel base (washed stone)	0.80			0.00
Area of **Poured Porous Concrete or Asphalt Pavement** with 12 or more inches of gravel base (washed stone)	1.00			0.00

*=1-Rv**

Return to Calculator

**Using Site Design Techniques to meet Development Standards for Stormwater Quality (BASMAA 2003)

**NCDENR Stormwater BMP Manual (2007)

Tree Planting Credit Worksheet

Please fill out a tree canopy credit worksheet for each project sub-watershed.

Tree Canopy Credit Criteria	Number of Trees Planted	Credit (acres)
Number of proposed evergreen trees to be planted (credit = number of trees x 0.005)*	0	0.00
Number of proposed deciduous trees to be planted (credit = number of trees x 0.0025)*		0.00
	Square feet Under Canopy	
Square feet under an existing tree canopy, that will remain on the property, with an average diameter at 4.5 ft above grade (i.e., diameter at breast height or DBH) is LESS than 12 in diameter.		0.00
Square feet under an existing tree canopy that will remain on the property, with an average diameter at 4.5 ft above grade (i.e., diameter at breast height or DBH) is 12 in diameter or GREATER.		0.00
Please describe below how the project will ensure that these trees will be maintained.		

0

Return to Calculator

* credit amount based on credits from Stormwater Quality Design Manual for the Sacramento and South Placer Regions

Downspout Disconnection Credit Worksheet

Please fill out a downspout disconnection credit worksheet for each project subwatershed. If you answer yes to all questions, all rooftop area draining to each downspout will be subtracted from your proposed rooftop impervious coverage.

Downspout Disconnection Credit Criteria		
Do downspouts and any extensions extend at least six feet from a basement and two feet from a crawl space or concrete slab?	○ Yes	◉ No
Is the area of rooftop connecting to each disconnected downspout 600 square feet or less?	○ Yes	◉ No
Is the roof runoff from the design storm event fully contained in a raised bed or planter box or does it drain as sheet flow to a landscaped area large enough to contain the roof runoff from the design storm event?	○ Yes	◉ No
The Stream Buffer and/or Vegetated Swale credits **will not** be taken in this sub-watershed area?	○ Yes	◉ No

Percentage of existing	0.00	Acres	of rooftop surface has disconnected downspouts	
Percentage of the proposed	0.00	Acres	of rooftop surface has disconnected downspouts	50

Return to Calculator

Impervious Area Disconnection Credit Worksheet

Please fill out an impervious area disconnection credit worksheet for each project sub-watershed. If you answer yes to all questions, all non-rooftop impervious surface area will be subtracted from your proposed non-rooftop impervious coverage.

Non-Rooftop Disconnection Credit Criteria	Response
Is the maximum contributing impervious flow path length less than 75 feet or, if equal or greater than 75 feet, is a storage device (e.g. French drain, bioretention area, gravel trench) implemented to achieve the required disconnection length?	◉ Yes ○ No
Is the impervious area to any one discharge location less than 5,000 square feet?	◉ Yes ○ No
The Stream Buffer credit **will not** be taken in this sub-watershed area?	◉ Yes ○ No

Percentage of existing	0.00	Acres non-rooftop surface area disconnected	
Percentage of the proposed	0.00	Acres non-rooftop surface area disconnected	70

Return to Calculator

Green Roof Credit Worksheet

Please fill out a greenroof credit worksheet for each project sub-watershed. If you answer yes to all questions, 70% of the greenroof area will be subtracted from your proposed rooftop impervious coverage.

Green Roof Credit Criteria				Response
Is the roof slope less than 15% or does it have a grid to hold the substrate in place until it forms a thick vegetation mat?				◉ Yes ○ No
Has a professional engineer assessed the necessary load reserves and designed a roof structure to meet state and local codes?				◉ Yes ○ No
Is the irrigation needed for plant establishment and/or to sustain the green roof during extended dry periods, is the source from stored, recycled, reclaimed, or reused water?				◉ Yes ○ No
Percentage of existing	0.00	Acres	rooftop surface area in greenroof	
Percentage of the proposed	0.00	Acres	rooftop surface area in greenroof	

Return to Calculator

Stream Buffer Credit Worksheet

Please fill out a stream buffer credit worksheet for each project sub-watershed. If you answer yes to all questions, you may subtract all impervious surface draining to each stream buffer that has not been addressed using the Downspout and/or Impervious Area Disconnection credits.

Stream Buffer Credit Criteria				Response
Does runoff enter the floodprone width* or within 500 feet (whichever is larger) of a stream channel as sheet flow**?				○ Yes ◉ No
Is the contributing overland slope 5% or less, or if greater than 5%, is a level spreader used?				○ Yes ◉ No
Is the buffer area protected from vehicle or other traffic barriers to reduce compaction?				○ Yes ◉ No
Will the stream buffer be maintained in an ungraded and uncompacted condition and will the vegetation be maintained in a natural condition?				○ Yes ◉ No
Percentage of existing	0.00	Acres	impervious surface area draining into a stream buffer:	
Percentage of the proposed	0.00	Acres	impervious surface area that will drain into a stream buffer:	
Please describe below how the project will ensure that the buffer areas will remain in ungraded and uncompacted condition and that the vegetation will be maintained in a natural condition.				

Return to Calculator

* floodprone width is the width at twice the bankfull depth.
** the maximum contributing length shall be 75 feet for impervious area

Vegetated Swale Credit Worksheet

Please fill out a vegetated swale worksheet for each project subwatershed. If you answer yes to all questions, you may subtract all impervious surface draining to each stream buffer that has not been addressed using the Downspout Disconnection credit.

Vegetated Swale Credit Criteria

Have all vegetated swales been designed in accordance with Treatment Control BMP 30 (TC-30 - Vegetated Swale) from the California Stormwater BMP Handbook, New Development and Redevelopment (available at www.cabmphandbooks.com)?	○ Yes ◉ No
Is the maximum flow velocity for runoff from the design storm event less than or equal to 1.0 foot per second?	○ Yes ◉ No

Percentage of existing	0.00	Acres of impervious area draining to a vegetated swale	
Percentage of the proposed	0.00	Acres of impervious area draining to a vegetated swale	

Return to Calculator

Rain Barrel/Cistern Credit Worksheet

Please fill out a rain barrel/cistern worksheet for each project sub-watershed.

Rain Barrel/Cistern Credit Criteria	Response
Total number of rain barrel(s)/cisterns	
Average capacity of rain barrel(s)/cistern(s) (in gallons)	
Total capacity rain barrel(s)/cistern(s) (in cu ft) [1]	0

[1] accounts for 10% loss

Return to Calculator

Please fill out a soil quality worksheet for each project sub-watershed.

	Response
Will the landscaped area be lined with an impervious membrane?	
Will the soils used for landscaping meet the ideal bulk densities listed in Table 1 below? [1]	○ Yes ◉ No
If you answered yes to the question above, and you know the area-weighted bulk density within the top 12 inches for soils used for landscaping (in g/cm^3)* , fill in the cell to the right and skip to cell G11. If not select from the drop-down menu in G10.	1.3
If you answered yes to the question above, but you do not know the exact bulk density, which of the soil types in the drop down menu to the right best describes the top 12 inches for soils used for landscaping (in g/cm^3).	Sandy loams, loams
What is the average depth of your landscaped soil media meeting the above criteria (inches)?	12
What is the total area of the landscaped areas meeting the above criteria (in acres)?	2.97

Return to Calculator

Table 1

Sands, loamy sands	<1.6
Sandy loams, loams	<1.4
Sandy clay loams, loams, clay loams	<1.4
Silts, silt loams	<1.3
Silt loams, silty clay loams	<1.1
Sandy clays, silty clays, some clay loams (35-45% clay)	<1.1
Clays (>45% clay)	<1.1

Porosity (%) 50.94%

Mineral grains in many soils are mainly quartz and feldspar, so 2.65 a good average for particle density. To determine percent porosity, use the formula: Porosity (%) = (1-Bulk Density/2.65) X 100

[1] USDA NRCS. "Soil Quality Urban Technical Note No.2-Urban Soil Compaction". March 2000. http://soils.usda.gov/sqi/management/files/sq_utn_2.pdf

* To determine how to calculate density see: http://www.globe.gov/tctg/bulkden.pdf?sectionID=94

APPENDIX 3
Bioassessment Monitoring Guidelines

Bioassessment monitoring is required for projects that meet all of the following criteria:

1. The project is rated Risk Level 3 or LUP Type 3
2. The project directly discharges runoff to a freshwater wadeable stream (or streams) that is either: (a) listed by the State Water Board or USEPA as impaired due to sediment, and/or (b) tributary to any downstream water body that is listed for sediment; and/or have the beneficial use SPAWN & COLD & MIGRATORY
3. Total project-related ground disturbance exceeds 30 acres.

For all such projects, the discharger shall conduct bioassessment monitoring, as described in this section, to assess the effect of the project on the biological integrity of receiving waters.
Bioassessment shall include:

1. The collection and reporting of specified instream biological data
2. The collection and reporting of specified instream physical habitat data

<u>Bioassessment Exception</u>
If a site qualifies for bioassessment, but construction commences out of an index period for the site location, the discharger shall:

1. Receive Regional Water Board approval for the sampling exception
2. Make a check payable to: Cal State Chico Foundation (SWAMP Bank Account) or San Jose State Foundation (SWAMP Bank Account) and include the WDID# on the check for the amount calculated for the exempted project.
3. Send a copy of the check to the Regional Water Board office for the site's region
4. Invest **7,500.00 X The number of samples required** into the SWAMP program as compensation (upon Regional Water Board approval).
5. Conduct bioassessment monitoring, as described in Appendix 4
6. Include the collection and reporting of specified instream biological data and physical habitat
7. Use the bioassessment sample collection and Quality Assurance & Quality Control (QA/QC) protocols developed by the State of California's Surface Water Ambient Monitoring Program (SWAMP)

<u>Site Locations and Frequency</u>
Macroinvertebrate samples shall be collected both before ground disturbance is initiated and after the project is completed. The "after" sample(s) shall be collected after at least one winter season resulting in surface runoff has transpired after project-related ground disturbance has ceased. "Before" and "after" samples shall be collected both upstream and downstream of the project's

discharge. Upstream samples should be taken immediately before the sites outfall and downstream samples should be taken immediately after the outfall (when safe to collect the samples). Samples should be collected for each freshwater wadeable stream that is listed as impaired due to sediment, or tributary to a water body that is listed for sediment. Habitat assessment data shall be collected concurrently with all required macroinvertebrate samples.

Index Period (Timing of Sample Collection)
Macroinvertebrate sampling shall be conducted during the time of year (i.e., the "index period") most appropriate for bioassessment sampling, depending on ecoregion. This map is posted on the State Water Board's Website: http://www.waterboards.ca.gov/water_issues/programs/stormwater/construction.shtml

Field Methods for Macroinvertebrate Collections
In collecting macroinvertebrate samples, the discharger shall use the "Reachwide Benthos (Multi-habitat) Procedure" specified in *Standard Operating Procedures for Collecting Benthic Macroinvertebrate Samples and Associated Physical and Chemical Data for Ambient Bioassessments in California* (Ode 2007).[1]

Physical - Habitat Assessment Methods
The discharger shall conduct, concurrently with all required macroinvertebrate collections, the "Full" suite of physical habitat characterization measurements as specified in *Standard Operating Procedures for Collecting Benthic Macroinvertebrate Samples and Associated Physical and Chemical Data for Ambient Bioassessments in California* (Ode 2007), and as summarized in the Surface Water Ambient Monitoring Program's *Stream Habitat Characterization Form — Full Version*.

Laboratory Methods
Macroinvertebrates shall be identified and classified according to the Standard Taxonomic Effort (STE) Level I of the Southwestern Association of Freshwater Invertebrate Taxonomists (SAFIT),[2] and using a fixed-count of 600 organisms per sample.

Quality Assurance
The discharger or its consultant(s) shall have and follow a quality assurance (QA) plan that covers the required bioassessment monitoring. The QA plan shall include, or be supplemented to include, a specific requirement for external QA checks (i.e., verification of taxonomic identifications and correction of data where

[1] This document is available on the Internet at: ~~http://www.swrcb.ca.gov/swamp/docs/phab_sopr6.pdf~~. http://swamp.mpsl.mlml.calstate.edu/wp-content/uploads/2009/04/swamp_sop_bioassessment_collection_020107.pdf.

[2] The current SAFIT STEs (28 November 2006) list requirements for both the Level I and Level II taxonomic effort, and are located at: ~~http://www.swrcb.ca.gov/swamp/docs/safit/ste_list.pdf~~ http://www.safit.org/Docs/ste_list.pdf. When new editions are published by SAFIT, they will supersede all previous editions. All editions will be posted at the State Water Board's SWAMP website.

errors are identified). External QA checks shall be performed on one of the discharger's macroinvertebrate samples collected per calendar year, or ten percent of the samples per year (whichever is greater). QA samples shall be randomly selected. The external QA checks shall be paid for by the discharger, and performed by the California Department of Fish and Game's Aquatic Bioassessment Laboratory. An alternate laboratory with equivalent or better expertise and performance may be used if approved in writing by State Water Board staff.

Sample Preservation and Archiving

The original sample material shall be stored in 70 percent ethanol and retained by the discharger until: 1) all QA analyses specified herein and in the relevant QA plan are completed; and 2) any data corrections and/or re-analyses recommended by the external QA laboratory have been implemented. The remaining subsampled material shall be stored in 70 percent ethanol and retained until completeness checks have been performed according to the relevant QA plan. The identified organisms shall be stored in 70 percent ethanol, in separate glass vials for each final ID taxon. (For example, a sample with 45 identified taxa would be archived in a minimum of 45 vials, each containing all individuals of the identified taxon.) Each of the vials containing identified organisms shall be labeled with taxonomic information (i.e., taxon name, organism count) and collection information (i.e., site name/site code, waterbody name, date collected, method of collection). The identified organisms shall be archived (i.e., retained) by the discharger for a period of not less than three years from the date that all QA steps are completed, and shall be checked at least once per year and "topped off" with ethanol to prevent desiccation. The identified organisms shall be relinquished to the State Water Board upon request by any State Water Board staff.

Data Submittal

The macroinvertebrate results (i.e., taxonomic identifications consistent with the specified SAFIT STEs, and number of organisms within each taxa) shall be submitted to the State Water Board in electronic format. The State Water Board's Surface Water Ambient Monitoring Program (SWAMP) is currently developing standardized formats for reporting bioassessment data. All bioassessment data collected after those formats become available shall be submitted using the SWAMP formats. Until those formats are available, the biological data shall be submitted in MS-Excel (or equivalent) format.[3]

The physical/habitat data shall be reported using the standard format titled *SWAMP Stream Habitat Characterization Form — Full Version*.[4]

[3] Any version of Excel, 2000 or later, may be used.
[4] Available at: http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/reports/fieldforms_fullversion052908.pdf

Invasive Species Prevention

In conducting the required bioassessment monitoring, the discharger and its consultants shall take precautions to prevent the introduction or spread of aquatic invasive species. At minimum, the discharger and its consultants shall follow the recommendations of the California Department of Fish and Game to minimize the introduction or spread of the New Zealand mudsnail.[5]

[5] Instructions for controlling the spread of NZ mudsnails, including decontamination methods, can be found at: http://www.dfg.ca.gov/invasives/mudsnail/
More information on AIS More information on AIS
http://www.waterboards.ca.gov/water_issues/programs/swamp/ais/

Appendix 4 Non Sediment TMDLs

Region 1 Lost River-DIN and CBOD

Region 1 Source: Cal Trans Construction TMDL Completion Date: 12 30 2008 TMDL Type: River, Lake Watershed Area= 2996 mi^2	**Pollutant Stressors/WLA**	
	Dissolved inorganic nitrogen (DIN) (metric tons/yr)	**Carbonaceous biochemical oxygen demand (CBOD) (metric tons/yr)**
Lost River from the Oregon border to Tule Lake	.1	.2
Tule Lake Refuge	.1	.2
Lower Klamath Refuge	.1	.2

Region 2 San Francisco Bay-Mercury

Region 2 Source:Non-Urban Stormwater Runoff TMDL Type: Bay	**Name**	**Pollutant Stressor/WLA**	**TMDL Completion Date**
	San Francisco Bay	Mercury 25 kg/year	08 09 2006

Region 4 Ballona Creek-Metals and Selenium

Region 4 Source: NPDES General Construction TMDL Completion Date: 12 22 2005 TMDL Type: Creek	**Pollutant Stressors/WLA**							
	Copper (Cu)		**Lead (Pb)**		**Selenium (Se)**		**Zinc (Zn)**	
	g/day	g/day/acre	g/day	g/day/acre	g/day	g/day/acre	g/day	g/day/acre
Ballona Creek	4.94E-07 x Daily storm volume (L)	2.20E-10 x Daily storm volume (L)	1.62E-06 x Daily storm volume (L)	7.20E-10 x Daily storm volume (L)	1.37E-07 x Daily storm volume (L)	6.10E-11 x Daily storm volume (L)	3.27E-06 x Daily storm volume (L)	1.45E-09 x Daily storm volume (L)

General Construction Storm Water Permits:
Waste load allocations will be incorporated into the State Board general permit upon renewal or into a watershed-specific general permit developed by the Regional Board.

- Dry-weather Implementation Non-storm water flows authorized by the General Permit for Storm Water Discharges Associated with Construction Activity (Water Quality Order No. 99-08 DWQ), or any successor order, are exempt from the dry-weather waste load allocation equal to zero as long as they comply with the provisions of sections C.3 and A.9 of the Order No. 99-08 DWQ, which state that these authorized non-storm discharges shall be:
  (1) infeasible to eliminate
  (2) comply with BMPs as described in the Storm Water Pollution Prevention Plan prepared by the permittee, and
  (3) not cause or contribute to a violation of water quality standards, or comparable provisions in any successor order.
  Unauthorized non-storm water flows are already prohibited by Order No. 99-08 DWQ.
- Wet-weather Implementation Within seven years of the effective date of the TMDL, the construction industry will submit the results of BMP effectiveness studies to determine BMPs that will achieve compliance with the final waste load allocations assigned to construction storm water permittees.
- Regional Board staff will bring the recommended BMPs before the Regional Board for consideration within eight years of the effective date of the TMDL.
- General construction storm water permittees will be considered in compliance with final waste load allocations if they implement these Regional Board approved BMPs. All permittees must implement the approved BMPs within nine years of the effective date of the TMDL. If no effectiveness studies are conducted and no BMPs are approved by the Regional Board within eight years of the effective date of the TMDL, each general construction storm water permit holder will be subject to site-specific BMPs and monitoring requirements to demonstrate compliance with final waste load allocations.

Region 4 Calleaguas Creek-OC Pesticides, PCBs, and Siltation

Interim Requirements

Region 4 Calleaguas Creek Source: Minor NPDES point sources/WDRs TMDL Completion Date: 3 14 2006 TMDL Type:Creek	**Pollutant Stressor**	**WLA Daily Max (µg/L)**	**WLA Monthly Ave (µg/L)**
	Chlordane	1.2	0.59
	4,4-DDD	1.7	0.84
	4,4-DDE	1.2	0.59
	4,4-DDT	1.2	0.59
	Dieldrin	0.28	0.14
	PCB’s	0.34	0.17
	Toxaphene	0.33	0.16

Final WLA (ng/g)							
Region 4 Calleaguas Creek Source: Stormwater Permittees TMDL Completion Date: 3 14 2006 TMDL Type:Creek	Chlordane	4,4-DDD	4,4-DDE	4,4-DDT	Dieldrin	PCB's	Toxaphene
Mugu Lagoon*	3.3	2.0	2.2	0.3	4.3	180.0	360.0
Callegaus Creek	3.3	2.0	1.4	0.3	0.2	120.0	0.6
Revolon Slough (SW)*	0.9	2.0	1.4	0.3	0.1	130.0	1.0
Arroyo Las posas(SW)*	3.3	2.0	1.4	0.3	0.2	120.0	0.6
Arroyo Simi	3.3	2.0	1.4	0.3	0.2	120.0	0.6
Conejo Creek	3.3	2.0	1.4	0.3	0.2	120.0	0.6
Interim Requirements (ng/g)							
Mugu Lagoon*	25.0	69.0	300.0	39.0	19.0	180.	22900.0
Callegaus Creek	17.0	66.0	470.0	110.0	3.0	3800.0	260.0
Revolon Slough (SW)*	48.0	400.0	1600.0	690.0	5.7	7600.0	790.0
Arroyo Las posas(SW)*	3.3	290.0	950.0	670.0	1.1	25700.0	230.0
Arroyo Simi	3.3	14.0	170.0	25.0	1.1	25700.0	230.0
Conejo Creek	3.4	5.3	20.0	2.0	3.0	3800.0	260.0

*(SW)=Subwatershed

*Mugu Lagoon includes Duck pond/Agricultural Drain/Mugu/Oxnard Drain #2

Compliance with sediment based WLAs is measured as an instream annual average at the base of each subwatershed where the discharges are located.

Region 4 Calleguas Creek-Salts

Final Dry Weather Pollutant WLA (mg/L)					
Region 4 Calleaguas Creek Source Permitted Stormwater Dischargers TMDL Completion Date: 12 2 2008 TMDL Type:Creek	**Critical Condition Flow Rate (mgd)**	**Chloride (lb/day)**	**TDS (lb/day)**	**Sulfate (lb/day)**	**Boron (lb/day)**
Simi	1.39	1738.0	9849.0	2897.0	12.0
Las Posas	0.13	157.0	887.0	261.0	N/A
Conejo	1.26	1576.0	8931.0	2627.0	N/A

Camarillo	0.06	72.0	406.0	119.0	N/A
Pleasant Valley (Calleguas)	0.12	150.0	850.0	250.0	N/A
Pleasant Valley (Revolon)	0.25	314.0	1778.0	523.0	2.0

Dry Weather Interim Pollutant WLA (mg/L)				
	Chloride (mg/L)	**TDS (mg/L)**	**Sulfate (mg/L)**	**Boron (mg/L)**
Simi	230.0	1720.0	1289.0	1.3
Las Posas	230.0	1720.0	1289.0	1.3
Conejo	230.0	1720.0	1289.0	1.3
Camarillo	230.0	1720.0	1289.0	1.3
Pleasant Valley (Calleguas)	230.0	1720.0	1289.0	1.3
Pleasant Valley (Revolon)	230.0	1720.0	1289.0	1.3

- General Construction permittees are assigned a dry weather wasteload allocation equal to the average dry weather critical condition flow rate multiplied by the numeric target for each constituent. Waste load allocations apply in the receiving water at the base of each subwatershed. Dry weather allocations apply when instream flow rates are below the 86th percentile flow and there has been no measurable precipitation in the previous 24 hours.
- Because wet weather flows transport a large mass of salts at low concentrations, these dischargers meet water quality objectives during wet weather.
- Interim limits are assigned for dry weather discharges from areas covered by NPDES stormwater permits to allow time to implement appropriate actions. The interim limits are assigned as concentration based receiving water limits set to the 95th percentile of the discharger data as a monthly average limit except for chloride. The 95th percentile for chloride was 267 mg/L which is higher than the recommended criteria set forth in the Basin Plan for protection of sensitive beneficial uses including aquatic life. Therefore, the interim limit for chloride for Permitted Stormwater Dischargers is set equal to 230 mg/L to ensure protection of sensitive beneficial uses in the Calleguas Creek watershed.

Region 4 San Gabriel River and Tributaries-Metals and Selenium

Region 4 San Gabriel River and Tributaries Source: Construction Stormwater Dischargers TMDL Completion Date: 3 2007 TMDL Type: Creek	**Pollutant Stressor**	**Wet weather Allocations**	**Dry Weather Allocations**	**% of Watershed**

San Gabriel Reach 2	Lead (Pb)	0.7% * 166 µg/l * Daily Storm Vol	N/A	0.7%
San Gabriel Reach 2	Lead (Pb) Mass based	0.8 kg/d	N/A	0.7%
Coyote Creek	Copper (Cu)	0.285 kg/d	0	5.0%
Coyote Creek	Lead (Pb)	1.70 kg/d	N/A	5.0%
Coyote Creek	Zinc (Zn)	2.4 kg/d	N/A	5.0%
San Jose Creek Reach 1 and 2	Selenium	5 µg/L	5 µg/L	5.0%

Wet-weather allocations for lead in San Gabriel River Reach 2. Concentration-based allocations apply to non-stormwater NPDES discharges. Stormwater allocations are expressed as a percent of load duration curve. Mass-based values presented in table are based on a flow of 260 cfs (daily storm volume = 6.4 $x10^{8}$ liters).

There are 1555 acres of water in the entire watershed, 37.4 acres of water in the Reach 1 subwatershed (2.4%), and 269 acres in the Coyote Creek subwatershed (17%).

General Construction Storm Water Permits

Waste load allocations for the general construction storm water permits may be incorporated into the State Board general permit upon renewal or into a watershed-specific general permit developed by the Regional Board. An estimate of direct atmospheric deposition is developed based on the percent area of surface water in the watershed. Approximately 0.4% of the watershed area draining to San Gabriel River Reach 2 is comprised of water and approximately 0.2% of the watershed area draining to Coyote Creek is comprised of water.

Region 4 The Harbor Beaches of Ventura County-Bacteria

The TMDL has a multi-part numeric target based on the bacteriological water quality objectives for marine water to protect the water contact recreation use. These targets are the most appropriate indicators of public health risk in recreational waters. Bacteriological objectives are set forth in Chapter 3 of the Basin Plan. The objectives are based on four bacteria indicators and include both geometric mean limits and single sample limits. The Basin Plan objectives that serve as the numeric targets for this TMDL are:

The General NPDES Construction permit is seen as a minor contributor and is given no allocation

General NPDES permits, individual NPDES permits, the Statewide Industrial Storm Water General Permit, the Statewide Construction Activity Storm Water General Permit, and WDR permittees in the Channel Islands Harbor subwatershed are assigned WLAs of zero (0) days of allowable exceedances for all three time periods and for the single sample limits and the rolling 30-day geometric mean. Any future enrollees under a general NPDES permit, individual NPDES permit, the Statewide Industrial Storm Water General Permit, the Statewide Construction Activity Storm Water General Permit, and WDR will also be subject to a WLA of zero (0) days of allowable exceedances.

Region 4 Resolution No. 03-009 Los Angeles River and Tributaries-Nutrients

Minor Point Sources
Waste loads are allocated to minor point sources enrolled under NPDES or WDR permits including but not limited to Tapia WRP, Whittier Narrows WRP, Los Angeles Zoo WRP, industrial and construction stormwater, and municipal storm water and urban runoff from municipal separate storm sewer systems (MS4s)

Region 4 Minor Point Sources for NPDES/WDR Permits TMDL Completion Date: 7 10 2003 TMDL Type: River	Pollutant Stressor/WLA				
	Total Ammonia (NH_3)		**Nitrate-nitrogen (NO_3-N)**	**Nitrite-nitrogen (NO_2-N)**	**NO_3-N + NO_3-N**
	1 Hr Ave mg/l	30 Day Ave mg/l	30 Day Ave mg/l		30 Day Ave mg/l
LA River Above Los Angeles-Glendale WRP (LAG)	4.7	1.6	8.0	1.0	8.0
LA River Below LAG	8.7	2.4	8.0	1.0	8.0
Los Angeles Tributaries	10.1	2.3	8.0	1.0	8.0

Malibu Creek Attachment A to Resolution No. 2004-019R-Bacteria

12 13 2004 The WLAs for permittees under the NPDES General Stormwater Construction Permit are zero (0) days of allowable exceedances for all three time periods and for the single sample limits and the rolling 30-day geometric mean.

Region 4 Marina del Rey Harbor, Mothers' Beach and Back Basins

Attachment A to Resolution No. 2003-012-Bacteria

8 7 2003 As discussed in “Source Analysis”, discharges from general NPDES permits, general industrial storm water permits and general construction storm water permits are not expected to be a significant source of bacteria. Therefore, the WLAs for these discharges are zero (0) days of allowable exceedances for all three time periods and for the single sample limits and the rolling 30-day geometric mean. Any future enrollees under a general NPDES permit, general industrial storm water permit or general construction storm water permit within the MdR Watershed will also be subject to a WLA of zero days of allowable exceedances.

Region 4 San Gabriel River and Tributaries-Metals and Selenium

Dry Weather Selenium WLA
A zero WLA is assigned to the industrial and construction stormwater permits during dry weather. Non-storm water discharges are already prohibited or restricted by existing general permits.

Region 4 General Construction Permittees TMDL Completion Date: 7 13 2006 TMDL Type: River	**Total Recoverable Metals (kg/day)**		
	Copper (Cu) Kg/day	**Lead (Pb) Kg/day**	**Zinc (Zn) Kg/day**
San Gabriel River Reach 2 and upstream reaches/tributaries	**XXXX**	Daily storm volume x 1.24 µg/L	**XXXX**
Coyote Creek and Tributaries	Daily storm volume x 0.7 µg/L	Daily storm volume x 4.3 µg/L	Daily storm volume x 6.2 µg/L

Each enrollee under the general construction stormwater permit receives a WLA on a per acre basis

Region 4 General Construction Permittees TMDL Completion Date: 7 13 2006 TMDL Type: River	**Total Recoverable Metals (kg/day/acre)**		
	Copper (Cu) Kg/acre/day	**Lead (Pb) Kg/acre/day**	**Zinc (Zn) Kg/acre/day**
San Gabriel River Reach 2 and upstream reaches/tributaries	**XXXX**	Daily storm volume x 0.56 µg/L	**XXXX**

Coyote Creek and Tributaries	Daily storm volume x 0.12 µg/L	Daily storm volume x 0.70 µg/L	Daily storm volume x 1.01 µg/L

For the general industrial and construction storm water permits, the daily storm volume is measured at USGS station 11085000 for discharges to Reach 2 and above and at LACDPW flow gauge station F354-R for discharges to Coyote Creek.

General construction storm water permits
WLAs will be incorporated into the State Board general permit upon renewal or into a watershed-specific general permit developed by the Regional Board.

Dry-weather implementation
Non-storm water flows authorized by the General Permit for Storm Water Discharges Associated with Construction Activity (NPDES Permit No. CAS000002), or any successor permit, are exempt from the dry-weather WLA equal to zero as long as they comply with the provisions of sections C.3.and A.9 of the Order No. 99-08 DWQ, which state that these authorized non-storm discharges shall be (1) infeasible to eliminate (2) comply with BMPs as described in the Storm Water Pollution Prevention Plan prepared by the permittee, and (3) not cause or contribute to a violation of water quality standards, or comparable provisions in any successor order. Unauthorized non-storm water flows are already prohibited by Permit No. CAS000002.

Upon permit issuance, renewal, or re-opener
Non-storm water flows not authorized by Order No. 99-08 DWQ, or any successor order, shall achieve dry-weather WLAs. WLAs shall be expressed as NPDES water quality-based effluent limitations specified in accordance with federal regulations and state policy on water quality control. Effluent limitations may be expressed as permit conditions, such as the installation, maintenance, and monitoring of Regional Board-approved BMPs.

Six years from the effective date of the TMDL
The construction industry will submit the results of wet-weather BMP effectiveness studies to the Los Angeles Regional Board for consideration. In the event that no effectiveness studies are conducted and no BMPs are approved, permittees shall be subject to site-specific BMPs and monitoring to demonstrate BMP effectiveness.

Seven years from the effective date of the TMDL
The Los Angeles Regional Board will consider results of the wet weather BMP effectiveness studies and consider approval of BMPs.

Eight years from the effective date of the TMDL
All general construction storm water permittees shall implement Regional Board-approved BMPs.

Total Maximum Daily Loads (TMDLs) for San Diego Creek,
Upper and Lower Newport Bay, Orange County, California

Region 8 NPDES Construction Permit TMDL Completion Date: 1 24 1995 TMDL Type: River. Cr, Bay	Organochlorine Compounds							
	Total DDT		**Chlordane**		**Total PCBs**		**Toxaphene**	
	g/day	g/yr	g/day	g/yr	g/day	g/yr	g/day	g/yr
San Diego Creek	.27	99.8	**.18***	**64.3***	**.09***	**31.5***	.004	1.5
Upper Newport Bay	.11	40.3	.06	23.4	.06	23.2	**X**	**X**
Lower Newport Bay	.04	14.9	.02	8.6	.17	60.7	**X**	**X**

*Red= Informational WLA only, not for enforcement purposes

Organochlorine Compounds TMDLs Implementation Tasks and Schedule

Regional Board staff shall develop a SWPPP Improvement Program that identifies the Regional Board's expectations with respect to the content of SWPPPs, including documentation regarding the selection and implementation of BMPs, and a sampling and analysis plan. The Improvement Program shall include specific guidance regarding the development and implementation of monitoring plans, including the constituents to be monitored, sampling frequency and analytical protocols. The SWPPP Improvement Program shall be completed by (*the date of OAL approval of this BPA*). ***No later than two months*** from completion of the Improvement Program, Board staff shall assure that the requirements of the Program are communicated to interested parties, including dischargers with existing authorizations under the General Construction Permit. Existing, authorized dischargers shall revise their project SWPPPs as needed to address the Program requirements as soon as possible but ***no later than (three months of completion of the SWPPP Improvement Program)***. Applicable SWPPPs that do not adequately address the Program requirements shall be considered inadequate and enforcement by the Regional Board shall proceed accordingly. The Caltrans and Orange County MS4 permits shall be revised as needed to assure that the permittees communicate the Regional Board's SWPPP expectations, based on the SWPPP Improvement Program, with the Standard Conditions of Approval.

Appendix 4 Sediment TMDLs

Implemented Sediment TMDLs in California. Construction was listed as a source in all fo these TMDLs in relation to road construction. Although construction was mentioned as a source, it was not given a specific allocation amount. The closest allocation amount would be for the road activity management WLA. **Implementation Phase** – Adoption process by the Regional Board, the State Water Resources Control Board, the Office of Administrative Law, and the US Environmental Protection Agency completed and TMDL being implemented.

A. Region	**Type**	**Name**	**Pollutant Stressor**	**Potential Sources**	**TMDL Completion Date**	**Watershed Acres**	**WLA** tons mi^2 yr
1 R1.epa.albionfinaltmdl	R	Albion River	Sedimentation	Road Construction	2001	43 acres	See A (table 6)

B Region	**Type**	**Name**	**Pollutant Stressor**	**Potential Sources**	**TMDL Completion Date**	**Watershed Acres**	**WLA** tons mi^2 yr
1 R1.epa.EelR-middle.mainSed.temp	R	Middle Main Eel River and Tributaries (from Dos Rios to the South Fork)	Sedimentation	Road Construction	2005-2006	521 mi^2	100

C Region	**Type**	**Name**	**Pollutant Stressor**	**Potential Sources**	**TMDL Completion Date**	**Watershed Acres**	**WLA** tons mi^2 yr
1 R1.epa.EelRsouth.sed.temp	R	South Fork Eel River	Sedimentation	Road Construction	12 1999	See chart	473

D Region	**Type**	**Name**	**Pollutant Stressor**	**Potential Sources**	**TMDL Completion Date**	**Watershed Acres**	**WLA** tons mi^2 yr
1 R1.epa.bigfinaltmdl	R	Big River	Sedimentation	Road Construction	12 2001	181 mi^2 watershed drainage	TMDL = loading capacity = nonpoint sources + background =

							393 t mi2 yr

E Region	**Type**	**Name**	**Pollutant Stressor**	**Potential Sources**	**TMDL Completion Date**	**Watershed Acres**	**WLA** tons mi^2 yr
1 R1.epa.EelR-lower.Sed.temp-121807-signed	R	Lower Eel River	Sedimentation	Road Construction	12 2007	300 square-mile watershed	898

F Region	**Type**	**Name**	**Pollutant Stressor**	**Potential Sources**	**TMDL Completion Date**	**Watershed Acres**	**WLA** tons mi^2 yr
1 R1.epa.EelR-middle.Sed.temp-	R	Middle Fork Eel River	Sedimentation	Road Construction	12 2003	753 mi^2 (approx. 482,000 acres)	82

G Region	**Type**	**Name**	**Pollutant Stressor**	**Potential Sources**	**TMDL Completion Date**	**Watershed Acres** Mi^2	**WLA** tons mi^2 yr
1 R1.epa.EelRnorth-Sed.temp.final-121807-signed	R	North Fork Eel River	Sedimentation	Road Construction	12 30 2002	289 (180,020 acres)	20

H Region	**Type**	**Name**	**Pollutant Stressor**	**Potential Sources**	**TMDL Completion Date**	**Watershed Acres** Mi^2	**WLA** tons mi^2 yr
1 R1.epa.EelR-upper.mainSed.temp-	R	Upper Main Eel River and Tributaries (including Tomki Creek, Outlet Creek and Lake Pillsbury)	Sedimentation	Road Construction	12 29 2004	688 (approx. 440,384 acres)	14

I Region	**Type**	**Name**	**Pollutant Stressor**	**Potential Sources**	**TMDL Completion Date**	**Watershed Acres**	**WLA** tons mi^2 yr
1 R1.epa.gualalafinaltmdl	R	Gualala River	Sedimentation	Road Construction	Not sure	300 (191,145 acres)	7

J Region	**Type**	**Name**	**Pollutant Stressor**	**Potential Sources**	**TMDL Completion Date**	**Watershed Acres** mi^2	**WLA** tons mi^2 yr
1 R1.epa.Mad-sed.turbidity	R	Mad River	Sedimentation	Road Construction	12 21 2007	480	174

K Region	**Type**	**Name**	**Pollutant Stressor**	**Potential Sources**	**TMDL Completion Date**	**Watershed Acres** mi^2	**WLA** tons mi^2 yr
1 R1.epa.mattole.sediment	R	Mattole River	Sedimentation	Road Construction	12 30 2003	296	27 or 520+27 = 547

L Region	**Type**	**Name**	**Pollutant Stressor**	**Potential Sources**	**TMDL Completion Date**	**Watershed Acres** mi^2	**WLA** tons mi^2 yr
1 R1.epa.navarro.sed.temp	R	Navarro River	Sedimentation	Road Construction	Not sure	315 (201,600 acres).	50

M Region	**Type**	**Name**	**Pollutant Stressor**	**Potential Sources**	**TMDL Completion Date**	**Watershed Acres** mi^2	**WLA** tons mi^2 yr
1 R1.epa.noyo.sediment	R	Noyo River	Sedimentation	Road Construction	12 16 1999	113 (72,323 acres)	68 (three areas measured) Table 16 in the TMDL

N Region	**Type**	**Name**	**Pollutant Stressor**	**Potential Sources**	**TMDL Completion Date**	**Watershed Acres** mi^2	**WLA** tons mi^2 yr
1 R1.epa.RedwoodCk.sed	Cr	Redwood Creek	Sedimentation	Road Construction	12 30 1998	278	1900 Total allocation

O Region	**Type**	**Name**	**Pollutant Stressor**	**Potential Sources**	**TMDL Completion Date**	**Watershed Acres** mi^2	**WLA – Roads** tons mi^2 yr
1 R1.epa.tenmile.sed	R	Ten Mile River	Sedimentation	Road Construction	2000	120	9

P Region	**Type**	**Name**	**Pollutant Stressor**	**Potential Sources**	**TMDL Completion Date**	**Watershed Acres** mi^2	**WLA management** tons mi^2 yr
1 R1.epa.trinity.sed	R	Trinity River	Sedimentation	Road Construction	12 20 2001	2000 of 3000 covered in this TMDL	See rows below
1	Cr	Horse Linto Creek	Sedimentation	Road Construction	12 20 2001	64	528
1	Cr	Mill creek and Tish Tang	Sedimentation	Road Construction	12 20 2001	39	210
1	Cr	Willow Creek	Sedimentation	Road Construction	12 20 2001	43	94
1	Cr	Campbell Creek and Supply Creek	Sedimentation	Road Construction	12 20 2001	11	1961
1	Cr	Lower Mainstem and Coon Creek	Sedimentation	Road Construction	12 20 2001	32	63
1	R	Reference	Sedimentation	Road	12 20 2001	434	24

		Subwatershed [1]		Construction			
1	Cr	Canyon Creek	Sedimentation	Road Construction	12 20 2001	64	326
1	R	Upper Tributaries[2]	Sedimentation	Road Construction	12 20 2001	72	67
1	R	Middle Tributaries[3]	Sedimentation	Road Construction	12 20 2001	54	53
1	R	Lower Tributaries[4]	Sedimentation	Road Construction	12 20 2001	96	55
1	Cr	Weaver and Rush Creeks	Sedimentation	Road Construction	12 20 2001	72	169
1	Cr	Deadwood Creek Hoadley Gulch Poker Bar	Sedimentation	Road Construction	12 20 2001	47	68
1	L	Lewiston Lake	Sedimentation	Road Construction	12 20 2001	25	49
1	Cr	Grassvalley Creek	Sedimentation	Road Construction	12 20 2001	37	44
1	Cr	Indian Creek	Sedimentation	Road Construction	12 20 2001	34	81
1	Cr	Reading and Browns Creek	Sedimentation	Road Construction	12 20 2001	104	66
1	Cr	Reference Subwatersheds[5]	Sedimentation	Road Construction	12 20 2001	235	281
1	L, Cr	Westside tributaries[6]	Sedimentation	Road Construction	12 20 2001	93	105
1	R, Cr, G	Upper trinity[7]	Sedimentation	Road Construction	12 20 2001	161	690
1	R, Cr, G	East Fork Tributaries[8]	Sedimentation	Road Construction	12 20 2001	115	65

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2
3
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1	R, L	Eastside Tributaries[9]	Sedimentation	Road Construction	12 20 2001	89	60

1 New River, Big French, Manzanita, North Fork, East Fork, North Fork
2 Dutch, Soldier, Oregon gulch, Conner Creek
3 Big Bar, Prairie Creek, Little French Creek
4 Swede, Italian, Canadian, Cedar Flat, Mill, McDonald, Hennessy, Quimby, Hawkins, Sharber
5 Stuarts Fork, Swift Creek, Coffee Creek
6 Stuart Arm, Stoney Creek, Mule Creek, East Fork, Stuart Fork, West Side Trinity Lake, Hatchet Creek, Buckeye Creek,
7 Upper Trinity River, Tangle Blue, Sunflower, Graves, Bear Upper Trinity Mainstream, Ramshorn Creek, Ripple Creek, Minnehaha Creek, Snowslide Gulch, Scorpion Creek
8 East Fork Trinity, Cedar Creek, Squirrel Gulch
9 East Side Tributaries, Trinity Lake

Q Region	**Type**	**Name**	**Pollutant Stressor**	**Potential Sources**	**TMDL Completion Date**	**Watershed Acres** mi^2	**WLA** tons mi^2 yr
1 R1.epa.trinity.so.sed	R, Cr	South Fork Trinity River and Hayfork Creek	Sedimentation	Road Construction	12 1998	Not given, 19 miles long	33 (road total)

R Region	**Type**	**Name**	**Pollutant Stressor**	**Potential Sources**	**TMDL Completion Date**	**Watershed Acres** mi^2	**WLA** tons mi^2 yr
1 R1.epa.vanduzen.sed	R, Cr	Van Duzen River and Yager Creek	Sedimentation	Various	12 16 1999	429	1353 total allocation
1		Upper Basin	Sedimentation	Road Construction			7
1		Middle Basin	Sedimentation	Road Construction			22
1		Lower Basin	Sedimentation	Road Construction			20

S Region	**Type**	**Name**	**Pollutant Stressor**	**Potential**	**TMDL**	**Watershed**	**WLA** tons mi^2

9 2009-0009-DWQ as amended by 2010-0014-DWQ & 2012-0006-DWQ

				Sources	**Completion Date**	**Acres** mi^2	yr
6 R6.blackwood.sed	Cr	Blackwood Creek (Placer County)	Bedded Sediment	Various	9 2007	11	17272 total

T Region	**Type**	**Name**	**Pollutant Stressor**	**Potential Sources**	**TMDL Completion Date**	**Watershed Acres** mi^2	**WLA** tons mi^2 yr
6 R6.SquawCk.sed	R	Squaw Creek (Placer County)	Sedimentation /controllable sources	Various – basin plan amendment	4 13 2006	8.2	10,900

Adopted TMDLs for Construction Sediment Sources

Region	Type	Name	Pollutant Stressor	Potential Sources	**TMDL Completion Date**	**Watershed Area** mi^2	Waste load Allocation tons mi^2 yr
8	R	Newport Bay San Diego Creek Watershed	Sedimentation	Construction Land Development	1999	2.24 (1432 acres)	125,000 tons per Year (no more than 13,000 tons per year from construction sites)

APPENDIX 5:
Glossary

Active Areas of Construction
All areas subject to land surface disturbance activities related to the project including, but not limited to, project staging areas, immediate access areas and storage areas. All previously active areas are still considered active areas until final stabilization is complete. [The construction activity Phases used in this General Permit are the Preliminary Phase, Grading and Land Development Phase, Streets and Utilities Phase, and the Vertical Construction Phase.]

Active Treatment System (ATS)
A treatment system that employs chemical coagulation, chemical flocculation, or electrocoagulation to aid in the reduction of turbidity caused by fine suspended sediment.

Acute Toxicity Test
A chemical stimulus severe enough to rapidly induce a negative effect; in aquatic toxicity tests, an effect observed within 96 hours or less is considered acute.

Air Deposition
Airborne particulates from construction activities.

Approved Signatory
A person who has been authorized by the Legally Responsible Person to sign, certify, and electronically submit Permit Registration Documents, Notices of Termination, and any other documents, reports, or information required by the General Permit, the State or Regional Water Board, or U.S. EPA. The Approved Signatory must be one of the following:

1. For a corporation or limited liability company: a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: (a) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation or limited liability company; or (b) the manager of the facility if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

2. For a partnership or sole proprietorship: a general partner or the proprietor, respectively;

3. For a municipality, State, Federal, or other public agency: a principal executive officer, ranking elected official, city manager, council president, or any other authorized public employee with managerial responsibility over the

construction or land disturbance project (including, but not limited to, project manager, project superintendent, or resident engineer);

4. For the military: any military officer or Department of Defense civilian, acting in an equivalent capacity to a military officer, who has been designated;

5. For a public university: an authorized university official;

6. For an individual: the individual, because the individual acts as both the Legally Responsible Person and the Approved Signatory; or

7. For any type of entity not listed above (e.g. trusts, estates, receivers): an authorized person with managerial authority over the construction or land disturbance project.

Beneficial Uses
As defined in the California Water Code, beneficial uses of the waters of the state that may be protected against quality degradation include, but are not limited to, domestic, municipal, agricultural and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves.

Best Available Technology Economically Achievable (BAT)
As defined by USEPA, BAT is a technology-based standard established by the Clean Water Act (CWA) as the most appropriate means available on a national basis for controlling the direct discharge of toxic and nonconventional pollutants to navigable waters. The BAT effluent limitations guidelines, in general, represent the best existing performance of treatment technologies that are economically achievable within an industrial point source category or subcategory.

Best Conventional Pollutant Control Technology (BCT)
As defined by USEPA, BCT is a technology-based standard for the discharge from existing industrial point sources of conventional pollutants including biochemical oxygen demand (BOD), total suspended sediment (TSS), fecal coliform, pH, oil and grease.

Best Professional Judgment (BPJ)
The method used by permit writers to develop technology-based NPDES permit conditions on a case-by-case basis using all reasonably available and relevant data.

Best Management Practices (BMPs)
BMPs are scheduling of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants. BMPs also include treatment requirements, operating procedures,

and practices to control site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Chain of Custody (COC)
Form used to track sample handling as samples progress from sample collection to the analytical laboratory. The COC is then used to track the resulting analytical data from the laboratory to the client. COC forms can be obtained from an analytical laboratory upon request.

Coagulation
The clumping of particles in a discharge to settle out impurities, often induced by chemicals such as lime, alum, and iron salts.

Common Plan of Development
Generally a contiguous area where multiple, distinct construction activities may be taking place at different times under one plan. A plan is generally defined as any piece of documentation or physical demarcation that indicates that construction activities may occur on a common plot. Such documentation could consist of a tract map, parcel map, demolition plans, grading plans or contract documents. Any of these documents could delineate the boundaries of a common plan area. However, broad planning documents, such as land use master plans, conceptual master plans, or broad-based CEQA or NEPA documents that identify potential projects for an agency or facility are not considered common plans of development.

Daily Average Discharge
The discharge of a pollutant measured during any 24-hour period that reasonably represents a calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged during the day. For pollutants with limitations expressed in other units of measurement (e.g., concentration) the daily discharge is calculated as the average measurement of the pollutant throughout the day (40 CFR 122.2). In the case of pH, the pH must first be converted from a log scale.

Debris
Litter, rubble, discarded refuse, and remains of destroyed inorganic anthropogenic waste.

Direct Discharge
A discharge that is routed directly to waters of the United States by means of a pipe, channel, or ditch (including a municipal storm sewer system), or through surface runoff.

Discharger
The Legally Responsible Person (see definition) or entity subject to this General Permit.

Dose Rate (for ATS)
In exposure assessment, dose (e.g. of a chemical) per time unit (e.g. mg/day), sometimes also called dosage.

Drainage Area
The area of land that drains water, sediment, pollutants, and dissolved materials to a common outlet.

Effluent
Any discharge of water by a discharger either to the receiving water or beyond the property boundary controlled by the discharger.

Effluent Limitation
Any numeric or narrative restriction imposed on quantities, discharge rates, and concentrations of pollutants which are discharged from point sources into waters of the United States, the waters of the contiguous zone, or the ocean.

Erosion
The process, by which soil particles are detached and transported by the actions of wind, water, or gravity.

Erosion Control BMPs
Vegetation, such as grasses and wildflowers, and other materials, such as straw, fiber, stabilizing emulsion, protective blankets, etc., placed to stabilize areas of disturbed soils, reduce loss of soil due to the action of water or wind, and prevent water pollution.

Field Measurements
Testing procedures performed in the field with portable field-testing kits or meters.

Final Stabilization
All soil disturbing activities at each individual parcel within the site have been completed in a manner consistent with the requirements in this General Permit.

First Order Stream
Stream with no tributaries.

Flocculants
Substances that interact with suspended particles and bind them together to form flocs.

Good Housekeeping BMPs
BMPs designed to reduce or eliminate the addition of pollutants to construction site runoff through analysis of pollutant sources, implementation of proper handling/disposal practices, employee education, and other actions.

Grading Phase (part of the Grading and Land Development Phase)
Includes reconfiguring the topography and slope including; alluvium removals; canyon cleanouts; rock undercuts; keyway excavations; land form grading; and stockpiling of select material for capping operations.

Hydromodification
Hydromodification is the alteration of the hydrologic characteristics of coastal and non-coastal waters, which in turn could cause degradation of water resources. Hydromodification can cause excessive erosion and/or sedimentation rates, causing excessive turbidity, channel aggradation and/or degradation.

Identified Organisms
Organisms within a sub-sample that is specifically identified and counted.

Inactive Areas of Construction
Areas of construction activity that are not active and those that have been active and are not scheduled to be re-disturbed for at least 14 days.

Index Period
The period of time during which bioassessment samples must be collected to produce results suitable for assessing the biological integrity of streams and rivers. Instream communities naturally vary over the course of a year,and sampling during the index period ensures that samples are collected during a time frame when communities are stable so that year-to-year consistency is obtained. The index period approach provides a cost-effective alternative to year-round sampling. Furthermore, sampling within the appropriate index period will yield results that are comparable to the assessment thresholds or criteria for a given region, which are established for the same index period. Because index periods differ for different parts of the state, it is essential to know the index period for your area.

K Factor
The soil erodibility factor used in the Revised Universal Soil Loss Equation (RUSLE). It represents the combination of detachability of the soil, runoff potential of the soil, and the transportability of the sediment eroded from the soil.

Legally Responsible Person
The Legally Responsible Person (LRP) will typically be the project proponent. The categories of persons or entities that are eligible to serve as the LRP are set forth below. For any construction or land disturbance project where multiple persons or entities are eligible to serve as the LRP, those persons or entities

shall select a single LRP. In exceptional circumstances, a person or entity that qualifies as the LRP may provide written authorization to another person or entity to serve as the LRP. In such a circumstance, the person or entity that provides the authorization retains all responsibility for compliance with the General Permit. Except as provided in category 2(d), a contractor who does not satisfy the requirements of any of the categories below is not qualified to be an LRP.

The following persons or entities may serve as an LRP:

1. A person, company, agency, or other entity that possesses a real property interest (including, but not limited to, fee simple ownership, easement, leasehold, or other rights of way) in the land upon which the construction or land disturbance activities will occur for the regulated site.

2. In addition to the above, the following persons or entities may also serve as an LRP:

    a. For linear underground/overhead projects, the utility company, municipality, or other public or private company or agency that owns or operates the LUP;

    b. For land controlled by an estate or similar entity, the person who has day-to-day control over the land (including, but not limited to, a bankruptcy trustee, receiver, or conservator);

    c. For pollution investigation and remediation projects, any potentially responsible party that has received permission to conduct the project from the holder of a real property interest in the land; or

    d. For U.S. Army Corp of Engineers projects, the U.S. Army Corps of Engineers may provide written authorization to its bonded contractor to serve as the LRP, provided, however, that the U.S. Army Corps of Engineers is also responsible for compliance with the general permit, as authorized by the Clean Water Act or the Federal Facilities Compliance Act.

Likely Precipitation Event
Any weather pattern that is forecasted to have a 50% or greater chance of producing precipitation in the project area. The discharger shall obtain likely precipitation forecast information from the National Weather Service Forecast Office (e.g., by entering the zip code of the project's location at http://www.srh.noaa.gov/forecast).

Maximum Allowable Threshold Concentration (MATC)
The allowable concentration of residual, or dissolved, coagulant/flocculant in effluent. The MATC shall be coagulant/flocculant-specific, and based on toxicity

testing conducted by an independent, third-party laboratory. A typical MATC would be:

The MATC is equal to the geometric mean of the NOEC (No Observed Effect Concentration) and LOEC (Lowest Observed Effect Concentration) Acute and Chronic toxicity results for most sensitive species determined for the specific coagulant. The most sensitive species test shall be used to determine the MATC.

Natural Channel Evolution
The physical trend in channel adjustments following a disturbance that causes the river to have more energy and degrade or aggrade more sediment. Channels have been observed to pass through 5 to 9 evolution types. Once they pass though the suite of evolution stages, they will rest in a new state of equilibrium.

Non-Storm Water Discharges
Discharges are discharges that do not originate from precipitation events. They can include, but are not limited to, discharges of process water, air conditioner condensate, non-contact cooling water, vehicle wash water, sanitary wastes, concrete washout water, paint wash water, irrigation water, or pipe testing water.

Non-Visible Pollutants
Pollutants associated with a specific site or activity that can have a negative impact on water quality, but cannot be seen though observation (ex: chlorine). Such pollutants being discharged are not authorized.

Numeric Action Level (NAL)
Level is used as a warning to evaluate if best management practices are effective and take necessary corrective actions. Not an effluent limit.

Original Sample Material
The material (i.e., macroinvertebrates, organic material, gravel, etc.) remaining after the subsample has been removed for identification.

pH
Unit universally used to express the intensity of the acid or alkaline condition of a water sample. The pH of natural waters tends to range between 6 and 9, with neutral being 7. Extremes of pH can have deleterious effects on aquatic systems.

Post-Construction BMPs
Structural and non-structural controls which detain, retain, or filter the release of pollutants to receiving waters after final stabilization is attained.

Preliminary Phase (Pre-Construction Phase - Part of the Grading and Land Development Phase)
Construction stage including rough grading and/or disking, clearing and grubbing operations, or any soil disturbance prior to mass grading.

Project

Qualified SWPPP Developer
Individual who is authorized to develop and revise SWPPPs.

Qualified SWPPP Practitioner
Individual assigned responsibility for non-storm water and storm water visual observations, sampling and analysis, and responsibility to ensure full compliance with the permit and implementation of all elements of the SWPPP, including the preparation of the annual compliance evaluation and the elimination of all unauthorized discharges.

Qualifying Rain Event
Any event that produces 0.5 inches or more precipitation with a 48 hour or greater period between rain events.

R Factor
Erosivity factor used in the Revised Universal Soil Loss Equation (RUSLE). The R factor represents the erosivity of the climate at a particular location. An average annual value of R is determined from historical weather records using erosivity values determined for individual storms. The erosivity of an individual storm is computed as the product of the storm's total energy, which is closely related to storm amount, and the storm's maximum 30-minute intensity.

Rain Event Action Plan (REAP)
Written document, specific for each rain event, that when implemented is designed to protect all exposed portions of the site within 48 hours of any likely precipitation event.

Remaining Sub sampled Material
The material (e.g., organic material, gravel, etc.) that remains after the organisms to be identified have been removed from the subsample for identification. (Generally, no macroinvertebrates are present in the remaining subsampled material, but the sample needs to be checked and verified using a complete Quality Assurance (QA) plan)

Routine Maintenance
Activities intended to maintain the original line and grade, hydraulic capacity, or original purpose of a facility.

Runoff Control BMPs
Measures used to divert runon from offsite and runoff within the site.

Run-on
Discharges that originate offsite and flow onto the property of a separate project site.

Revised Universal Soil Loss Equation (RUSLE)
Empirical model that calculates average annual soil loss as a function of rainfall and runoff erosivity, soil erodibility, topography, erosion controls, and sediment controls.

Sampling and Analysis Plan
Document that describes how the samples will be collected, under what conditions, where and when the samples will be collected, what the sample will be tested for, what test methods and detection limits will be used, and what methods/procedures will be maintained to ensure the integrity of the sample during collection, storage, shipping and testing (i.e., quality assurance/quality control protocols).

Sediment
Solid particulate matter, both mineral and organic, that is in suspension, is being transported, or has been moved from its site of origin by air, water, gravity, or ice and has come to rest on the earth's surface either above or below sea level.

Sedimentation
Process of deposition of suspended matter carried by water, wastewater, or other liquids, by gravity. It is usually accomplished by reducing the velocity of the liquid below the point at which it can transport the suspended material.

Sediment Control BMPs
Practices that trap soil particles after they have been eroded by rain, flowing water, or wind. They include those practices that intercept and slow or detain the flow of storm water to allow sediment to settle and be trapped (e.g., silt fence, sediment basin, fiber rolls, etc.).

Settleable Solids (SS)
Solid material that can be settled within a water column during a specified time frame. It is typically tested by placing a water sample into an Imhoff settling cone and then allowing the solids to settle by gravity for a given length of time. Results are reported either as a volume (mL/L) or a mass (mg/L) concentration.

Sheet Flow
Flow of water that occurs overland in areas where there are no defined channels where the water spreads out over a large area at a uniform depth.

Site

Soil Amendment
Any material that is added to the soil to change its chemical properties, engineering properties, or erosion resistance that could become mobilized by storm water.

Streets and Utilities Phase
Construction stage including excavation and street paving, lot grading, curbs, gutters and sidewalks, public utilities, public water facilities including fire hydrants, public sanitary sewer systems, storm sewer system and/or other drainage improvements.

Structural Controls
Any structural facility designed and constructed to mitigate the adverse impacts of storm water and urban runoff pollution

Suspended Sediment Concentration (SSC)
The measure of the concentration of suspended solid material in a water sample by measuring the dry weight of all of the solid material from a known volume of a collected water sample. Results are reported in mg/L.

Total Suspended Solids (TSS)
The measure of the suspended solids in a water sample includes inorganic substances, such as soil particles and organic substances, such as algae, aquatic plant/animal waste, particles related to industrial/sewage waste, etc. The TSS test measures the concentration of suspended solids in water by measuring the dry weight of a solid material contained in a known volume of a sub-sample of a collected water sample. Results are reported in mg/L.

Toxicity
The adverse response(s) of organisms to chemicals or physical agents ranging from mortality to physiological responses such as impaired reproduction or growth anomalies.

Turbidity
The cloudiness of water quantified by the degree to which light traveling through a water column is scattered by the suspended organic and inorganic particles it contains. The turbidity test is reported in Nephelometric Turbidity Units (NTU) or Jackson Turbidity Units (JTU).

Vertical Construction Phase
The Build out of structures from foundations to roofing, including rough landscaping.

Waters of the United States
Generally refers to surface waters, as defined by the federal Environmental Protection Agency in 40 C.F.R. § 122.2.[1]

Water Quality Objectives (WQO)
Water quality objectives are defined in the California Water Code as limits or levels of water quality constituents or characteristics, which are established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specific area.

[1] The application of the definition of "waters of the United States" may be difficult to determine; there are currently several judicial decisions that create some confusion. If a landowner is unsure whether the discharge must be covered by this General Permit, the landowner may wish to seek legal advice.

APPENDIX 6:
Acronym List

ASBS	Areas of Special Biological Significance
ASTM	American Society of Testing and Materials; Standard Test Method for Particle-Size Analysis of Soils
ATS	Active Treatment System
BASMAA	Bay Area Storm water Management Agencies Association
BAT	Best Available Technology Economically Achievable
BCT	Best Conventional Pollutant Control Technology
BMP	Best Management Practices
BOD	Biochemical Oxygen Demand
BPJ	Best Professional Judgment
CAFO	Confined Animal Feeding Operation
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CGP	NPDES General Permit for Storm Water Discharges Associated with Construction Activities
CIWQS	California Integrated Water Quality System
CKD	Cement Kiln Dust
COC	Chain of Custody
CPESC	Certified Professional in Erosion and Sediment Control
CPSWQ	Certified Professional in Storm Water Quality
CSMP	Construction Site Monitoring Program
CTB	Cement Treated Base
CTR	California Toxics Rule
CWA	Clean Water Act
CWC	California Water Code
CWP	Center for Watershed Protection
DADMAC	Diallyldimethyl-ammonium chloride
DDNR	Delaware Department of Natural Resources
DFG	Department of Fish and Game
DHS	Department of Health Services
DWQ	Division of Water Quality
EC	Electrical Conductivity
ELAP	Environmental Laboratory Accreditation Program
EPA	Environmental Protection Agency
ESA	Environmentally Sensitive Area
ESC	Erosion and Sediment Control
HSPF	Hydrologic Simulation Program Fortran
JTU	Jackson Turbidity Units
LID	Low Impact Development
LOEC	Lowest Observed Effect Concentration
LRP	Legally Responsible Person
LUP	Linear Underground/Overhead Projects

MATC	Maximum Allowable Threshold Concentration
MDL	Method Detection Limits
MRR	Monitoring and Reporting Requirements
MS4	Municipal Separate Storm Sewer System
MUSLE	Modified Universal Soil Loss Equation
NAL	Numeric Action Level
NEL	Numeric Effluent Limitation
NICET	National Institute for Certification in Engineering Technologies
NOAA	National Oceanic and Atmospheric Administration
NOEC	No Observed Effect Concentration
NOI	Notice of Intent
NOT	Notice of Termination
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NTR	National Toxics Rule
NTU	Nephelometric Turbidity Units
O&M	Operation and Maintenance
PAC	Polyaluminum chloride
PAM	Polyacrylamide
PASS	Polyaluminum chloride Silica/sulfate
POC	Pollutants of Concern
PoP	Probability of Precipitation
POTW	Publicly Owned Treatment Works
PRDs	Permit Registration Documents
PWS	Planning Watershed
QAMP	Quality Assurance Management Plan
QA/QC	Quality Assurance/Quality Control
REAP	Rain Event Action Plan
Regional Board	Regional Water Quality Control Board
ROWD	Report of Waste Discharge
RUSLE	Revised Universal Soil Loss Equation
RW	Receiving Water
SMARTS	Storm water Multi Application Reporting and Tracking System
SS	Settleable Solids
SSC	Suspended Sediment Concentration
SUSMP	Standard Urban Storm Water Mitigation Plan
SW	Storm Water
SWARM	Storm Water Annual Report Module
SWAMP	Surface Water Ambient Monitoring Program
SWMM	Storm Water Management Model
SWMP	Storm Water Management Program
SWPPP	Storm Water Pollution Prevention Plan
TC	Treatment Control
TDS	Total Dissolved Solids

TMDL	Total Maximum Daily Load
TSS	Total Suspended Solids
USACOE	U.S. Army Corps of Engineers
USC	United States Code
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
WDID	Waste Discharge Identification Number
WDR	Waste Discharge Requirements
WLA	Waste Load Allocation
WET	Whole Effluent Toxicity
WRCC	Western Regional Climate Center
WQBEL	Water Quality Based Effluent Limitation
WQO	Water Quality Objective
WQS	Water Quality Standard

APPENDIX 7:
State and Regional Water Resources Control Board Contacts

NORTH COAST REGION (1)
5550 Skylane Blvd, Ste. A
Santa Rose, CA 95403
(707) 576-2220 FAX: (707)523-0135

SAN FRANCISCO BAY REGION (2)
1515 Clay Street, Ste. 1400
Oakland, CA 94612
(510) 622-2300 FAX: (510) 622-2640

CENTRAL COAST REGION (3)
895 Aerovista Place, Ste 101
San Luis Obispo, CA 93401
(805) 549-3147 FAX: (805) 543-0397

LOS ANGELES REGION (4)
320 W. 4th Street, Ste. 200
Los Angeles, CA 90013
(213) 576-6600 FAX: (213) 576-6640

CENTRAL VALLEY REGION (5S)
11020 Sun Center Dr., #200
Rancho Cordova, CA 95670-6114
(916) 464-3291 FAX: (916) 464-4645

FRESNO BRANCH OFFICE (5F)
1685 E St.
Fresno, CA 93706
(559) 445-5116 FAX: (559) 445-5910

REDDING BRANCH OFFICE (5R)
364 Knollcrest Drive, Ste. 205
Redding, CA 96002
(530) 224-4845 FAX: (530) 224-4857

LAHONTAN REGION (6 SLT)
2501 Lake Tahoe Blvd.
South Lake Tahoe, CA 96150
(530) 542-5400 FAX: (530) 544-2271

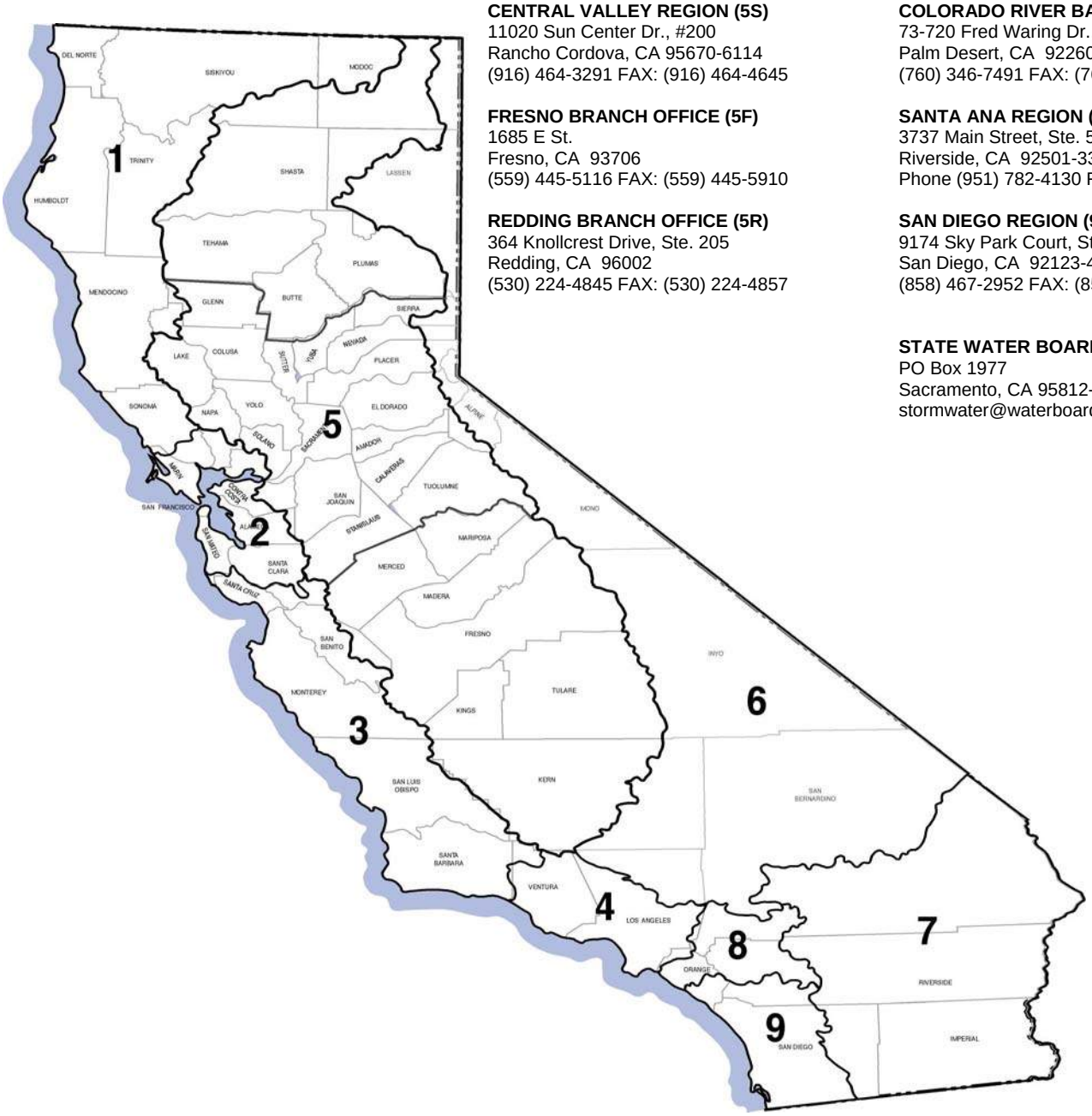
VICTORVILLE OFFICE (6V)
14440 Civic Drive, Ste. 200
Victorville, CA 92392-2383
(760) 241-6583 FAX: (760) 241-7308

COLORADO RIVER BASIN REGION (7)
73-720 Fred Waring Dr., Ste. 100
Palm Desert, CA 92260
(760) 346-7491 FAX: (760) 341-6820

SANTA ANA REGION (8)
3737 Main Street, Ste. 500
Riverside, CA 92501-3339
Phone (951) 782-4130 FAX: (951) 781-6288

SAN DIEGO REGION (9)
9174 Sky Park Court, Ste. 100
San Diego, CA 92123-4340
(858) 467-2952 FAX: (858) 571-6972

STATE WATER BOARD
PO Box 1977
Sacramento, CA 95812-1977
stormwater@waterboards.ca.gov



UNITED WALNUT TAXPAYERS PRELIMINARY REVIEW OF NEGATIVE GEOTECHNICAL AND GEOLOGICAL ASPECTS OF CONSTRUCTING EARTHFILL PAD FOR A SOLAR FARM ON THE WEST PARCEL - DRAFT

1. Introduction

A licensed Engineering Geologist has been retained by United Walnut Taxpayers (UWT) to review of the report from Converse Consultants, dated December 19, 2014, from a geotechnical perspective, and grading plans prepared by Psomas and submitted to the City of Walnut on January 24, 2017. The purpose of this work was to assess the general geological setting of the site, assess the hazards and issues related to placement of earthfill at the site in accordance with grading plans received, and determine if it is possible to develop a project in a safe manner suitable to support the proposed earthfill development and maintain the integrity of the surrounding properties. Licensed Civil Engineers from United Walnut Taxpayers are overseeing this work and have prepared this draft summary document.

2. Initial Summary of Preliminary Expert Opinion of Converse and Psomas Reports

a. Significant Deficiencies in Converse Subsurface Investigations, Analysis and Baseline Geologic Data

i. Conclusions are not well supported and there is no discussion and/or analysis of significant issues.

ii. Poorly supported conclusions could impact the stability and safety of the project site and the safety of adjacent offsite properties and homes.

iii. Subsurface investigations did not provide for direct observation of geologic field conditions by a Professional Geologist and/or Engineering Geologist.

iv. Complex observations were performed by an Engineer-in-Training who is not trained or qualified to analyze geologic conditions and log field investigation borings.

v. Observations were based on the limited field sampling that was conducted. Data is lacking to create a geologic map and geologic cross-sections that illustrate the site geologic conditions.

vi. Insufficient surface and subsurface information is available from the Converse report to determine the earth materials that are present, and the geologic structure of the site.

vii. The Converse report did not recognize a significant landslide in the central hill of the project site present for more than thirty years (see Google Earth attachment), which is vulnerable to further sliding.

viii. Orientations of bedding planes at northwest portion of site were based on limited borings and are opposite to all relevant published geologic mapping.

ix. Inconsistencies in bedding plane orientation reported by Converse versus published geologic mapping is not explained or reconciled.

x. Converse concludes bedding planes near Regal Canyon Drive homes are oriented into the slope and stable, while all relevant, published geologic mapping shows bedding is oriented out of the slope and unstable to these homes and properties.

xi. The project results in potential significant negative impacts to Grand Avenue, including effects of potential liquefaction and induced settlement from adjacent earthfill over alluvial materials if left in place.

xii. Poorly defined and inadequate removal of unsuitable soils proposed can result in earthfill and foundation instability of the project, including placement of earthfill over an active landslide.

3. Review of the Geologic and Geotechnical Information

Several documents were reviewed in order to understand the geologic conditions underlying the site. The Converse report was based on subsurface exploration consisting of drilling, logging, and sampling various diameter borings in May 2014. Their investigation also included laboratory testing.

a. Partial Listing of Geologic and Engineering Documents Reviewed

i. Regional Geologic Map Generated by T.W. Dibblee (1989).

ii. Geologic and Landslide Potential Maps (Plates I and II), generated by the Los Angeles County Engineer for the City of Walnut as part of their General Plan (1974).

iii. Converse Consultants, Geotechnical Study Report, Proposed Fill Placement at the West Parcel, December 19, 2014.

iv. Psomas, Undated, South Campus Site Improvements - West, Mount San Antonio College, Undated.

v. UWT Engineering Geologist expert knowledge of geologic formations present at the site.

c. Preliminary Findings of Relevant Geological Mapping Review of West Parcel - T.W. Dibblee (1989), LA County Engineer (1974) and UWT Engineering Geologist (2017)

i. The Dibblee Regional Geologic map (1989) indicates the site is underlain by bedrock of the Tertiary Sycamore Canyon Formation and that bedding is generally striking northwest southeast and dipping to the northeast. The surrounding areas are indicated as being underlain by the Tertiary Yorba member of the Monterey (Puente Formation) with similar bedding orientations.

ii. The LA County Engineer, 1974, geologic map indicates, the site is underlain by bedrock of the Puente Formation. The central knob and adjacent hilltops are indicated as being underlain by sandstone and conglomerate, however, the lower portions of the hills are indicated as being underlain by the shales and siltstones.

iii. UWT Engineering Geologist observations confirm findings of the LA County Engineer (1974) and T.W. Dibblee (1989) geologic mapping.

iv. UWT Engineering Geologist observes bedding dip is generally east and sandstone and conglomerates are present. Where the shale and siltstone was observed, bedding dips to the east-northeast (similar to as indicated by T.W. Dibblee [1989]).

d. Converse Geological Investigation Does not Reveal Low Strength Silts and Shales and Presents Other Significant Omissions

i. Converse report indicates, *"the site is underlain by hard, cemented sandstone pebble conglomerate bedrock".* There is no mention of the presence of siltstone and/or shales, indicative of lower strength materials, which could result in unstable conditions in overlying earthfill.

ii. The low strength of numerous observed laminations and bedded siltstones are not emphasized as they affect the stability of the overlying earthfill.

iii. There are few notations of earth materials encountered.

iv. Geologic contacts between the differing geologic materials are not indicated and no structural information (such as bedding orientations) is provided.

v. Site-specific geologic structural information is only discussed in the text as it relates to a single large-diameter bucket auger boring , indicating bedding that was generally dipping northwest

vi. The above cited northwest bedding dip by Converse is nearly opposite of the regional bedding orientations indicated on the T.W. Dibblee Regional Geology map (1989) and LA County Engineer geologic mapping (1974).

ix. Converse's observations from infrequent samples in the small diameter borings indicated bedding which had near horizontal to near vertical dips. These inconsistences are not presented or explained in the report.

The above statements and observations by Converse could potentially lead to conclusions that bedding orientations are generally into the slope and westerly, suggesting hillsides and hillside cuts are stable. In fact, there is evidence that actual bedding orientations dip out of the slope, as represented on all relevant geologic maps and field observation by our Engineering Geologist, resulting in unstable conditions.

4. Need for Qualified Personnel to Perform Geologic Field Observations

i. Inadequacies of Converse Field Observation Personnel

i. A Geologist or Engineering Geologist should perform a geological study, including direct observations of geologic field conditions such that field conditions are not overlooked or misinterpreted.

ii. An Engineer-in-Training who is not trained to analyze geologic conditions logged borings and performed field observations.

iii. Field observations were based on the limited field sampling that was conducted.

iv. Converse field personnel overlooked an obvious and significant landside that occurred on the central hill area of the site that by expert review of historical photographs took place several decades ago.

v. Improper field observations can lead to conclusions affecting the safe installation the project, but also the safety of adjacent properties and residences.

The practical consequence of inadequate field observations is that up to seventy (70) feet of earthfill would be placed over unmitigated landslide rupture surfaces, typically exhibiting low strength and subject to further movement, adjacent to a highly-travel public road. As noted below, limited sampling in other areas compromised liquefaction analyses and the consequences of bedding plane orientations on adjacent properties and residents.

5. Landslides/Mass Movements

a. Deficient Landslide Analysis Overlooked a Significant Existing Landslide at Grand Avenue and Other Adverse Geologic Features

i. Government codes and guidelines require a discussion of the potential for landsliding at any hillside site in California.

ii. No landslide analyses of mass movements/landsliding were conducted by Converse nor were landslides shown on any of their maps, cross-sections or indicated in the text of the report.

iii. No discussion is provided in the report other than relating to seismically induced landslides, which by site evidence does not account for existing landsliding that has occurred along Grand Avenue more than thirty years ago after the four-lane road was established.

iv. Aerial imagery from Google Earth clearly indicates landslide(s) exists on the eastern side of the central knob descending down to Grand Avenue (see attachment). The landslide area on the central hill is present in aerial imagery dating from after 1980 until the present.

v. The above referenced landslide is further validated through field visits to the site by our Engineering Geologist and former City officials with first-hand knowledge of at least two landslides that occurred at the subject site after Grand Avenue was expanded to four lanes.

vi. At least one of the above landslides at the central hill of the site closed the road (Grand Ave.) and covered all the lanes. In addition, siltstone and shale bedrock with eastward dipping bedding subject to landsliding was observed in this area.

vii. In addition to the landslide(s) discussed above, review of aerial imagery indicates other areas of the site, which may be underlain by landslides, or have the potential for landsliding.

viii. Geologic cross-sections were not prepared to show landslide extent and no stability analyses were conducted to determine if earthfill slopes or cuts in natural slopes were feasible.

ix. The Converse report did not reference the LA County Engineer Landslide Potential Map (1974) that indicates significant portions of the site have a High Landslide Potential (Plate II). Such a report is typical of city planning initiatives and is an obvious document to be sought out and reviewed.

x. Essentially any of the east facing slopes that are underlain by thinly bedded (laminated) bedding has a potential for landsliding. There are also several geomorphic features of the site that may be indicative of landsliding, but not investigated and analyzed by Converse.

The consequence of not identifying the landslide was that significant earthfill would have been placed over landslide rupture surfaces without any remedial measures, making it subject to future landsliding. The public safety consequences of a potential landslide on the highly traveled Grand Avenue are apparent.

6. Liquefaction

a. Abbreviated and Poorly Scoped Liquefaction Analysis Overlooked Liquefaction Potential Below the Proposed Earthfill and Near Grand Avenue

i. The Converse report identified portions of the site as having a potential for liquefaction according to the state of California (CGS, 1999).

ii. Several borings were excavated in these areas, but Converse conducted liquefaction analysis for only one of the borings.

iii. This boring was located in the southern canyon area where the alluvial deposits were the shallowest, and analyses concluded that the site was not susceptible to liquefaction and significant seismic settlement.

iv. Converse did not conduct liquefaction analysis for the northern canyon area where alluvium was deepest and more indicative of conditions subject to liquefaction.

v. Two borings that were excavated closer to the northern canyon were terminated without encountering bedrock.

vi. Groundwater was encountered in both these borings along with some loose alluvium typical of liquefiable materials. However, these boring were not analyzed for liquefaction potential.

vii. None of the above borings were excavated along the axis of the canyon or at the lower end of the canyon where the alluvium would be the deepest, groundwater would potentially be the shallowest, the potential for liquefaction would be the greatest.

viii. The total depth of alluvium was not modeled or investigated near Grand Avenue within this canyon.

ix. No analyses were conducted to determine the total depth of alluvium and obtain subsurface information the full length of the canyon for a proper liquefaction evaluation.

The groundwater observations, loose alluvial deposits encountered and deeper alluvium suggest susceptibility to liquefaction and potential instability in the overlying proposed earthfill and nearby Grand Avenue.

7. Slope Stability

a. Vital Slope Stability Analyses Were Omitted Throughout the Converse Document

i. Geotechnical reports generally require slope stability analyses for cut and fill slopes, including the highest fill slopes.

ii. Most agencies require proposed cut slopes over about 10 feet in height to be analyzed for geologic conditions and to determine orientation of bedding or other weak features.

ii. Out-of-slope bedding, as is the case at the West Parcel, requires specific analyses of these features.

iii. No geologic cross sections or geologic interpretations were prepared. Regional bedding attitudes and bedding observed by our Engineering Geologist elsewhere at the site indicated a significant potential for weak siltstone bedding dipping out of the slope.

b. No Stability Analysis Was Conducted for Cut Slopes, Including Critical Cut Slope Near Homes at Regal Canyon Drive

i. There are several proposed slopes that lack sufficient geologic information to prepare a geologic cross-section and/or conduct slope stability analysis.

iv. No stability analyses were conducted near homes at the northwest portion of the site, despite published adverse out of slope bedding recorded at the highest cut slope on the project.

v. The slope of most concern is the cut slope described above, proposed in the northwest portion of the site up to 40 feet in height, and located directly behind several existing homes.

vi. The report stated that the proposed cut slope would have neutral to favorable bedding attitudes due to the bedding observed in only one large diameter boring and very limited field sampling.

vii. However, published geologic mapping by T.W. Dibblee (1989) and the LA County Engineer (1974) show near opposite and adverse bedding orientation out of the slope similar to other bedding orientations on the project.

viii. Converse provides no explanation of the above inconsistency.

ix. Two smaller borings in this area found siltstone with no apparent bedding. However, an Engineer-in-Training who is not trained to analyze geologic conditions

logged these borings, and the observations were based on the limited sampling that was conducted.

x. The proposed high cut slope would potentially remove natural resisting forces to landsliding along these beddings planes and could represent a significant hazard to offsite properties and existing homes at this location along Regal Canyon Drive.

c. Vulnerable Orientation of Easterly Dipping Bedding Planes are Not Highlighted in Converse Report

i. The landslide at the central hill along Grand Avenue likely took place along easterly out of slope bedding orientations.

ii. Necessary removals of loose alluvium or removals in areas with High Landslide Potential could concurrently remove hillside materials that provide resisting forces to landsliding.

iii. The above condition would likely apply to homes and properties on Regal Canyon Drive (to the west) and on Stonybrook Drive (to the east) since slopes near these properties have essentially the same bedding orientation observed at the central hill.

d. Existing Landslide at Grand Avenue Posing Risk to Earthfill Project Was Overlooked

i. The slope along Grand Avenue consists of variable cut, fill, and in some locations, fill over the existing slope.

ii. The central portion of the Grand Avenue site is underlain by the landslide.

iii. The proposed cut slope in this area will most likely not remove all the landslide debris, and the underlying cause(s) of the landslide.

iv. Additional landslide movement can potentially occur with the placement of overlying earthfill and without removing all landslide rupture surfaces.

v. The geologic conditions have not been modeled by Converse for the differing conditions along the length of this slope nor has the existence of the landslide been identified.

8. Remedial Removals and Measures to Mitigate Landslide Mass Movements

a. Project Description of Remedial Soil Removals is Poorly Defined

i. Converse report states that “loose, disturbed or unsuitable alluvial soils” is to be removed from the surface of the West Parcel site before placing earth fill.

ii. The above statement is difficult to interpret and is not well defined as to the precise depths and/or criteria for remedial soil removals on the project site. A definition of "loose and unsuitable soils" is also not provided within the report.

iii. Based on the alluvial deposits encountered in Converse borings, remedial soil removal would likely be at least 20 feet in depth.

iv. Removal of landslide materials are likely greater than 20 feet in depth and could at least double earthwork quantities for the project.

b. Remedial Soil Removals May Result in Destabilizing Adjacent Natural Slopes

i. At the south end of the project, hillsides would be undercut by remedial soil removals and preparations for earthfill placement, and would potentially be destabilized because of out of slope bedding, along with adjacent properties and homes along Stonybrook Drive.

ii. UWT Engineering Geologist recommends that the extent of soft, yielding soils cited by Converse should be explicitly defined in order to address remedial removals.

iii. Similar to the above soft, yielding soil conditions, the LA County Engineer Geologic and Landslide Potential Maps (1974) depict unsuitable soil and geologic conditions over a substantial portion of the site.

iv. The occurrence of an existing landslide at the site suggests potential for landslides with similar east facing slopes, underlain by thinly bedded (laminated) east-facing bedding.

v. The need to remove unsuitable alluvial soils is demonstrated in areas with High Landslide Potential on the 1974 maps, which left unmitigated could lead to instability in proposed earthfill and foundation materials.

c. Placement of Earthfill over Alluvium Poses Potential Risk of Settlement of Earthfill and Induced Settlement of Grand Avenue

i. Removal of alluvium along Grand Avenue, where the alluvium will be the thickest, has not been discussed and/or modeled.

ii. If alluvium is remaining adjacent/beneath Grand Avenue and additional filling is proposed over the alluvium, then there is potential that this proposed condition will result in settlement under the earthfill, as well as induce settlement beneath Grand Avenue.

iii. Potential induced settlement of Grand Avenue and the underlying major utilities that likely exist within the road prism may be a significant issue.

iv. The above potential settlement conditions were not discussed or analyzed in the Converse report, leaving significant settlement issues and consequences unaddressed.

d. Plan for Remedial Soil Removals Omitted from Plans

i. Remedial soil removals were discussed by Converse however, estimated depths of removal and the criteria to determine if removals are sufficient were not provided.

ii. Remedial soil removal can affect many other issues including total and differential settlement, potential for collapse, and the stability of existing slopes.

iii. A remedial measure map was omitted that would indicate all the recommended remediation necessary for safely grading the site.

iv. Lacking clear definition of remedial removals, the integrity of the underlying foundation materials and proposed overlying earthfill cannot be determined, and remedial removals when defined can become a significant cost issue.

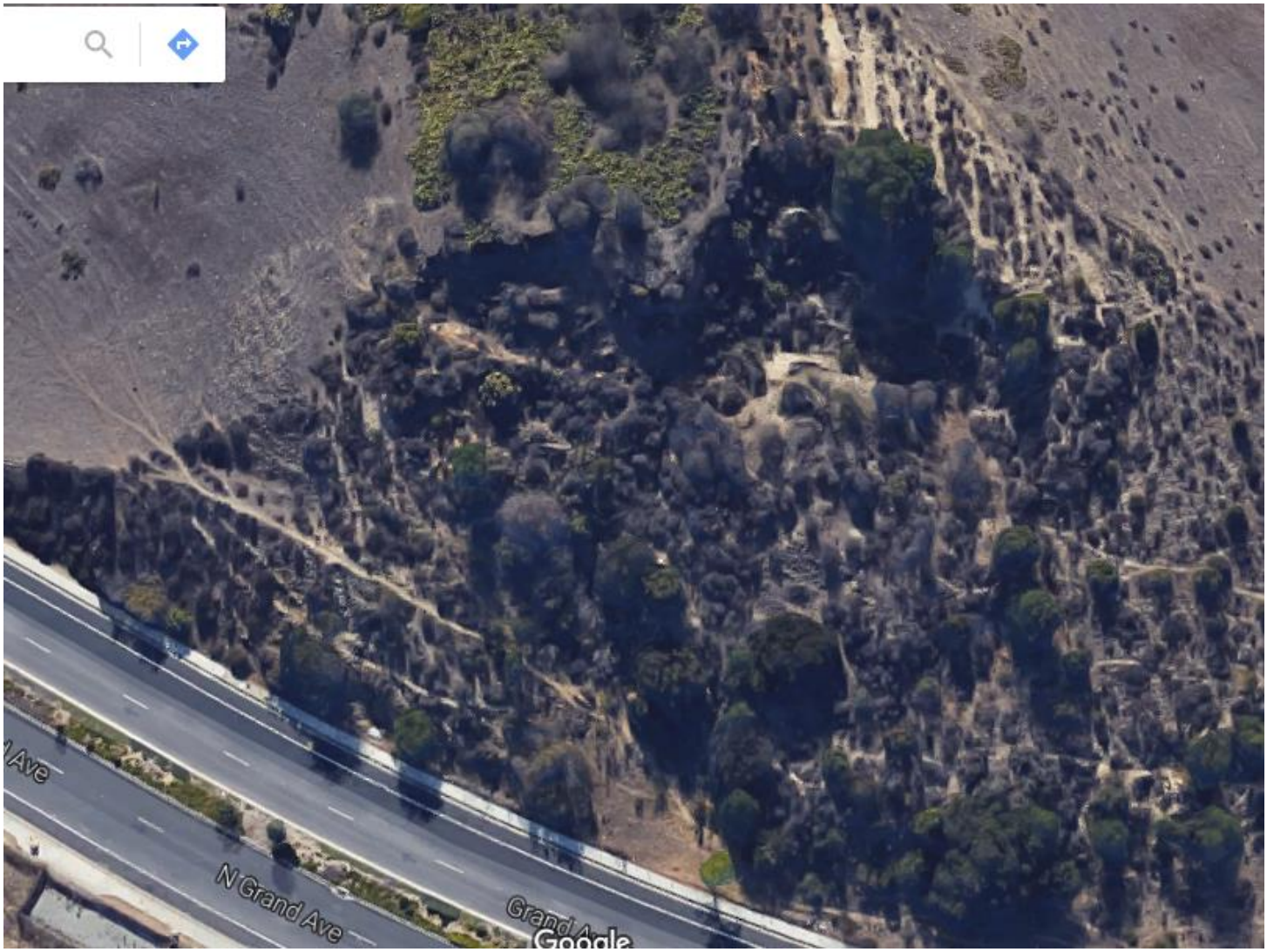
e. Potential for Similar Landsliding from Slope Undercutting and Adverse Bedding Orientations Exists at Central Hill and Near Regal Canyon Drive

i. The landslide at Grand Avenue occurred about 1980 shortly after Grand Avenue was widened to four lanes in the late 1970's, likely from the undercutting of the central hill near the roadway.

ii. Homes on Regal Canyon Drive were built between 1980 and 1995, separated by about 0.15 miles from the central hill by an intervening canyon.

iii. The proposed project grading would undercut hillside slopes north of these homes by up to 40 feet, potentially causing similar landsliding along out of slope bedding planes.

Attachment
Google Earth Image of Existing Landslide at West Parcel Site



P.O. Box 682, Walnut, CA 91788-0682
21201 La Puente Road
Walnut, CA 91789-2018
Telephone (909) 595-7543
FAX (909) 595-6095
www.cityofwalnut.org

CITY OF WALNUT

June 7, 2017

Via E-Mail and Certified Mail

Rebecca Mitchell, Manager, Facilities Support Services
Facilities Planning & Management
Mount San Antonio College
1100 North Grand Avenue
Walnut CA 91789-1399

SUBJECT: Notice of Scoping Session for the Mt. San Antonio Community College District's (Mt. SAC) West Parcel Solar Project

Dear Ms. Mitchell:

The City of Walnut has received (via certified mail) the Notice of Scoping Session for Mt. SAC West Parcel Solar Project (WPSP), to be held on Wednesday, June 7th, 2017 at 5:00 p.m. at the Facilities Planning and Management Offices, Bldg. 46, Room 1050. The City appreciates the efforts by neighboring public agencies and school districts to disseminate reports and documentation on projects that will have significant impacts to the City and our residents.

Pursuant to the Court's recent decision in the *United Walnut Taxpayer's v Mt. SAC et. al.* (Los Angeles County Superior Court Case No. BC576587), the City is eager to engage in further discussion of the proposed WPSP.

In an effort to maintain open and effective communications between the City of Walnut and Mt. SAC, this letter provides the City's written comments concerning areas of significant environmental impacts of the WPSP in response to the Notice of Scoping Session.

The City encourages Mt. SAC to closely comply with the mandates of the California Environmental Quality Act (CEQA) and urges Mt. SAC to consider the benefits of preparing an Environmental Impact Report (EIR) for the WPSP. The City notes the following areas and/or potential impacts of specific concern to the City and the community:

- Impacts from any proposed truck haul routes on City streets addressing traffic, traffic safety, air quality and noise impacts
- Hillside geologic/geotechnical impact
- Aesthetics impacts and scenic highway preservation
- Water and air quality impacts
- Habitat preservation and forestry resources impacts

In addition, we note that the Mt. SAC Site Zoning Map (Exhibit 5) included in the Notice of Scoping Session denotes a "Solar/Retail" designation on the West Parcel. Please clarify whether the WPSP includes a retail component. If so, Mt. SAC should analyze the land use and planning impacts of the WPSP in light of the current Hillside Single-Family Residential Walnut General Plan Land Use Designation and Residential Planned Development 61,700 – 0.6 DU Zoning District classification of the West Parcel.

Lastly, the City encourages Mt. SAC to consider whether environmentally superior alternatives exist to the WPSP, which may, in turn, materially change the scope of work required for the project and lessen the impact to the City and its residents.

Thank you for giving the City of Walnut the opportunity to comment with respect to the environmental scoping related to the WPSP. If you have any questions, please feel free to contact me at (909) 595-7543.

Sincerely,

Tom Weiner
Director of Community Development

Derrick Womble
Senior Management Analyst

Cc: Robert M. Wishner, City Manager
Barbara Leibold, City Attorney
Justin Carlson, City Planner
Teresa De Dios, City Clerk

From: Layla Abou Taleb <abousassi@yahoo.com>
To: facilitiesplanning@mtsac.edu
Cc: Becky Mitchell <BMitchell@mtsac.edu>, mikaela.klein@mtsac.edu, Mansfield Collins <mansfieldcollins@gmail.com>
Date: 05/30/2017 10:20 AM
Subject: Re: Notice of a Scoping Session for the Mt. SAC West Parcel Solar Project

Rebecca,

Thank you for forwarding to me the Notice of scoping.

While I'm glad that Mt Sac is conducting scoping sessions, as community input is not only vital but is an integral part of CEQA, however, this is a short notice at a time of graduations and weddings and does not appear adequate.

To ensure community input, sufficient notice via direct mail to the Walnut community should be made. In addition, those homes surrounding the site should be sent certified return receipt letters to ensure notification. Also an effort should be made to contact the owners on record who might not reside at the property as their property will be directly impacted.

Our goal as I hope is yours is to get the necessary feedback from the community affected.

Layla
UWT, President

GABRIELEÑO BAND OF MISSION INDIANS - KIZH NATION
Historically known as The San Gabriel Band of Mission Indians
recognized by the State of California as the aboriginal tribe of the Los Angeles basin

Mt. San Antonio Community College District

Date 5-26-2017

Re: AB52 Consultation request for Project Title: Mt. San Antonio College West Parcel Solar Project

Dear Rebecca Mitchell, Manager

Please find this letter as a written request for consultation regarding the above-mentioned project pursuant to Public Resources Code § 21080.3.1, subd. (d). Your project lies within our ancestral tribal territory, meaning descending from, or a higher degree of kinship than traditional or cultural affiliation. Your project is located within a sensitive area and may cause a substantial adverse change in the significance of our tribal cultural resources. Most often, a records search for our tribal cultural resources will result in a "no records found" for the project area. The Native American Heritage Commission, ethnographers, historians, and professional archaeologists can only provide limited information that has been previously documented about California Native Tribes. This is the reason the Native American Heritage Commission (NAHC) will always refer the lead agency to the respective Native American Tribe of the area because the NAHC is only aware of general information and are not the experts on each California Tribe. Our Elder Committee & tribal historians are the experts for our Tribe and are able to provide a more complete history (both written and oral) regarding the location of historic villages, trade routes, cemeteries and sacred/religious sites in the project area. Therefore, to avoid adverse effects to our tribal cultural resources, we would like to consult with you and your staff to provide you with a more complete understanding of the prehistoric use(s) of the project area and the potential risks for causing a substantial adverse change to the significance of our tribal cultural resources.

Consultation appointments are available on Wednesdays and Thursdays at our offices at 901 N. Citrus Ave. Covina, CA 91722 or over the phone. Please call toll free 1-844-390-0787 or email gabrielenoindians@yahoo.com to schedule an appointment.

** Prior to the first consultation with our Tribe, we require all those individuals participating in the consultation to view a video produced and provided by CalEPA and the NAHC for sensitivity and understanding of AB52. You can view the video at: http://nahc.ca.gov/2015/12/ab-52-tribal-training/

With Respect,

Andrew Salas, Chairman

Andrew Salas, Chairman | Nadine Salas, Vice-Chairman | Christina Swindall Martinez, secretary
Albert Perez, treasurer I | Martha Gonzalez Lemos, treasurer II | Richard Gradias, Chairman of the Council of Elders
PO Box 393, Covina, CA 91723 | www.gabrielenoindians.org | gabrielenoindians@yahoo.com

Lijin Sun <LSun@aqmd.gov>

To "facilitiesplanning@mtsac.edu" <facilitiesplanning@mtsac.edu>
06/06/2017 11:39 AM
cc Jillian Wong <jwong1@aqmd.gov>

Subject RE: SCAQMD Staff NOP Comments for the Mt. San Antonio College West Parcel Solar Parcel Project

Dear Becky,

SCAQMD staff understands that the CEQA Guidelines encourage early public consultation, which may be called scoping. However, "[w]here scoping is used, it should be combined to the extent possible with consultation under Section 15082 (Notice of Preparation and Determination of Scope of EIR)" (CEQA Guidelines Section 15083 (c)). It was not clear from the Notice of Scoping Session for the proposed project that a Notice of Preparation (NOP) within the definition of Section 15082 would be issued in the future.

As a CEQA commenting agency, SCAQMD staff reviews and may comment on the CEQA documents. Staff's goal is to ensure that project emissions and health risk impacts are adequately and sufficiently evaluated, disclosed, and mitigated to the maximum extent feasible. In general, SCAQMD staff's comments during the early consultation are recommendations to assist the Lead Agencies "in identifying the range of actions, alternatives, mitigation measures, and significant [air quality and health risk] effects to be analyzed in depth in an EIR [...]" (CEQA Guidelines Section 15083 (a)). Our comments, dated June 2, 2017, provided the information that may be helpful to the Lead Agency in preparing the air quality and health risk analyses for the proposed project. As such, we believe that our comments fulfilled the CEQA requirement under Section 15083 for SCAQMD.

We look forward to receiving the NOP when it is available. Please send it to my attention.

Thank you,
Lijin Sun, J.D.
Program Supervisor, CEQA IGR
South Coast Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765
Direct: (909) 396-3308
Fax: (909) 396-3324

WRITTEN COMMENTS TO SCOPING MEETING FOR WEST PARCEL SOLAR PROJECT, JUNE 7, 2017

UNITED WALNUT TAXPAYERS PRELIMINARY REVIEW OF NEGATIVE GEOTECHNICAL AND GEOLOGICAL ASPECTS OF CONSTRUCTING EARTHFILL PAD FOR A SOLAR FARM ON THE WEST PARCEL - DRAFT

1. Introduction

A licensed Engineering Geologist has been retained by United Walnut Taxpayers (UWT) to review of the report from Converse Consultants, dated December 19, 2014, from a geotechnical perspective, and grading plans prepared by Psomas and submitted to the City of Walnut on January 24, 2017. The purpose of this work was to assess the general geological setting of the site, assess the hazards and issues related to placement of earthfill at the site in accordance with grading plans received, and determine if it is possible to develop a project in a safe manner suitable to support the proposed earthfill development and maintain the integrity of the surrounding properties. Licensed Civil Engineers from United Walnut Taxpayers are overseeing this work and have prepared this draft summary document.

2. Initial Summary of Preliminary Expert Opinion of Converse and Psomas Reports

a. Significant Deficiencies in Converse Subsurface Investigations, Analysis and Baseline Geologic Data

i. Conclusions are not well supported and there is no discussion and/or analysis of significant issues.

ii. Poorly supported conclusions could impact the stability and safety of the project site and the safety of adjacent offsite properties and homes.

iii. Subsurface investigations did not provide for direct observation of geologic field conditions by a Professional Geologist and/or Engineering Geologist.

iv. Complex observations were performed by an Engineer-in-Training who is not trained or qualified to analyze geologic conditions and log field investigation borings.

v. Observations were based on the limited field sampling that was conducted. Data is lacking to create a geologic map and geologic cross-sections that illustrate the site geologic conditions.

vi. Insufficient surface and subsurface information is available from the Converse report to determine the earth materials that are present, and the geologic structure of the site.

vii. The Converse report did not recognize a significant landslide in the central hill of the project site present for more than thirty years (see Google Earth attachment), which is vulnerable to further sliding.

viii. Orientations of bedding planes at northwest portion of site were based on limited borings and are opposite to all relevant published geologic mapping.

ix. Inconsistencies in bedding plane orientation reported by Converse versus published geologic mapping is not explained or reconciled.

x. Converse concludes bedding planes near Regal Canyon Drive homes are oriented into the slope and stable, while all relevant, published geologic mapping shows bedding is oriented out of the slope and unstable to these homes and properties.

xi. The project results in potential significant negative impacts to Grand Avenue, including effects of potential liquefaction and induced settlement from adjacent earthfill over alluvial materials if left in place.

xii. Poorly defined and inadequate removal of unsuitable soils proposed can result in earthfill and foundation instability of the project, including placement of earthfill over an active landslide.

3. Review of the Geologic and Geotechnical Information

Several documents were reviewed in order to understand the geologic conditions underlying the site. The Converse report was based on subsurface exploration consisting of drilling, logging, and sampling various diameter borings in May 2014. Their investigation also included laboratory testing.

a. Partial Listing of Geologic and Engineering Documents Reviewed

i. Regional Geologic Map Generated by T.W. Dibblee (1989).

ii. Geologic and Landslide Potential Maps (Plates I and II), generated by the Los Angeles County Engineer for the City of Walnut as part of their General Plan (1974).

iii. Converse Consultants, Geotechnical Study Report, Proposed Fill Placement at the West Parcel, December 19, 2014.

iv. Psomas, Undated, South Campus Site Improvements - West, Mount San Antonio College, Undated.

v. UWT Engineering Geologist expert knowledge of geologic formations present at the site.

c. Preliminary Findings of Relevant Geological Mapping Review of West Parcel - T.W. Dibblee (1989), LA County Engineer (1974) and UWT Engineering Geologist (2017)

i. The Dibblee Regional Geologic map (1989) indicates the site is underlain by bedrock of the Tertiary Sycamore Canyon Formation and that bedding is generally striking northwest southeast and dipping to the northeast. The surrounding areas are indicated as being underlain by the Tertiary Yorba member of the Monterey (Puente Formation) with similar bedding orientations.

ii. The LA County Engineer, 1974, geologic map indicates, the site is underlain by bedrock of the Puente Formation. The central knob and adjacent hilltops are indicated as being underlain by sandstone and conglomerate, however, the lower portions of the hills are indicated as being underlain by the shales and siltstones.

iii. UWT Engineering Geologist observations confirm findings of the LA County Engineer (1974) and T.W. Dibblee (1989) geologic mapping.

iv. UWT Engineering Geologist observes bedding dip is generally east and sandstone and conglomerates are present. Where the shale and siltstone was observed, bedding dips to the east-northeast (similar to as indicated by T.W. Dibblee [1989]).

d. Converse Geological Investigation Does not Reveal Low Strength Silts and Shales and Presents Other Significant Omissions

i. Converse report indicates, *"the site is underlain by hard, cemented sandstone pebble conglomerate bedrock".* There is no mention of the presence of siltstone and/or shales, indicative of lower strength materials, which could result in unstable conditions in overlying earthfill.

ii. The low strength of numerous observed laminations and bedded siltstones are not emphasized as they affect the stability of the overlying earthfill.

iii. There are few notations of earth materials encountered.

iv. Geologic contacts between the differing geologic materials are not indicated and no structural information (such as bedding orientations) is provided.

v. Site-specific geologic structural information is only discussed in the text as it relates to a single large-diameter bucket auger boring , indicating bedding that was generally dipping northwest

vi. The above cited northwest bedding dip by Converse is nearly opposite of the regional bedding orientations indicated on the T.W. Dibblee Regional Geology map (1989) and LA County Engineer geologic mapping (1974).

ix. Converse's observations from infrequent samples in the small diameter borings indicated bedding which had near horizontal to near vertical dips. These inconsistences are not presented or explained in the report.

The above statements and observations by Converse could potentially lead to conclusions that bedding orientations are generally into the slope and westerly, suggesting hillsides and hillside cuts are stable. In fact, there is evidence that actual bedding orientations dip out of the slope, as represented on all relevant geologic maps and field observation by our Engineering Geologist, resulting in unstable conditions.

4. Need for Qualified Personnel to Perform Geologic Field Observations

i. Inadequacies of Converse Field Observation Personnel

i. A Geologist or Engineering Geologist should perform a geological study, including direct observations of geologic field conditions such that field conditions are not overlooked or misinterpreted.

ii. An Engineer-in-Training who is not trained to analyze geologic conditions logged borings and performed field observations.

iii. Field observations were based on the limited field sampling that was conducted.

iv. Converse field personnel overlooked an obvious and significant landside that occurred on the central hill area of the site that by expert review of historical photographs took place several decades ago.

v. Improper field observations can lead to conclusions affecting the safe installation the project, but also the safety of adjacent properties and residences.

The practical consequence of inadequate field observations is that up to seventy (70) feet of earthfill would be placed over unmitigated landslide rupture surfaces, typically exhibiting low strength and subject to further movement, adjacent to a highly-travel public road. As noted below, limited sampling in other areas compromised liquefaction analyses and the consequences of bedding plane orientations on adjacent properties and residents.

5. Landslides/Mass Movements

a. Deficient Landslide Analysis Overlooked a Significant Existing Landslide at Grand Avenue and Other Adverse Geologic Features

i. Government codes and guidelines require a discussion of the potential for landsliding at any hillside site in California.

ii. No landslide analyses of mass movements/landsliding were conducted by Converse nor were landslides shown on any of their maps, cross-sections or indicated in the text of the report.

iii. No discussion is provided in the report other than relating to seismically induced landslides, which by site evidence does not account for existing landsliding that has occurred along Grand Avenue more than thirty years ago after the four-lane road was established.

iv. Aerial imagery from Google Earth clearly indicates landslide(s) exists on the eastern side of the central knob descending down to Grand Avenue (see attachment). The landslide area on the central hill is present in aerial imagery dating from after 1980 until the present.

v. The above referenced landslide is further validated through field visits to the site by our Engineering Geologist and former City officials with first-hand knowledge of at least two landslides that occurred at the subject site after Grand Avenue was expanded to four lanes.

vi. At least one of the above landslides at the central hill of the site closed the road (Grand Ave.) and covered all the lanes. In addition, siltstone and shale bedrock with eastward dipping bedding subject to landsliding was observed in this area.

vii. In addition to the landslide(s) discussed above, review of aerial imagery indicates other areas of the site, which may be underlain by landslides, or have the potential for landsliding.

viii. Geologic cross-sections were not prepared to show landslide extent and no stability analyses were conducted to determine if earthfill slopes or cuts in natural slopes were feasible.

ix. The Converse report did not reference the LA County Engineer Landslide Potential Map (1974) that indicates significant portions of the site have a High Landslide Potential (Plate II). Such a report is typical of city planning initiatives and is an obvious document to be sought out and reviewed.

x. Essentially any of the east facing slopes that are underlain by thinly bedded (laminated) bedding has a potential for landsliding. There are also several geomorphic features of the site that may be indicative of landsliding, but not investigated and analyzed by Converse.

The consequence of not identifying the landslide was that significant earthfill would have been placed over landslide rupture surfaces without any remedial measures, making it subject to future landsliding. The public safety consequences of a potential landslide on the highly traveled Grand Avenue are apparent.

6. Liquefaction

a. Abbreviated and Poorly Scoped Liquefaction Analysis Overlooked Liquefaction Potential Below the Proposed Earthfill and Near Grand Avenue

i. The Converse report identified portions of the site as having a potential for liquefaction according to the state of California (CGS, 1999).

ii. Several borings were excavated in these areas, but Converse conducted liquefaction analysis for only one of the borings.

iii. This boring was located in the southern canyon area where the alluvial deposits were the shallowest, and analyses concluded that the site was not susceptible to liquefaction and significant seismic settlement.

iv. Converse did not conduct liquefaction analysis for the northern canyon area where alluvium was deepest and more indicative of conditions subject to liquefaction.

v. Two borings that were excavated closer to the northern canyon were terminated without encountering bedrock.

vi. Groundwater was encountered in both these borings along with some loose alluvium typical of liquefiable materials. However, these boring were not analyzed for liquefaction potential.

vii. None of the above borings were excavated along the axis of the canyon or at the lower end of the canyon where the alluvium would be the deepest, groundwater would potentially be the shallowest, the potential for liquefaction would be the greatest.

viii. The total depth of alluvium was not modeled or investigated near Grand Avenue within this canyon.

ix. No analyses were conducted to determine the total depth of alluvium and obtain subsurface information the full length of the canyon for a proper liquefaction evaluation.

The groundwater observations, loose alluvial deposits encountered and deeper alluvium suggest susceptibility to liquefaction and potential instability in the overlying proposed earthfill and nearby Grand Avenue.

7. Slope Stability

a. Vital Slope Stability Analyses Were Omitted Throughout the Converse Document

i. Geotechnical reports generally require slope stability analyses for cut and fill slopes, including the highest fill slopes.

ii. Most agencies require proposed cut slopes over about 10 feet in height to be analyzed for geologic conditions and to determine orientation of bedding or other weak features.

ii. Out-of-slope bedding, as is the case at the West Parcel, requires specific analyses of these features.

iii. No geologic cross sections or geologic interpretations were prepared. Regional bedding attitudes and bedding observed by our Engineering Geologist elsewhere at the site indicated a significant potential for weak siltstone bedding dipping out of the slope.

b. No Stability Analysis Was Conducted for Cut Slopes, Including Critical Cut Slope Near Homes at Regal Canyon Drive

i. There are several proposed slopes that lack sufficient geologic information to prepare a geologic cross-section and/or conduct slope stability analysis.

iv. No stability analyses were conducted near homes at the northwest portion of the site, despite published adverse out of slope bedding recorded at the highest cut slope on the project.

v. The slope of most concern is the cut slope described above, proposed in the northwest portion of the site up to 40 feet in height, and located directly behind several existing homes.

vi. The report stated that the proposed cut slope would have neutral to favorable bedding attitudes due to the bedding observed in only one large diameter boring and very limited field sampling.

vii. However, published geologic mapping by T.W. Dibblee (1989) and the LA County Engineer (1974) show near opposite and adverse bedding orientation out of the slope similar to other bedding orientations on the project.

viii. Converse provides no explanation of the above inconsistency.

ix. Two smaller borings in this area found siltstone with no apparent bedding. However, an Engineer-in-Training who is not trained to analyze geologic conditions

logged these borings, and the observations were based on the limited sampling that was conducted.

x. The proposed high cut slope would potentially remove natural resisting forces to landsliding along these beddings planes and could represent a significant hazard to offsite properties and existing homes at this location along Regal Canyon Drive.

c. Vulnerable Orientation of Easterly Dipping Bedding Planes are Not Highlighted in Converse Report

i. The landslide at the central hill along Grand Avenue likely took place along easterly out of slope bedding orientations.

ii. Necessary removals of loose alluvium or removals in areas with High Landslide Potential could concurrently remove hillside materials that provide resisting forces to landsliding.

iii. The above condition would likely apply to homes and properties on Regal Canyon Drive (to the west) and on Stonybrook Drive (to the east) since slopes near these properties have essentially the same bedding orientation observed at the central hill.

d. Existing Landslide at Grand Avenue Posing Risk to Earthfill Project Was Overlooked

i. The slope along Grand Avenue consists of variable cut, fill, and in some locations, fill over the existing slope.

ii. The central portion of the Grand Avenue site is underlain by the landslide.

iii. The proposed cut slope in this area will most likely not remove all the landslide debris, and the underlying cause(s) of the landslide.

iv. Additional landslide movement can potentially occur with the placement of overlying earthfill and without removing all landslide rupture surfaces.

v. The geologic conditions have not been modeled by Converse for the differing conditions along the length of this slope nor has the existence of the landslide been identified.

8. Remedial Removals and Measures to Mitigate Landslide Mass Movements

a. Project Description of Remedial Soil Removals is Poorly Defined

i. Converse report states that “loose, disturbed or unsuitable alluvial soils” is to be removed from the surface of the West Parcel site before placing earth fill.

ii. The above statement is difficult to interpret and is not well defined as to the precise depths and/or criteria for remedial soil removals on the project site. A definition of "loose and unsuitable soils" is also not provided within the report.

iii. Based on the alluvial deposits encountered in Converse borings, remedial soil removal would likely be at least 20 feet in depth.

iv. Removal of landslide materials are likely greater than 20 feet in depth and could at least double earthwork quantities for the project.

b. Remedial Soil Removals May Result in Destabilizing Adjacent Natural Slopes

i. At the south end of the project, hillsides would be undercut by remedial soil removals and preparations for earthfill placement, and would potentially be destabilized because of out of slope bedding, along with adjacent properties and homes along Stonybrook Drive.

ii. UWT Engineering Geologist recommends that the extent of soft, yielding soils cited by Converse should be explicitly defined in order to address remedial removals.

iii. Similar to the above soft, yielding soil conditions, the LA County Engineer Geologic and Landslide Potential Maps (1974) depict unsuitable soil and geologic conditions over a substantial portion of the site.

iv. The occurrence of an existing landslide at the site suggests potential for landslides with similar east facing slopes, underlain by thinly bedded (laminated) east-facing bedding.

v. The need to remove unsuitable alluvial soils is demonstrated in areas with High Landslide Potential on the 1974 maps, which left unmitigated could lead to instability in proposed earthfill and foundation materials.

c. Placement of Earthfill over Alluvium Poses Potential Risk of Settlement of Earthfill and Induced Settlement of Grand Avenue

i. Removal of alluvium along Grand Avenue, where the alluvium will be the thickest, has not been discussed and/or modeled.

ii. If alluvium is remaining adjacent/beneath Grand Avenue and additional filling is proposed over the alluvium, then there is potential that this proposed condition will result in settlement under the earthfill, as well as induce settlement beneath Grand Avenue.

iii. Potential induced settlement of Grand Avenue and the underlying major utilities that likely exist within the road prism may be a significant issue.

iv. The above potential settlement conditions were not discussed or analyzed in the Converse report, leaving significant settlement issues and consequences unaddressed.

d. Plan for Remedial Soil Removals Omitted from Plans

i. Remedial soil removals were discussed by Converse however, estimated depths of removal and the criteria to determine if removals are sufficient were not provided.

ii. Remedial soil removal can affect many other issues including total and differential settlement, potential for collapse, and the stability of existing slopes.

iii. A remedial measure map was omitted that would indicate all the recommended remediation necessary for safely grading the site.

iv. Lacking clear definition of remedial removals, the integrity of the underlying foundation materials and proposed overlying earthfill cannot be determined, and remedial removals when defined can become a significant cost issue.

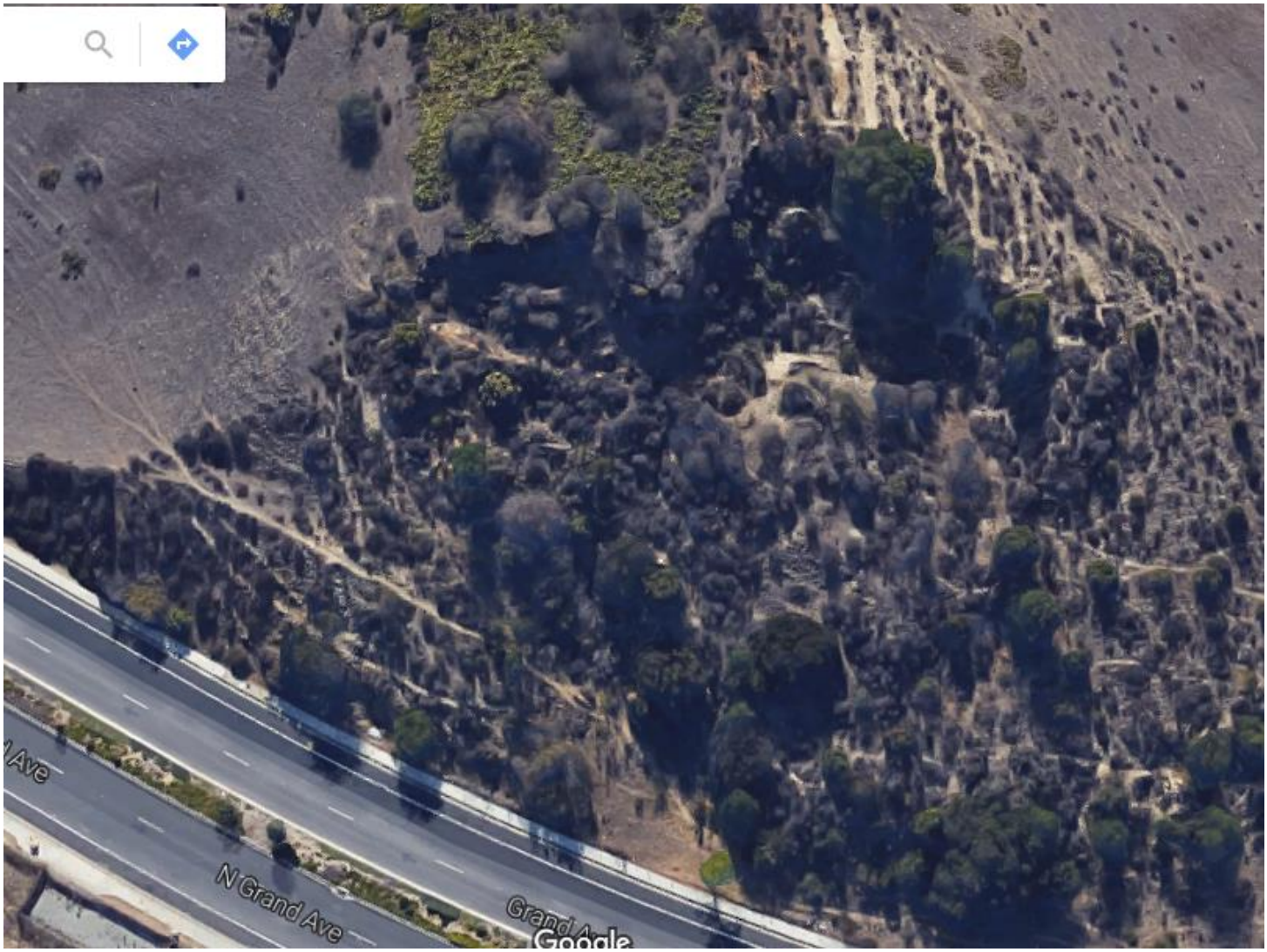
e. Potential for Similar Landsliding from Slope Undercutting and Adverse Bedding Orientations Exists at Central Hill and Near Regal Canyon Drive

i. The landslide at Grand Avenue occurred about 1980 shortly after Grand Avenue was widened to four lanes in the late 1970's, likely from the undercutting of the central hill near the roadway.

ii. Homes on Regal Canyon Drive were built between 1980 and 1995, separated by about 0.15 miles from the central hill by an intervening canyon.

iii. The proposed project grading would undercut hillside slopes north of these homes by up to 40 feet, potentially causing similar landsliding along out of slope bedding planes.

Attachment
Google Earth Image of Existing Landslide at West Parcel Site



WRITTEN COMMENTS TO SCOPING MEETING FOR WEST PARCEL SOLAR PROJECT, JUNE 7, 2017

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vi. At least one of the above landslides at the central hill of the site closed the road (Grand Ave.) and covered all the lanes. In addition, siltstone and shale bedrock with eastward dipping bedding subject to landsliding was observed in this area.

vii. In addition to the landslide(s) discussed above, review of aerial imagery indicates other areas of the site, which may be underlain by landslides, or have the potential for landsliding.

viii. Geologic cross-sections were not prepared to show landslide extent and no stability analyses were conducted to determine if earthfill slopes or cuts in natural slopes were feasible.

ix. The Converse report did not reference the LA County Engineer Landslide Potential Map (1974) that indicates significant portions of the site have a High Landslide Potential (Plate II). Such a report is typical of city planning initiatives and is an obvious document to be sought out and reviewed.

x. Essentially any of the east facing slopes that are underlain by thinly bedded (laminated) bedding has a potential for landsliding. There are also several geomorphic features of the site that may be indicative of landsliding, but not investigated and analyzed by Converse.

The consequence of not identifying the landslide was that significant earthfill would have been placed over landslide rupture surfaces without any remedial measures, making it subject to future landsliding. The public safety consequences of a potential landslide on the highly traveled Grand Avenue are apparent.

6. Liquefaction

a. Abbreviated and Poorly Scoped Liquefaction Analysis Overlooked Liquefaction Potential Below the Proposed Earthfill and Near Grand Avenue

i. The Converse report identified portions of the site as having a potential for liquefaction according to the state of California (CGS, 1999).

ii. Several borings were excavated in these areas, but Converse conducted liquefaction analysis for only one of the borings.

iii. This boring was located in the southern canyon area where the alluvial deposits were the shallowest, and analyses concluded that the site was not susceptible to liquefaction and significant seismic settlement.

iv. Converse did not conduct liquefaction analysis for the northern canyon area where alluvium was deepest and more indicative of conditions subject to liquefaction.

v. Two borings that were excavated closer to the northern canyon were terminated without encountering bedrock.

vi. Groundwater was encountered in both these borings along with some loose alluvium typical of liquefiable materials. However, these boring were not analyzed for liquefaction potential.

vii. None of the above borings were excavated along the axis of the canyon or at the lower end of the canyon where the alluvium would be the deepest, groundwater would potentially be the shallowest, the potential for liquefaction would be the greatest.

viii. The total depth of alluvium was not modeled or investigated near Grand Avenue within this canyon.

ix. No analyses were conducted to determine the total depth of alluvium and obtain subsurface information the full length of the canyon for a proper liquefaction evaluation.

The groundwater observations, loose alluvial deposits encountered and deeper alluvium suggest susceptibility to liquefaction and potential instability in the overlying proposed earthfill and nearby Grand Avenue.

7. Slope Stability

a. Vital Slope Stability Analyses Were Omitted Throughout the Converse Document

i. Geotechnical reports generally require slope stability analyses for cut and fill slopes, including the highest fill slopes.

ii. Most agencies require proposed cut slopes over about 10 feet in height to be analyzed for geologic conditions and to determine orientation of bedding or other weak features.

ii. Out-of-slope bedding, as is the case at the West Parcel, requires specific analyses of these features.

iii. No geologic cross sections or geologic interpretations were prepared. Regional bedding attitudes and bedding observed by our Engineering Geologist elsewhere at the site indicated a significant potential for weak siltstone bedding dipping out of the slope.

b. No Stability Analysis Was Conducted for Cut Slopes, Including Critical Cut Slope Near Homes at Regal Canyon Drive

i. There are several proposed slopes that lack sufficient geologic information to prepare a geologic cross-section and/or conduct slope stability analysis.

iv. No stability analyses were conducted near homes at the northwest portion of the site, despite published adverse out of slope bedding recorded at the highest cut slope on the project.

v. The slope of most concern is the cut slope described above, proposed in the northwest portion of the site up to 40 feet in height, and located directly behind several existing homes.

vi. The report stated that the proposed cut slope would have neutral to favorable bedding attitudes due to the bedding observed in only one large diameter boring and very limited field sampling.

vii. However, published geologic mapping by T.W. Dibblee (1989) and the LA County Engineer (1974) show near opposite and adverse bedding orientation out of the slope similar to other bedding orientations on the project.

viii. Converse provides no explanation of the above inconsistency.

ix. Two smaller borings in this area found siltstone with no apparent bedding. However, an Engineer-in-Training who is not trained to analyze geologic conditions

logged these borings, and the observations were based on the limited sampling that was conducted.

x. The proposed high cut slope would potentially remove natural resisting forces to landsliding along these beddings planes and could represent a significant hazard to offsite properties and existing homes at this location along Regal Canyon Drive.

c. Vulnerable Orientation of Easterly Dipping Bedding Planes are Not Highlighted in Converse Report

i. The landslide at the central hill along Grand Avenue likely took place along easterly out of slope bedding orientations.

ii. Necessary removals of loose alluvium or removals in areas with High Landslide Potential could concurrently remove hillside materials that provide resisting forces to landsliding.

iii. The above condition would likely apply to homes and properties on Regal Canyon Drive (to the west) and on Stonybrook Drive (to the east) since slopes near these properties have essentially the same bedding orientation observed at the central hill.

d. Existing Landslide at Grand Avenue Posing Risk to Earthfill Project Was Overlooked

i. The slope along Grand Avenue consists of variable cut, fill, and in some locations, fill over the existing slope.

ii. The central portion of the Grand Avenue site is underlain by the landslide.

iii. The proposed cut slope in this area will most likely not remove all the landslide debris, and the underlying cause(s) of the landslide.

iv. Additional landslide movement can potentially occur with the placement of overlying earthfill and without removing all landslide rupture surfaces.

v. The geologic conditions have not been modeled by Converse for the differing conditions along the length of this slope nor has the existence of the landslide been identified.

8. Remedial Removals and Measures to Mitigate Landslide Mass Movements

a. Project Description of Remedial Soil Removals is Poorly Defined

i. Converse report states that “loose, disturbed or unsuitable alluvial soils” is to be removed from the surface of the West Parcel site before placing earth fill.

ii. The above statement is difficult to interpret and is not well defined as to the precise depths and/or criteria for remedial soil removals on the project site. A definition of "loose and unsuitable soils" is also not provided within the report.

iii. Based on the alluvial deposits encountered in Converse borings, remedial soil removal would likely be at least 20 feet in depth.

iv. Removal of landslide materials are likely greater than 20 feet in depth and could at least double earthwork quantities for the project.

b. Remedial Soil Removals May Result in Destabilizing Adjacent Natural Slopes

i. At the south end of the project, hillsides would be undercut by remedial soil removals and preparations for earthfill placement, and would potentially be destabilized because of out of slope bedding, along with adjacent properties and homes along Stonybrook Drive.

ii. UWT Engineering Geologist recommends that the extent of soft, yielding soils cited by Converse should be explicitly defined in order to address remedial removals.

iii. Similar to the above soft, yielding soil conditions, the LA County Engineer Geologic and Landslide Potential Maps (1974) depict unsuitable soil and geologic conditions over a substantial portion of the site.

iv. The occurrence of an existing landslide at the site suggests potential for landslides with similar east facing slopes, underlain by thinly bedded (laminated) east-facing bedding.

v. The need to remove unsuitable alluvial soils is demonstrated in areas with High Landslide Potential on the 1974 maps, which left unmitigated could lead to instability in proposed earthfill and foundation materials.

c. Placement of Earthfill over Alluvium Poses Potential Risk of Settlement of Earthfill and Induced Settlement of Grand Avenue

i. Removal of alluvium along Grand Avenue, where the alluvium will be the thickest, has not been discussed and/or modeled.

ii. If alluvium is remaining adjacent/beneath Grand Avenue and additional filling is proposed over the alluvium, then there is potential that this proposed condition will result in settlement under the earthfill, as well as induce settlement beneath Grand Avenue.

iii. Potential induced settlement of Grand Avenue and the underlying major utilities that likely exist within the road prism may be a significant issue.

iv. The above potential settlement conditions were not discussed or analyzed in the Converse report, leaving significant settlement issues and consequences unaddressed.

d. Plan for Remedial Soil Removals Omitted from Plans

i. Remedial soil removals were discussed by Converse however, estimated depths of removal and the criteria to determine if removals are sufficient were not provided.

ii. Remedial soil removal can affect many other issues including total and differential settlement, potential for collapse, and the stability of existing slopes.

iii. A remedial measure map was omitted that would indicate all the recommended remediation necessary for safely grading the site.

iv. Lacking clear definition of remedial removals, the integrity of the underlying foundation materials and proposed overlying earthfill cannot be determined, and remedial removals when defined can become a significant cost issue.

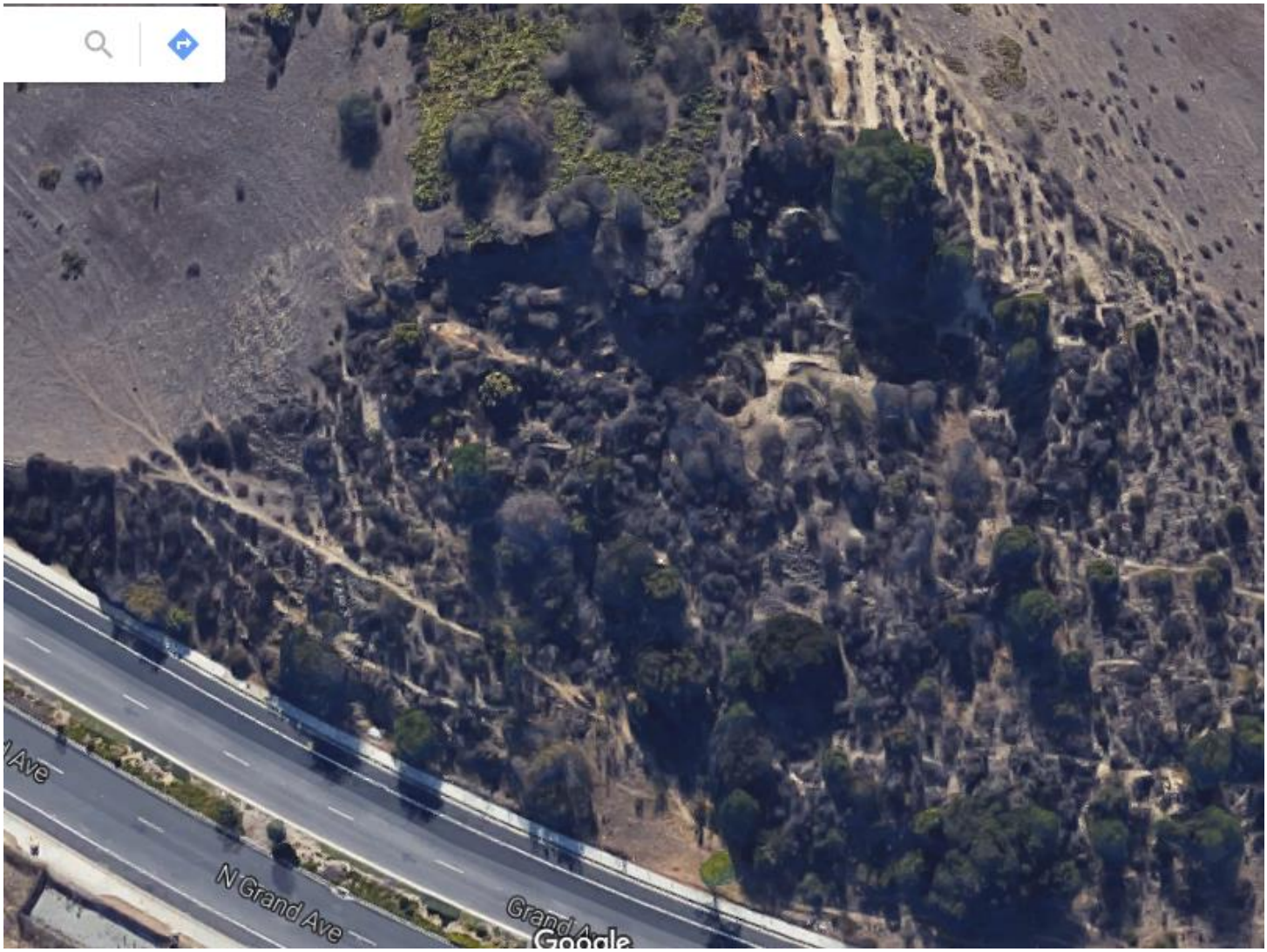
e. Potential for Similar Landsliding from Slope Undercutting and Adverse Bedding Orientations Exists at Central Hill and Near Regal Canyon Drive

i. The landslide at Grand Avenue occurred about 1980 shortly after Grand Avenue was widened to four lanes in the late 1970's, likely from the undercutting of the central hill near the roadway.

ii. Homes on Regal Canyon Drive were built between 1980 and 1995, separated by about 0.15 miles from the central hill by an intervening canyon.

iii. The proposed project grading would undercut hillside slopes north of these homes by up to 40 feet, potentially causing similar landsliding along out of slope bedding planes.

Attachment
Google Earth Image of Existing Landslide at West Parcel Site



WRITTEN COMMENTS TO SCOPING MEETING FOR WEST PARCEL SOLAR PROJECT, JUNE 7, 2017

UNITED WALNUT TAXPAYERS PRELIMINARY REVIEW OF NEGATIVE GEOTECHNICAL AND GEOLOGICAL ASPECTS OF CONSTRUCTING EARTHFILL PAD FOR A SOLAR FARM ON THE WEST PARCEL - DRAFT

1. Introduction

A licensed Engineering Geologist has been retained by United Walnut Taxpayers (UWT) to review of the report from Converse Consultants, dated December 19, 2014, from a geotechnical perspective, and grading plans prepared by Psomas and submitted to the City of Walnut on January 24, 2017. The purpose of this work was to assess the general geological setting of the site, assess the hazards and issues related to placement of earthfill at the site in accordance with grading plans received, and determine if it is possible to develop a project in a safe manner suitable to support the proposed earthfill development and maintain the integrity of the surrounding properties. Licensed Civil Engineers from United Walnut Taxpayers are overseeing this work and have prepared this draft summary document.

2. Initial Summary of Preliminary Expert Opinion of Converse and Psomas Reports

a. Significant Deficiencies in Converse Subsurface Investigations, Analysis and Baseline Geologic Data

i. Conclusions are not well supported and there is no discussion and/or analysis of significant issues.

ii. Poorly supported conclusions could impact the stability and safety of the project site and the safety of adjacent offsite properties and homes.

iii. Subsurface investigations did not provide for direct observation of geologic field conditions by a Professional Geologist and/or Engineering Geologist.

iv. Complex observations were performed by an Engineer-in-Training who is not trained or qualified to analyze geologic conditions and log field investigation borings.

v. Observations were based on the limited field sampling that was conducted. Data is lacking to create a geologic map and geologic cross-sections that illustrate the site geologic conditions.

vi. Insufficient surface and subsurface information is available from the Converse report to determine the earth materials that are present, and the geologic structure of the site.

vii. The Converse report did not recognize a significant landslide in the central hill of the project site present for more than thirty years (see Google Earth attachment), which is vulnerable to further sliding.

viii. Orientations of bedding planes at northwest portion of site were based on limited borings and are opposite to all relevant published geologic mapping.

ix. Inconsistencies in bedding plane orientation reported by Converse versus published geologic mapping is not explained or reconciled.

x. Converse concludes bedding planes near Regal Canyon Drive homes are oriented into the slope and stable, while all relevant, published geologic mapping shows bedding is oriented out of the slope and unstable to these homes and properties.

xi. The project results in potential significant negative impacts to Grand Avenue, including effects of potential liquefaction and induced settlement from adjacent earthfill over alluvial materials if left in place.

xii. Poorly defined and inadequate removal of unsuitable soils proposed can result in earthfill and foundation instability of the project, including placement of earthfill over an active landslide.

3. Review of the Geologic and Geotechnical Information

Several documents were reviewed in order to understand the geologic conditions underlying the site. The Converse report was based on subsurface exploration consisting of drilling, logging, and sampling various diameter borings in May 2014. Their investigation also included laboratory testing.

a. Partial Listing of Geologic and Engineering Documents Reviewed

i. Regional Geologic Map Generated by T.W. Dibblee (1989).

ii. Geologic and Landslide Potential Maps (Plates I and II), generated by the Los Angeles County Engineer for the City of Walnut as part of their General Plan (1974).

iii. Converse Consultants, Geotechnical Study Report, Proposed Fill Placement at the West Parcel, December 19, 2014.

iv. Psomas, Undated, South Campus Site Improvements - West, Mount San Antonio College, Undated.

v. UWT Engineering Geologist expert knowledge of geologic formations present at the site.

c. Preliminary Findings of Relevant Geological Mapping Review of West Parcel - T.W. Dibblee (1989), LA County Engineer (1974) and UWT Engineering Geologist (2017)

i. The Dibblee Regional Geologic map (1989) indicates the site is underlain by bedrock of the Tertiary Sycamore Canyon Formation and that bedding is generally striking northwest southeast and dipping to the northeast. The surrounding areas are indicated as being underlain by the Tertiary Yorba member of the Monterey (Puente Formation) with similar bedding orientations.

ii. The LA County Engineer, 1974, geologic map indicates, the site is underlain by bedrock of the Puente Formation. The central knob and adjacent hilltops are indicated as being underlain by sandstone and conglomerate, however, the lower portions of the hills are indicated as being underlain by the shales and siltstones.

iii. UWT Engineering Geologist observations confirm findings of the LA County Engineer (1974) and T.W. Dibblee (1989) geologic mapping.

iv. UWT Engineering Geologist observes bedding dip is generally east and sandstone and conglomerates are present. Where the shale and siltstone was observed, bedding dips to the east-northeast (similar to as indicated by T.W. Dibblee [1989]).

d. Converse Geological Investigation Does not Reveal Low Strength Silts and Shales and Presents Other Significant Omissions

i. Converse report indicates, *"the site is underlain by hard, cemented sandstone pebble conglomerate bedrock".* There is no mention of the presence of siltstone and/or shales, indicative of lower strength materials, which could result in unstable conditions in overlying earthfill.

ii. The low strength of numerous observed laminations and bedded siltstones are not emphasized as they affect the stability of the overlying earthfill.

iii. There are few notations of earth materials encountered.

iv. Geologic contacts between the differing geologic materials are not indicated and no structural information (such as bedding orientations) is provided.

v. Site-specific geologic structural information is only discussed in the text as it relates to a single large-diameter bucket auger boring , indicating bedding that was generally dipping northwest

vi. The above cited northwest bedding dip by Converse is nearly opposite of the regional bedding orientations indicated on the T.W. Dibblee Regional Geology map (1989) and LA County Engineer geologic mapping (1974).

ix. Converse's observations from infrequent samples in the small diameter borings indicated bedding which had near horizontal to near vertical dips. These inconsistences are not presented or explained in the report.

The above statements and observations by Converse could potentially lead to conclusions that bedding orientations are generally into the slope and westerly, suggesting hillsides and hillside cuts are stable. In fact, there is evidence that actual bedding orientations dip out of the slope, as represented on all relevant geologic maps and field observation by our Engineering Geologist, resulting in unstable conditions.

4. Need for Qualified Personnel to Perform Geologic Field Observations

i. Inadequacies of Converse Field Observation Personnel

i. A Geologist or Engineering Geologist should perform a geological study, including direct observations of geologic field conditions such that field conditions are not overlooked or misinterpreted.

ii. An Engineer-in-Training who is not trained to analyze geologic conditions logged borings and performed field observations.

iii. Field observations were based on the limited field sampling that was conducted.

iv. Converse field personnel overlooked an obvious and significant landside that occurred on the central hill area of the site that by expert review of historical photographs took place several decades ago.

v. Improper field observations can lead to conclusions affecting the safe installation the project, but also the safety of adjacent properties and residences.

The practical consequence of inadequate field observations is that up to seventy (70) feet of earthfill would be placed over unmitigated landslide rupture surfaces, typically exhibiting low strength and subject to further movement, adjacent to a highly-travel public road. As noted below, limited sampling in other areas compromised liquefaction analyses and the consequences of bedding plane orientations on adjacent properties and residents.

5. Landslides/Mass Movements

a. Deficient Landslide Analysis Overlooked a Significant Existing Landslide at Grand Avenue and Other Adverse Geologic Features

i. Government codes and guidelines require a discussion of the potential for landsliding at any hillside site in California.

ii. No landslide analyses of mass movements/landsliding were conducted by Converse nor were landslides shown on any of their maps, cross-sections or indicated in the text of the report.

iii. No discussion is provided in the report other than relating to seismically induced landslides, which by site evidence does not account for existing landsliding that has occurred along Grand Avenue more than thirty years ago after the four-lane road was established.

iv. Aerial imagery from Google Earth clearly indicates landslide(s) exists on the eastern side of the central knob descending down to Grand Avenue (see attachment). The landslide area on the central hill is present in aerial imagery dating from after 1980 until the present.

v. The above referenced landslide is further validated through field visits to the site by our Engineering Geologist and former City officials with first-hand knowledge of at least two landslides that occurred at the subject site after Grand Avenue was expanded to four lanes.

vi. At least one of the above landslides at the central hill of the site closed the road (Grand Ave.) and covered all the lanes. In addition, siltstone and shale bedrock with eastward dipping bedding subject to landsliding was observed in this area.

vii. In addition to the landslide(s) discussed above, review of aerial imagery indicates other areas of the site, which may be underlain by landslides, or have the potential for landsliding.

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The consequence of not identifying the landslide was that significant earthfill would have been placed over landslide rupture surfaces without any remedial measures, making it subject to future landsliding. The public safety consequences of a potential landslide on the highly traveled Grand Avenue are apparent.

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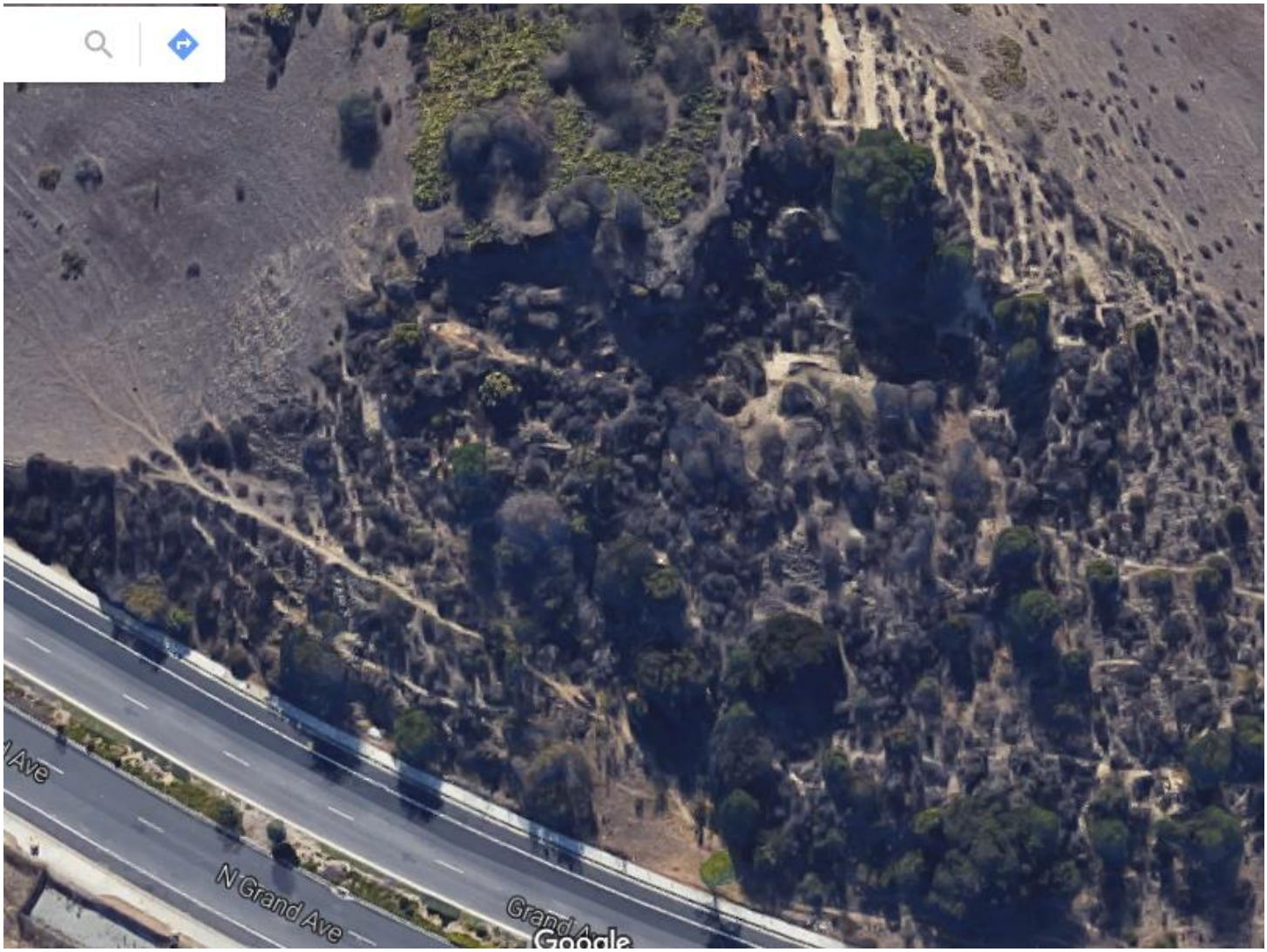
Attachment
Google Earth Image of Existing Landslide at West Parcel Site



PUBLIC COMMENT

MT. SAN ANTONIO COLLEGE

WEST PARCEL SOLAR PROJECT SCOPING SESSION

If you wish to address the meeting, please fill out this card completely and give it to the moderator. Comments are limited to four (4) minutes. Alternately, you may leave a written comment below, or attach a comment.

Name Mansfield Collins

Last First Middle Initial

Address _____ _____

Number Street City Zip Code

☑ I wish to address the meeting.

☐ I wish to make a written comment.

Comment:

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MT. SAN ANTONIO COLLEGE

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Name GLOVER (Last) LYNN (First) (Middle Initial)

Address 723 ARABIAN LANE (Number Street) WALNUT (City) 91789 (Zip Code)

☒ I wish to address the meeting.

☒ I wish to make a written comment.

Comment: I AM OPPOSED THIS PROJECT BECAUSE:
IT IS AN INSULT TO THE COMMUNITY TO
USE THE PARCEL AS A LANDILL WITH
AN INDUSRIAL STRUCTURE PLACED ON IT
IN A RESIDENTIAL AREA WHICH IS ALSO
A GATEWAY TO OUR CITY.
IT WOULD ACCEPTABLE IF PV PANELS
WERE LOCATED ON PARKING STRUCTURES
AS IS SEEN THROUHT S. CALIF - AN EXAMPLE
OF WHICH IS SOUTH HILLS HS IN W. COVINA
IT IS ALSO NOT THE HIGHEST & BEST USE OF
THE LAND - AN ECONOMIC REQUIREMENT

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Name SASSI (Last) HASSAINI (First) _____ (Middle Initial)

Address 1608 Timber Ridge Ln. (Number Street) Walnut (City) 91789 (Zip Code)

☒ I wish to address the meeting.

☒ I wish to make a written comment.

Comment:

6-6-17

WRITTEN COMMENTS TO SCOPING MEETING FOR WEST PARCEL SOLAR PROJECT, JUNE 7, 2017

UNITED WALNUT TAXPAYERS PRELIMINARY REVIEW OF NEGATIVE GEOTECHNICAL AND GEOLOGICAL ASPECTS OF CONSTRUCTING EARTHFILL PAD FOR A SOLAR FARM ON THE WEST PARCEL - DRAFT

1. Introduction

A licensed Engineering Geologist has been retained by United Walnut Taxpayers (UWT) to review of the report from Converse Consultants, dated December 19, 2014, from a geotechnical perspective, and grading plans prepared by Psomas and submitted to the City of Walnut on January 24, 2017. The purpose of this work was to assess the general geological setting of the site, assess the hazards and issues related to placement of earthfill at the site in accordance with grading plans received, and determine if it is possible to develop a project in a safe manner suitable to support the proposed earthfill development and maintain the integrity of the surrounding properties. Licensed Civil Engineers from United Walnut Taxpayers are overseeing this work and have prepared this draft summary document.

2. Initial Summary of Preliminary Expert Opinion of Converse and Psomas Reports

a. Significant Deficiencies in Converse Subsurface Investigations, Analysis and Baseline Geologic Data

i. Conclusions are not well supported and there is no discussion and/or analysis of significant issues.

ii. Poorly supported conclusions could impact the stability and safety of the project site and the safety of adjacent offsite properties and homes.

iii. Subsurface investigations did not provide for direct observation of geologic field conditions by a Professional Geologist and/or Engineering Geologist.

iv. Complex observations were performed by an Engineer-in-Training who is not trained or qualified to analyze geologic conditions and log field investigation borings.

v. Observations were based on the limited field sampling that was conducted. Data is lacking to create a geologic map and geologic cross-sections that illustrate the site geologic conditions.

vi. Insufficient surface and subsurface information is available from the Converse report to determine the earth materials that are present, and the geologic structure of the site.

vii. The Converse report did not recognize a significant landslide in the central hill of the project site present for more than thirty years (see Google Earth attachment), which is vulnerable to further sliding.

viii. Orientations of bedding planes at northwest portion of site were based on limited borings and are opposite to all relevant published geologic mapping.

ix. Inconsistencies in bedding plane orientation reported by Converse versus published geologic mapping is not explained or reconciled.

x. Converse concludes bedding planes near Regal Canyon Drive homes are oriented into the slope and stable, while all relevant, published geologic mapping shows bedding is oriented out of the slope and unstable to these homes and properties.

xi. The project results in potential significant negative impacts to Grand Avenue, including effects of potential liquefaction and induced settlement from adjacent earthfill over alluvial materials if left in place.

xii. Poorly defined and inadequate removal of unsuitable soils proposed can result in earthfill and foundation instability of the project, including placement of earthfill over an active landslide.

3. Review of the Geologic and Geotechnical Information

Several documents were reviewed in order to understand the geologic conditions underlying the site. The Converse report was based on subsurface exploration consisting of drilling, logging, and sampling various diameter borings in May 2014. Their investigation also included laboratory testing.

a. Partial Listing of Geologic and Engineering Documents Reviewed

i. Regional Geologic Map Generated by T.W. Dibblee (1989).

ii. Geologic and Landslide Potential Maps (Plates I and II), generated by the Los Angeles County Engineer for the City of Walnut as part of their General Plan (1974).

iii. Converse Consultants, Geotechnical Study Report, Proposed Fill Placement at the West Parcel, December 19, 2014.

iv. Psomas, Undated, South Campus Site Improvements - West, Mount San Antonio College, Undated.

v. UWT Engineering Geologist expert knowledge of geologic formations present at the site.

c. Preliminary Findings of Relevant Geological Mapping Review of West Parcel - T.W. Dibblee (1989), LA County Engineer (1974) and UWT Engineering Geologist (2017)

i. The Dibblee Regional Geologic map (1989) indicates the site is underlain by bedrock of the Tertiary Sycamore Canyon Formation and that bedding is generally striking northwest southeast and dipping to the northeast. The surrounding areas are indicated as being underlain by the Tertiary Yorba member of the Monterey (Puente Formation) with similar bedding orientations.

ii. The LA County Engineer, 1974, geologic map indicates, the site is underlain by bedrock of the Puente Formation. The central knob and adjacent hilltops are indicated as being underlain by sandstone and conglomerate, however, the lower portions of the hills are indicated as being underlain by the shales and siltstones.

iii. UWT Engineering Geologist observations confirm findings of the LA County Engineer (1974) and T.W. Dibblee (1989) geologic mapping.

iv. UWT Engineering Geologist observes bedding dip is generally east and sandstone and conglomerates are present. Where the shale and siltstone was observed, bedding dips to the east-northeast (similar to as indicated by T.W. Dibblee [1989]).

d. Converse Geological Investigation Does not Reveal Low Strength Silts and Shales and Presents Other Significant Omissions

i. Converse report indicates, *"the site is underlain by hard, cemented sandstone pebble conglomerate bedrock"*. There is no mention of the presence of siltstone and/or shales, indicative of lower strength materials, which could result in unstable conditions in overlying earthfill.

ii. The low strength of numerous observed laminations and bedded siltstones are not emphasized as they affect the stability of the overlying earthfill.

iii. There are few notations of earth materials encountered.

iv. Geologic contacts between the differing geologic materials are not indicated and no structural information (such as bedding orientations) is provided.

v. Site-specific geologic structural information is only discussed in the text as it relates to a single large-diameter bucket auger boring , indicating bedding that was generally dipping northwest

vi. The above cited northwest bedding dip by Converse is nearly opposite of the regional bedding orientations indicated on the T.W. Dibblee Regional Geology map (1989) and LA County Engineer geologic mapping (1974).

ix. Converse's observations from infrequent samples in the small diameter borings indicated bedding which had near horizontal to near vertical dips. These inconsistences are not presented or explained in the report.

The above statements and observations by Converse could potentially lead to conclusions that bedding orientations are generally into the slope and westerly, suggesting hillsides and hillside cuts are stable. In fact, there is evidence that actual bedding orientations dip out of the slope, as represented on all relevant geologic maps and field observation by our Engineering Geologist, resulting in unstable conditions.

4. Need for Qualified Personnel to Perform Geologic Field Observations

i. Inadequacies of Converse Field Observation Personnel

i. A Geologist or Engineering Geologist should perform a geological study, including direct observations of geologic field conditions such that field conditions are not overlooked or misinterpreted.

ii. An Engineer-in-Training who is not trained to analyze geologic conditions logged borings and performed field observations.

iii. Field observations were based on the limited field sampling that was conducted.

iv. Converse field personnel overlooked an obvious and significant landside that occurred on the central hill area of the site that by expert review of historical photographs took place several decades ago.

v. Improper field observations can lead to conclusions affecting the safe installation the project, but also the safety of adjacent properties and residences.

The practical consequence of inadequate field observations is that up to seventy (70) feet of earthfill would be placed over unmitigated landslide rupture surfaces, typically exhibiting low strength and subject to further movement, adjacent to a highly-travel public road. As noted below, limited sampling in other areas compromised liquefaction analyses and the consequences of bedding plane orientations on adjacent properties and residents.

5. Landslides/Mass Movements

a. Deficient Landslide Analysis Overlooked a Significant Existing Landslide at Grand Avenue and Other Adverse Geologic Features

i. Government codes and guidelines require a discussion of the potential for landsliding at any hillside site in California.

ii. No landslide analyses of mass movements/landsliding were conducted by Converse nor were landslides shown on any of their maps, cross-sections or indicated in the text of the report.

iii. No discussion is provided in the report other than relating to seismically induced landslides, which by site evidence does not account for existing landsliding that has occurred along Grand Avenue more than thirty years ago after the four-lane road was established.

iv. Aerial imagery from Google Earth clearly indicates landslide(s) exists on the eastern side of the central knob descending down to Grand Avenue (see attachment). The landslide area on the central hill is present in aerial imagery dating from after 1980 until the present.

v. The above referenced landslide is further validated through field visits to the site by our Engineering Geologist and former City officials with first-hand knowledge of at least two landslides that occurred at the subject site after Grand Avenue was expanded to four lanes.

vi. At least one of the above landslides at the central hill of the site closed the road (Grand Ave.) and covered all the lanes. In addition, siltstone and shale bedrock with eastward dipping bedding subject to landsliding was observed in this area.

vii. In addition to the landslide(s) discussed above, review of aerial imagery indicates other areas of the site, which may be underlain by landslides, or have the potential for landsliding.

viii. Geologic cross-sections were not prepared to show landslide extent and no stability analyses were conducted to determine if earthfill slopes or cuts in natural slopes were feasible.

ix. The Converse report did not reference the LA County Engineer Landslide Potential Map (1974) that indicates significant portions of the site have a High Landslide Potential (Plate II). Such a report is typical of city planning initiatives and is an obvious document to be sought out and reviewed.

x. Essentially any of the east facing slopes that are underlain by thinly bedded (laminated) bedding has a potential for landsliding. There are also several geomorphic features of the site that may be indicative of landsliding, but not investigated and analyzed by Converse.

The consequence of not identifying the landslide was that significant earthfill would have been placed over landslide rupture surfaces without any remedial measures, making it subject to future landsliding. The public safety consequences of a potential landslide on the highly traveled Grand Avenue are apparent.

6. Liquefaction

a. Abbreviated and Poorly Scoped Liquefaction Analysis Overlooked Liquefaction Potential Below the Proposed Earthfill and Near Grand Avenue

i. The Converse report identified portions of the site as having a potential for liquefaction according to the state of California (CGS, 1999).

ii. Several borings were excavated in these areas, but Converse conducted liquefaction analysis for only one of the borings.

iii. This boring was located in the southern canyon area where the alluvial deposits were the shallowest, and analyses concluded that the site was not susceptible to liquefaction and significant seismic settlement.

iv. Converse did not conduct liquefaction analysis for the northern canyon area where alluvium was deepest and more indicative of conditions subject to liquefaction.

v. Two borings that were excavated closer to the northern canyon were terminated without encountering bedrock.

vi. Groundwater was encountered in both these borings along with some loose alluvium typical of liquefiable materials. However, these boring were not analyzed for liquefaction potential.

vii. None of the above borings were excavated along the axis of the canyon or at the lower end of the canyon where the alluvium would be the deepest, groundwater would potentially be the shallowest, the potential for liquefaction would be the greatest.

viii. The total depth of alluvium was not modeled or investigated near Grand Avenue within this canyon.

ix. No analyses were conducted to determine the total depth of alluvium and obtain subsurface information the full length of the canyon for a proper liquefaction evaluation.

The groundwater observations, loose alluvial deposits encountered and deeper alluvium suggest susceptibility to liquefaction and potential instability in the overlying proposed earthfill and nearby Grand Avenue.

7. Slope Stability

a. Vital Slope Stability Analyses Were Omitted Throughout the Converse Document

i. Geotechnical reports generally require slope stability analyses for cut and fill slopes, including the highest fill slopes.

ii. Most agencies require proposed cut slopes over about 10 feet in height to be analyzed for geologic conditions and to determine orientation of bedding or other weak features.

ii. Out-of-slope bedding, as is the case at the West Parcel, requires specific analyses of these features.

iii. No geologic cross sections or geologic interpretations were prepared. Regional bedding attitudes and bedding observed by our Engineering Geologist elsewhere at the site indicated a significant potential for weak siltstone bedding dipping out of the slope.

b. No Stability Analysis Was Conducted for Cut Slopes, Including Critical Cut Slope Near Homes at Regal Canyon Drive

i. There are several proposed slopes that lack sufficient geologic information to prepare a geologic cross-section and/or conduct slope stability analysis.

iv. No stability analyses were conducted near homes at the northwest portion of the site, despite published adverse out of slope bedding recorded at the highest cut slope on the project.

v. The slope of most concern is the cut slope described above, proposed in the northwest portion of the site up to 40 feet in height, and located directly behind several existing homes.

vi. The report stated that the proposed cut slope would have neutral to favorable bedding attitudes due to the bedding observed in only one large diameter boring and very limited field sampling.

vii. However, published geologic mapping by T.W. Dibblee (1989) and the LA County Engineer (1974) show near opposite and adverse bedding orientation out of the slope similar to other bedding orientations on the project.

viii. Converse provides no explanation of the above inconsistency.

ix. Two smaller borings in this area found siltstone with no apparent bedding. However, an Engineer-in-Training who is not trained to analyze geologic conditions

logged these borings, and the observations were based on the limited sampling that was conducted.

x. The proposed high cut slope would potentially remove natural resisting forces to landsliding along these beddings planes and could represent a significant hazard to offsite properties and existing homes at this location along Regal Canyon Drive.

c. Vulnerable Orientation of Easterly Dipping Bedding Planes are Not Highlighted in Converse Report

i. The landslide at the central hill along Grand Avenue likely took place along easterly out of slope bedding orientations.

ii. Necessary removals of loose alluvium or removals in areas with High Landslide Potential could concurrently remove hillside materials that provide resisting forces to landsliding.

iii. The above condition would likely apply to homes and properties on Regal Canyon Drive (to the west) and on Stonybrook Drive (to the east) since slopes near these properties have essentially the same bedding orientation observed at the central hill.

d. Existing Landslide at Grand Avenue Posing Risk to Earthfill Project Was Overlooked

i. The slope along Grand Avenue consists of variable cut, fill, and in some locations, fill over the existing slope.

ii. The central portion of the Grand Avenue site is underlain by the landslide.

iii. The proposed cut slope in this area will most likely not remove all the landslide debris, and the underlying cause(s) of the landslide.

iv. Additional landslide movement can potentially occur with the placement of overlying earthfill and without removing all landslide rupture surfaces.

v. The geologic conditions have not been modeled by Converse for the differing conditions along the length of this slope nor has the existence of the landslide been identified.

8. Remedial Removals and Measures to Mitigate Landslide Mass Movements

a. Project Description of Remedial Soil Removals is Poorly Defined

i. Converse report states that "loose, disturbed or unsuitable alluvial soils" is to be removed from the surface of the West Parcel site before placing earth fill.

ii. The above statement is difficult to interpret and is not well defined as to the precise depths and/or criteria for remedial soil removals on the project site. A definition of "loose and unsuitable soils" is also not provided within the report.

iii. Based on the alluvial deposits encountered in Converse borings, remedial soil removal would likely be at least 20 feet in depth.

iv. Removal of landslide materials are likely greater than 20 feet in depth and could at least double earthwork quantities for the project.

b. Remedial Soil Removals May Result in Destabilizing Adjacent Natural Slopes

i. At the south end of the project, hillsides would be undercut by remedial soil removals and preparations for earthfill placement, and would potentially be destabilized because of out of slope bedding, along with adjacent properties and homes along Stonybrook Drive.

ii. UWT Engineering Geologist recommends that the extent of soft, yielding soils cited by Converse should be explicitly defined in order to address remedial removals.

iii. Similar to the above soft, yielding soil conditions, the LA County Engineer Geologic and Landslide Potential Maps (1974) depict unsuitable soil and geologic conditions over a substantial portion of the site.

iv. The occurrence of an existing landslide at the site suggests potential for landslides with similar east facing slopes, underlain by thinly bedded (laminated) east-facing bedding.

v. The need to remove unsuitable alluvial soils is demonstrated in areas with High Landslide Potential on the 1974 maps, which left unmitigated could lead to instability in proposed earthfill and foundation materials.

c. Placement of Earthfill over Alluvium Poses Potential Risk of Settlement of Earthfill and Induced Settlement of Grand Avenue

i. Removal of alluvium along Grand Avenue, where the alluvium will be the thickest, has not been discussed and/or modeled.

ii. If alluvium is remaining adjacent/beneath Grand Avenue and additional filling is proposed over the alluvium, then there is potential that this proposed condition will result in settlement under the earthfill, as well as induce settlement beneath Grand Avenue.

iii. Potential induced settlement of Grand Avenue and the underlying major utilities that likely exist within the road prism may be a significant issue.

iv. The above potential settlement conditions were not discussed or analyzed in the Converse report, leaving significant settlement issues and consequences unaddressed.

d. Plan for Remedial Soil Removals Omitted from Plans

i. Remedial soil removals were discussed by Converse however, estimated depths of removal and the criteria to determine if removals are sufficient were not provided.

ii. Remedial soil removal can affect many other issues including total and differential settlement, potential for collapse, and the stability of existing slopes.

iii. A remedial measure map was omitted that would indicate all the recommended remediation necessary for safely grading the site.

iv. Lacking clear definition of remedial removals, the integrity of the underlying foundation materials and proposed overlying earthfill cannot be determined, and remedial removals when defined can become a significant cost issue.

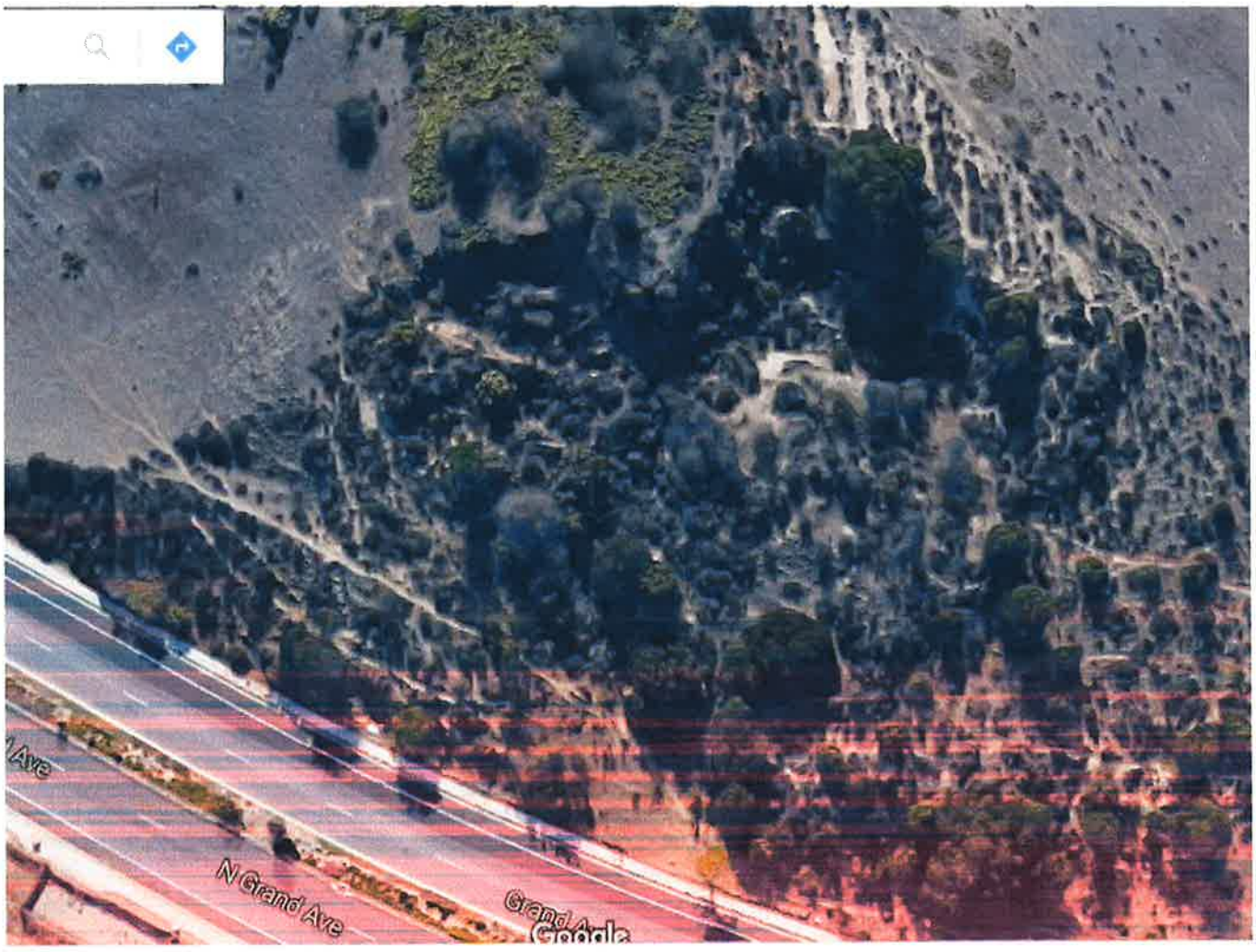
e. Potential for Similar Landsliding from Slope Undercutting and Adverse Bedding Orientations Exists at Central Hill and Near Regal Canyon Drive

i. The landslide at Grand Avenue occurred about 1980 shortly after Grand Avenue was widened to four lanes in the late 1970's, likely from the undercutting of the central hill near the roadway.

ii. Homes on Regal Canyon Drive were built between 1980 and 1995, separated by about 0.15 miles from the central hill by an intervening canyon.

iii. The proposed project grading would undercut hillside slopes north of these homes by up to 40 feet, potentially causing similar landsliding along out of slope bedding planes.

Attachment
Google Earth Image of Existing Landslide at West Parcel Site



PUBLIC COMMENT

MT. SAN ANTONIO COLLEGE

WEST PARCEL SOLAR PROJECT SCOPING SESSION

If you wish to address the meeting, please fill out this card completely and give it to the moderator. Comments are limited to four (4) minutes. Alternately, you may leave a written comment below, or attach a comment.

Name Someya (Last) Laviana (First) (Middle Initial)

Address 21229 (Number) Stonybrook Dr (Street) Walnut (City) 91789 (Zip Code)

☒ I wish to address the meeting.

☒ I wish to make a written comment.

Comment:

My property is right next to the project. I don't oppose the solar technology, HOWEVER I am opposed to the location of the solar farm. Deeply concerned about the impact of the project on the hillside and my property, the property value If damages to my property happen, will MT SAC pay for it?

Any studies on the long term effects of having such a big solar farm next to residents.

Thank you

PUBLIC COMMENT

MT. SAN ANTONIO COLLEGE

WEST PARCEL SOLAR PROJECT SCOPING SESSION

If you wish to address the meeting, please fill out this card completely and give it to the moderator. Comments are limited to four (4) minutes. Alternately, you may leave a written comment below, or attach a comment.

Name WEINER (Last) TOM (First) (Middle Initial)

Address 21201 (Number) LA PUENTE (Street) WALNUT (City) 92562 (Zip Code)

☐ I wish to address the meeting.

☒ I wish to make a written comment.

Comment: PLEASE SEE ATTACHED DOCUMENT FROM THE CITY OF WALNUT.

P.O. Box 682, Walnut, CA 91788-0682
21201 La Puente Road
Walnut, CA 91789-2018
Telephone (909) 595-7543
FAX (909) 595-6095
www.cityofwalnut.org

CITY OF WALNUT

June 7, 2017

Via E-Mail and Certified Mail

Rebecca Mitchell, Manager, Facilities Support Services
Facilities Planning & Management
Mount San Antonio College
1100 North Grand Avenue
Walnut CA 91789-1399

SUBJECT: Notice of Scoping Session for the Mt. San Antonio Community College District's (Mt. SAC) West Parcel Solar Project

Dear Ms. Mitchell:

The City of Walnut has received (via certified mail) the Notice of Scoping Session for Mt. SAC West Parcel Solar Project (WPSP), to be held on Wednesday, June 7th, 2017 at 5:00 p.m. at the Facilities Planning and Management Offices, Bldg. 46, Room 1050. The City appreciates the efforts by neighboring public agencies and school districts to disseminate reports and documentation on projects that will have significant impacts to the City and our residents.

Pursuant to the Court's recent decision in the *United Walnut Taxpayer's v Mt. SAC et. al.* (Los Angeles County Superior Court Case No. BC576587), the City is eager to engage in further discussion of the proposed WPSP.

In an effort to maintain open and effective communications between the City of Walnut and Mt. SAC, this letter provides the City's written comments concerning areas of significant environmental impacts of the WPSP in response to the Notice of Scoping Session.

The City encourages Mt. SAC to closely comply with the mandates of the California Environmental Quality Act (CEQA) and urges Mt. SAC to consider the benefits of preparing an Environmental Impact Report (EIR) for the WPSP. The City notes the following areas and/or potential impacts of specific concern to the City and the community:

- Impacts from any proposed truck haul routes on City streets addressing traffic, traffic safety, air quality and noise impacts
- Hillside geologic/geotechnical impact
- Aesthetics impacts and scenic highway preservation
- Water and air quality impacts
- Habitat preservation and forestry resources impacts

In addition, we note that the Mt. SAC Site Zoning Map (Exhibit 5) included in the Notice of Scoping Session denotes a "Solar/Retail" designation on the West Parcel. Please clarify whether the WPSP includes a retail component. If so, Mt. SAC should analyze the land use and planning impacts of the WPSP in light of the current Hillside Single-Family Residential Walnut General Plan Land Use Designation and Residential Planned Development 61,700 – 0.6 DU Zoning District classification of the West Parcel.

Lastly, the City encourages Mt. SAC to consider whether environmentally superior alternatives exist to the WPSP, which may, in turn, materially change the scope of work required for the project and lessen the impact to the City and its residents.

Thank you for giving the City of Walnut the opportunity to comment with respect to the environmental scoping related to the WPSP. If you have any questions, please feel free to contact me at (909) 595-7543.

Sincerely,

Tom Weiner
Director of Community Development

Derrick Womble
Senior Management Analyst

Cc: Robert M. Wishner, City Manager
Barbara Leibold, City Attorney
Justin Carlson, City Planner
Teresa De Dios, City Clerk

PUBLIC COMMENT

MT. SAN ANTONIO COLLEGE

WEST PARCEL SOLAR PROJECT SCOPING SESSION

If you wish to address the meeting, please fill out this card completely and give it to the moderator. Comments are limited to four (4) minutes. Alternately, you may leave a written comment below, or attach a comment.

Name Wilkins Jesse A

Last First Middle Initial

Address 21315 E STOCKTON BASS RD WALNUT

Number Street City Zip Code

☒ I wish to address the meeting.

☐ I wish to make a written comment.

Comment:

SSI Planning Proposal V-2016-11-09

Project Name	Mt. San Antonio College	
Project Address	1100 N Grand Ave, Walnut, CA 91789	
Project Size	2,206,980	DC
Project Cost /W	$ 3.01	Per Watt
Project Cost	$ 6,643,009.80	

Material Cost	Description	Actual Cost
Solar Modules	Canadian Solar	$ 1,349,004.80
Inverter	SMA or Similar	$ 302,352.60
Electrical & Wires	Wire, conduit, disconnects, combiner	$ 468,494.00
Monitoring and DAS		$ 19,950.00
Sales Tax		$ 192,582.13
Carport Installation and Design		
Carport Design and Installation		$ 2,663,430.00
Design		
Project Management		$ 50,450.00
Design		$ 67,608.00
Labor		
SSI labor and Construction		$ 1,219,433.40
Electrical Upgrade-Not Included		
Utility Company	N/A	$ -
Others		
1 Yr Maintenance		$ 32,712.00
Permits, Documentation, Warranty, etc		$ 149,496.00
Testing and Start up		$ 20,618.00
Financial Charges		
Interest	N/A	$ -
Profit & Overhead		$ 106,878.87

Line Items

PLANNING PROPOSAL FOR:
Mt San Antonio College (DSA)

CLIENT: **Ronnie Arce**
Sunvalley Solar Tech
Phone: **909.598.0618**
Email: **ron.a@sunvalleysolarinc.com**

DATE: November 1, 2016

PARKING CANOPY SPECIFICATIONS, PROJECT SPECIFIC

• Total System Size (DC):				2.21 MW
• Number Of Modules Supported:				6,588 modules
• Module Tilt:				7 degrees
• Module Manufacturer/Model Number:				72 Cell
• Module Wattage:				335 watts
• Module Orientation:				Portrait
• Minuimum Structure Clearance (At Drive Aisle):				10 ft
• Bay Size / Coumn Spacing:				32 ft
• Structure Type				CP-T
• Structure Finish:				All Galvanized
• Assumed Loading (Pending Local Verification):	IBC2012	0	psf snow	110 mph wind

Structure	Aisle or Perimeter	Length (ft)	Width (ft)	Panels/ Length	Panels/ Width	Panels/ Structure	Structure kW	Structure Type
1	Aisle	363	39.0	110	6	660	221.10	Single Slope
2	Aisle	363	39	110	6	660	221.10	Single Slope
3	Aisle	363	39	110	6	660	221.10	Single Slope
4	Aisle	363	39	110	6	660	221.10	Single Slope
5	Aisle	356.5	39	108	6	648	217.08	Single Slope
6	Aisle	330	39	100	6	600	201.00	Single Slope
7	Aisle	317	39	96	6	576	192.96	Single Slope
8	Aisle	238	39	72	6	432	144.72	Single Slope
9	Aisle	284	39	86	6	516	172.86	Single Slope
10	Aisle	238	39	72	6	432	144.72	Single Slope
11	Aisle	238	39	72	6	432	144.72	Single Slope
12	Aisle	172	39	52	6	312	104.52	Single Slope

*All structure layouts reflect RBI DSA Precheck Design

GENERAL RACKING SPECIFICATION

- RBI Solar is **NOT** responsible for PV system design or shading analysis as related to PV system production.
- A signed and sealed geotechnical report is required for final foundation design and submittals to the local building authorities.
- Layouts are subject to customer review and approval. All layouts shall be approved by customer prior to placement for orders of any materials.

MATERIALS & DESIGN ONLY SCOPE OF WORK:

- RBI Solar shall provide drawings signed and sealed by a Professional Engineer registered in the State of CA. Submittal process, special inspections and fees are not included.
- A soils report and underground utility location to be provided by others is required for final foundation design and submittal to building department. Foundations and conditions other than those specified may incur increased cost.
- Posts and top chord (superstructure) for a canopy system.
- Racking system, including all hardware and module mounting hardware.
- All members and hardware are galvanized steel with Columns and Top Beams hot dipped to ASTM A123 and purlins pregalvanized to a G140 minimum. Module hardware is stainless steel.
- All member connections shall be bolted. No on-site welding shall be required.
- Lights, electrical wiring and grounding/bonding material (unless called-out in Pricing section below) are NOT included.
- Sales/Use Tax and Permit Fees, NOT included unless specifically called-out in Pricing section below.
- Freight to site is included. Unloading is by others.

INSTALLATION SCOPE OF WORK:

- Labor for installation is assumed to be non-union prevailing wage rates.
- Installation to be performed by RBI Solar installation crews. Any special labor requirements including the use of electricians or unions is not included unless stated in the pricing section below.
- Foundation installation for surface parking lot canopies assumes normal soil conditions and 36" diameter drilled piers up to 11.75' in depth with no interference from underground utilities, water, drilling through rock or collapsible soils needing caissons. Foundations are to be installed to finish at grade.
- Columns to be set directly on concrete piers with chemical anchors or wet set anchor bolts.
- Uninterrupted access to the entire parking area shall be provided. Access is assumed to be at least 12 hours per day and 6 days per week. Restrictions to the working hours and area may result in additional cost.
- Temporary fencing, barricades or storage trailers necessary to secure site are NOT included.
- General Contractor shall provide dumpster or provide for trash removal from site. RBI to put debris in dumpster.
- Module installation is excluded, unless specifically called-out in Pricing section below. Module installation, by RBI Solar, is not available if decking is being installed.
- Disposal of clean soil/spoil created from the foundation installation is included. All permitting, inspection or remediation by others.
- Dumpsters, portolets and temporary electric are NOT included.

GROUNDING AND WIRE MANAGEMENT:

- Grounding hardware for modules and racking is NOT included (unless called-out in Pricing section below).
- Module grounding to be per module manufacturer's installation instructions. RBI Solar's racking is WEEB compatible for certain applications please check with the AHJ and the module manufacturer's installation manual.
- Base design includes prepunched holes in the purlin for wire management.

CUSTOMER RESPONSIBILITIES:

- A signed and sealed geotechnical report for final foundation design and submittals to the local building authorities.
- All special inspections. RBI will help coordinate.
- As built survey including topographic information and underground utility locations

Contract Terms and Conditions:

- Reference Attachment "RBI Solar Terms and Conditions". Available upon request.

PRICING: Pricing, per scope of work as defined above in this proposal:

Permit Fees, Bonds and Special Inspections, if applicable, are not included.			**$$/Watt**
PRICE - MATERIALS & DESIGN:		**$1,003,000**	**$0.454**
Price includes:			
• **Design**	• **Super Structure & Racking System**		
• **Stamped Engineered Drawings**	• **Freight**		
• **WEEBs for Module Grounding**			
Installation of Racking & Concrete Foundations (Prevailing Wage Rates):		**$1,250,400**	**$0.567**
Price includes material & labor for:			
• **Anchor Bolts**	• **Rebar**		
• **Equipment Rental**	• **Drilling**		
• **Steel Erection**	• **Concrete**		
• **Additional Foundation Cost For Foundations Deeper Than 11.75':**	**$ 401 /lf**		
Add for 36" Raised Piers Foundations:		**$182,900**	**$0.083**
Estimated Tax:		**$100,300**	**$0.045**

Due to steel price volatility, this quote is valid for 45 days and subject to reconfirmation thereafter or indexed to CRU.

CONTRACT PAYMENT TERMS:	Contract Value	Description of Work
	20%	Deposit With Order
	40%	Release Of Materials For Fabrication
	20%	First Delivery of Material to Site
	20%	Last Delivery of Material to Site

Labor to be billed on a percentage complete basis **All invoices except the deposit to be Net 30**

Thank you for your interest in RBI Solar, if you have any questions about this proposal or RBI Solar, please contact:

Contact: Adam Brescia **Phone:** 925-457-3076

Email: abrescia@rbisolar.com

A 20-page promotional booklet of Solar Mounting Systems

from RBI Solar with photos and selected specifications was included with the attachment.

The material is not included herein but is available from Facilities Planning and Management upon request. Please contact faciltiesplanning@mt.sac.edu

Cost Comparison for Mt SAC Solar Project

Source	Cost/Watt	Total Cost	Comments
October 12, 2016 BoT Meeting	$6.24	$13,723,645	West Parcel, site improvement included for 2.2 MW
RBI/Sunvalley Solar Inc.	$3.02	$ 6,643,009	Car Port System for 2.21 MW
November 2013 Mt SAC presentation	$6,19	9,280,000	Car Port for 1.5 MW/year 2021 with escalation, no Prop 39 funds
November 2013 Mt SAC presentation	$3.13	6,250,000	West Parcel with incentives and Prop 39 funds for 2MW

SUNVALLEY
SOLAR
Google

What Health Concerns Come With Installing Residential Solar Panels?

September 18, 2015 / in Residential, Solar Panels /

[https://1stlightenergy.com/health-concerns-come-installing-residential-solar-panels/]

Buzzwords and misconceptions have gotten our species into a lot of trouble over the years, as we fear or find things around us according to information that may not be the most accurate.

Of course, anyone interested in investing in new solar panels should do thorough research, consulting the experts in health and solar energy systems. And as such experts, let 1st Light Energy dispel any health concerns.

The Truth About Ultra-Violet Light

While it may seem like a large amount, the frequencies of UV light absorbed by solar panels are actually **less than those of the average cell phone**. So unless you would give up your cell phone, there's no need to worry.

Actually, present-day solar panels don't even use UV light

1 Shares
1

for energy, though new technological breakthroughs are leading in that direction. Instead, the far ends of the light spectrum, UV and infrared, are simply absorbed as heat by solar panels. This is **no different, in essence, than what a sheet-metal roof does**. Fluorescent lights, however, do use UV light, sourced via tube-internal, mercury vapors. The white coating inside the fluorescent bulb's glass converts this UV light to visible light. So there is more reason to be concerned with light bulbs inside your home than with solar energy panels on top.

What About Radioactivity?

Another stone thrown at modern solar panels is that they are radioactive. In that sense, your radio also uses radio waves, and so can (technically) be called "radioactive". The inverter, which converts the immediately produced DC current to usable AC current, is said to be the problem. The wires connected to the inverter are sometimes said to "act like radiation antennas" and wreak all kinds of health havoc even hundreds of feet away. New, more efficient, batteries used in solar panels during a blackout are also named as a culprit in this "radioactive crime." The extremity of the claim, combined with the quick sales pitch for DC-current-only solar cells that often follows these claims ought to be tip offs.

The Toxic, Heavy Metals Scare

A final assertion that is sometimes made is that solar panels contain toxins present in heavy metals used in their construction. For the most part, this is not true. Copper,

silicon, and aluminum are the most common components. However, there are some varieties of photovoltaic solar panels that do contain cadmium and selenium, and up and coming panels look like they will have traces of heavy metals like indium, gallium, and nitrogen. Yet, these systems bind all potentially toxic metals to other elements and then tightly enclose them in the inner depths of the solar cell. Modern solar cells are severely tested to stand up against wind, rain, hail, heat, and other outdoor challenges. Even the little bit of toxins present in certain solar panels are in a relatively harmless form and are tightly sealed off.

The Future Prospects of Solar Panels

Solar energy is getting cheaper, more common, and more efficient. At present, only about 30% of the light spectrum is used by any given panel, and this is a great improvement over earlier models. The ability to harness the full light spectrum is nearly within reach, however.

Take silicon panels as an example. They are highly efficient with red light but not with blue light. Each type of metal that is laid in a thin layer across a solar panel reacts differently to different light wavelengths. Red light causes the electrons of the metal silicon to be displaced, move about, and generate electricity. Blue light does not much affect silicon, however.

Future solar panels are going in the direction of “stacking.” Each layer of the panel will have a thin, metallic coating that reacts to a specific light frequency. There are even metals that could be used to take advantage of UV light, which is actually the highest-energy light in the spectrum. Nothing seems, as yet, to get much out of infrared, however.

Light would hit one layer of the panel after the other, and each layer would react to a particular “color” of light. This could lead to 90% or more efficiency and a huge boost in how much solar energy a panel produces.

Conclusion

Despite a recent battering with claims that solar panels are a health hazard, solar energy is progressing by leaps and bounds. UV light, radioactivity, and toxic metals have been used as reasons to call solar energy “dirty electricity.” Still, where is little evidence that anyone has been actually harmed by a solar panel just doing its job.

[https://1stlightenergy.com/request-a-solar-quote/]

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GABRIELEÑO BAND OF MISSION INDIANS - KIZH NATION
Historically known as The San Gabriel Band of Mission Indians
recognized by the State of California as the aboriginal tribe of the Los Angeles basin

Facilities Planning & Management
1100 North Grand Ave
Walnut, CA 91789

June 9, 2017

Re: AB52 Consultation request for Mt. San Antonio College West Parcel Solar Project Located: West of Grand Ave on an undeveloped parcel

Dear Rebecca Mitchell,

Please find this letter as a written request for consultation regarding the above-mentioned project pursuant to Public Resources Code § 21080.3.1, subd. (d). Your project lies within our ancestral tribal territory, meaning descending from, or a higher degree of kinship than traditional or cultural affiliation. Your project is located within a sensitive area and may cause a substantial adverse change in the significance of our tribal cultural resources. Most often, a records search for our tribal cultural resources will result in a "no records found" for the project area. The Native American Heritage Commission, ethnographers, historians, and professional archaeologists can only provide limited information that has been previously documented about California Native Tribes. This is the reason the Native American Heritage Commission (NAHC) will always refer the lead agency to the respective Native American Tribe of the area because the NAHC is only aware of general information and are not the experts on each California Tribe. Our Elder Committee & tribal historians are the experts for our Tribe and are able to provide a more complete history (both written and oral) regarding the location of historic villages, trade routes, cemeteries and sacred/religious sites in the project area. Therefore, to avoid adverse effects to our tribal cultural resources, we would like to consult with you and your staff to provide you with a more complete understanding of the prehistoric use(s) of the project area and the potential risks for causing a substantial adverse change to the significance of our tribal cultural resources.

Consultation appointments are available on Wednesdays and Thursdays at our offices at 901 N. Citrus Ave. Covina, CA 91722 or over the phone. Please call toll free 1-844-390-0787 or email gabrielenoindians@yahoo.com to schedule an appointment.

** Prior to the first consultation with our Tribe, we ask all those individuals participating in the consultation to view a video produced and provided by CalEPA and the NAHC for sensitivity and understanding of AB52. You can view the video at: http://nahc.ca.gov/2015/12/ab-52-tribal-training/

With Respect,

Andrew Salas, Chairman

Andrew Salas, Chairman | Nadine Salas, Vice-Chairman | Christina Swindall Martinez, secretary
Albert Perez, treasurer I | Martha Gonzalez Lemos, treasurer II | Richard Gradias, Chairman of the Council of Elders
PO Box 393, Covina, CA 91723 | www.gabrielenoindians.org | gabrielenoindians@yahoo.com

PUBLIC COMMENT

MT. SAN ANTONIO COLLEGE

WEST PARCEL SOLAR PROJECT SCOPING SESSION

If you wish to address the meeting, please fill out this card completely and give it to the moderator. Comments are limited to four (4) minutes. Alternately, you may leave a written comment below, or attach a comment.

Name ABOU-TALEB LAYLA

Last First Middle Initial

Address 1608 N. TIMBER RIDGE 91789

Number Street City Zip Code

☒ I wish to address the meeting.

☐ I wish to make a written comment.

Comment:

PUBLIC COMMENT

MT. SAN ANTONIO COLLEGE

WEST PARCEL SOLAR PROJECT SCOPING SESSION

If you wish to address the meeting, please fill out this card completely and give it to the moderator. Comments are limited to four (4) minutes. Alternately, you may leave a written comment below, or attach a comment.

Name Eibert (Last) Lily (First) (Middle Initial)

Address 21830 Oakwood Way (Number Street) Walnut (City) 91789 (Zip Code)

☐ I wish to address the meeting.

☑ I wish to make a written comment.

Comment: I'm a fan of Mt Sac as I attended classes here before and my kids currently attend "College for Kids". I think solar power is a great way to generate electricity & savings for the school but NOT on undeveloped land! Having it over parking lots or roof tops would be preferred.

My family has lived in Walnut since 1978 and all the natural undeveloped land is disappearing.

I'm also a realtor and buyers have already expressed concern about buying near Snow Creek due to this possible solar farm. It's a fact that property values will be affected.

PUBLIC COMMENT

MT. SAN ANTONIO COLLEGE

WEST PARCEL SOLAR PROJECT SCOPING SESSION

If you wish to address the meeting, please fill out this card completely and give it to the moderator. Comments are limited to four (4) minutes. Alternately, you may leave a written comment below, or attach a comment.

Name Melton Rhonda
Last First Middle Initial

Address 21219 Amybrook Dr Walnut 91789
Number Street City Zip Code

☑ I wish to address the meeting.

☐ I wish to make a written comment.

Comment:

PUBLIC COMMENT

MT. SAN ANTONIO COLLEGE

WEST PARCEL SOLAR PROJECT SCOPING SESSION

If you wish to address the meeting, please fill out this card completely and give it to the moderator. Comments are limited to four (4) minutes. Alternately, you may leave a written comment below, or attach a comment.

Name GONG (Last) ALICE (First) C (Middle Initial)

Address 21035 (Number) STONY BROOK DRIVE (Street) 91789 (Zip Code)

City

☑ I wish to address the meeting.

☑ I wish to make a written comment.

Comment:

REQUST COPY OF EIR

PUBLIC COMMENT

MT. SAN ANTONIO COLLEGE

WEST PARCEL SOLAR PROJECT SCOPING SESSION

If you wish to address the meeting, please fill out this card completely and give it to the moderator. Comments are limited to four (4) minutes. Alternately, you may leave a written comment below, or attach a comment.

Name MELTON JAMES

Last First Middle Initial

Address 21219 STONYBROOK DR WALNUT 91789

Number Street City Zip Code

☒ I wish to address the meeting.

☐ I wish to make a written comment.

Comment:

James Melton, 21219 Stonybrook Dr., Walnut, CA 91789 Walnut Resident 26 years.

The Photovoltaic System that has been planned for the West Parcel will butt up against my property line. I am here to voice my opinion against this project and offer an alternative solution that should be considered by the trustees.

While researching for tonights meeting I uncovered some interesting info:

From the Mt SAC website "The Photovoltaic System was approved by the Board of Trustees in July 2015. The projected cost of the project is $3.8m which includes moving dirt from the parking structure site, environmental mitigations, fencing and landscaping. This Project, plus our existing cogeneration plant, will move Mt. SAC closer to energy independence". This project will consist of the development of a solar power generation system on the area of campus commonly known as the "West Parcel," a triangular piece of land located west of Grand Avenue, south of Temple/ Amar, south of the "Christmas tree lot." This ground-mounted system will generate two megawatts of electricity for the campus and will save the college a projected $480,000 in energy costs annually.

5 key points from this statement :

- MOVING DIRT
- COST $3.8m
- ENERGY INDEPENDENCE
- 2 MEGAWATTS OF POWER
- SAVE $480,000 PER YEAR

From SGV Tribune 12/02/2013 -The Historical Hilmer Lodge Stadium "Construction will start in the summer of 2015 and be completed in early spring or summer 2017, according to contractors at the press event. About 50,000 cubic yards of dirt will be moved from the surrounding hills – about 4,550 dump-truck loads, said Kiki Phillips-Alonge, project manager."

- So are we to assume that since the Parking Structure Project has been placed on hold, the 50,000 cubic yards from the Stadium Project is going to be moved to the "West Parcel"?

From SGV Tribune 10/27/2016 "Mr. Scroggins was asked by a member of the group if he would be willing to reconsider the location of the solar farm, something residents say should be put atop campus buildings and on carport structures. After first saying

it was not up to him but to the college board of trustees, he said: "No direction has been given by the board or by me," promising that the college is going into mediation with an open mind.
However, the college rejected any alternative, saying "the west parcel," land owned by the college since 1946, was best for the project. Photovoltaic arrays on rooftops or on carport structures, such as done by high schools, City of Industry and Metrolink, would cost more and would not produce enough electrical energy, explained Jill Dolan, director of public relations.
She said the project is not using bond money from one of the college's two recent improvement bonds. Instead, the college received funding from Proposition 39, a green-energy measure passed by voters in 2012. The college wants to fulfill the governor's call to reduce fossil-fuel consumption and greenhouse gases that cause global warming.
"We are committed to reducing our carbon footprint," Dolan said. "This project is right in line with that. So, there are no conditions under which we will stop the solar project."

- Yes there is-Court order to stop work.

The article continues "The college wants to level a hillside across the street from campus on the southwest corner of Amar Road and Grand Avenue to construct a massive photovoltaic array that would be one of the largest solar power systems in a Los Angeles County community. Mt. SAC plans on spending between $7 million and $9 million on the 11-acre project that would produce 2.2 megawatts of electricity and supply about one-third of the college's electrical power, while cutting $480,000 from its annual electric bill."

4 key points of this article:
- Cost more to install carports or rooftops.
- Project is costing $7-9 million
- 11 acre project will produce only 2.2 megawatts 1/3 the need
- Site is "best for the project"

I would like to focus on the term Best Use in real estate.

The Appraisal Institute defines highest and best use as follows:
The reasonably probable and legal use of vacant land or an improved property that is physically possible, appropriately supported, financially feasible, and that results in the highest value.

- Physically Possible-Sure
- Appropriately Supported:Financially-Yes, Public Opinion-NO
- Financially Feasible: Prop 39 Bond Money
- Results in the Highest Value: Results in Zero Added Value

So here is the point. The West Parcel Project as it is currently envisioned only solves one problem. What to do with 50,000 cubic yards of dirt from the Stadium Project. The West Parcel has been forgotten since it was acquired by the college in 1946. The only reason it has been considered for the Solar Project was to provide a cheap dumping ground for the excess dirt from the ongoing Stadium construction project.

The New Solar Project

- 8 Megawatt project to cover 100% of the current and future needs of Mt. SAC.
- Install Solar Canopies on EXISTING the parking lots A, B, D F, G, H, open areas within the Natural boundaries of the college and Rooftop installations on any new construction (Business and Tech Complex) going forward.
- Spend the same amount of money to achieve better results.
- More appealing visually to the campus and community.
- Provides much needed shade to the 1000's of cars in the parking lots
- Saves millions

Parking Lot M is 11 acres of flat parking that would be a perfect spot to put a 2.2 megawatt project. Since this area is "TEMPORARY" and across from the college boundaries its use should be a secondary priority.

In June 2015 Jim Hughes, CEO of First Solar was speaking at the Edison Electric Institute meet in New Orleans and he said "By 2017, We will be under $1.00 per watt fully installed"

That would make the project come is at $8-10 million. Makes much more financial sense than the $14 million+ number that was discussed at the last meeting.

The Solar Canopy Solution

- Solar canopies are elevated structures that host solar panels and provide shade. These overhead solar panel installations are typically installed in parking lots or other paved areas.
- Solar canopies are an efficient use of space-Parking lots are an untapped opportunity for solar installations all across the country. According to the Lawrence Berkeley National Laboratory, pavement makes up 35 to 50 percent of total surface area in cities, and 40 percent of that pavement is parking lots. Installing a solar

canopy over an existing parking lot is simply a more efficient use of space than installing a standard ground-mounted system

- Solar panel parking lots also provide shade-If you've ever had to get into a hot car that has been sitting in the sun all day, it's easy to understand why the shade that solar parking canopies offer is another major benefit. However, shade isn't just a matter of comfort in your car. When you build a solar canopy in your parking lot, the shade it provides can also improve the fuel economy of cars that park under it. According to FuelEconomy.gov, running your car's air conditioning (AC) system is the main cause of reduced fuel economy in hot weather. Under very hot conditions (such as when your car has been baking in the hot sun), using the AC can reduce a conventional vehicle's fuel economy by more than 25 percent. For hybrids, plug-in hybrids, and electric vehicles, the effect can be even larger. By keeping cars cool on hot days, solar parking lots reduce the need for heavy air conditioning use.
- Solar Canopy parking can be oriented for maximum production-Rooftop solar arrays are restricted by the characteristics of the roof on which they are installed.

Finally, what to do with the West Parcel. Give it to the City of Walnut. We have a need for an Aquatic Center, A Multi-Function Community Hall, A new park or keep it as open space.

PUBLIC COMMENT

MT. SAN ANTONIO COLLEGE

WEST PARCEL SOLAR PROJECT SCOPING SESSION

If you wish to address the meeting, please fill out this card completely and give it to the moderator. Comments are limited to four (4) minutes. Alternately, you may leave a written comment below, or attach a comment.

Name Richards George C.
Last First Middle Initial

Address 1689 S. Lost Trail Dr. Walnut 91789
Number Street City Zip Code

☐ I wish to address the meeting.

☒ I wish to make a written comment.

Comment: I believe that the location is not desirable because of the view that we would lose as we enter beautiful Walnut. I have seen many schools that are placing solar Panels in the parking lot. This creates shade for the cars.

I am against the proposed placement of the Solar Panels along Grand Ave. Please re-consider this project. We love our city for its Natural look.

Thank you

PUBLIC COMMENT

MT. SAN ANTONIO COLLEGE

WEST PARCEL SOLAR PROJECT SCOPING SESSION

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Name SASSI (Last) HASSAN (First) (Middle Initial)

Address 1608 N. Timber Ridge Ln. (Number Street) Walnut (City) 91789 (Zip Code)

☒ I wish to address the meeting.

☐ I wish to make a written comment.

Comment:

PUBLIC COMMENT

MT. SAN ANTONIO COLLEGE

WEST PARCEL SOLAR PROJECT SCOPING SESSION

If you wish to address the meeting, please fill out this card completely and give it to the moderator. Comments are limited to four (4) minutes. Alternately, you may leave a written comment below, or attach a comment.

Name SMITH (Last) RANDY (First) L. (Middle Initial)

Address 20852 (Number) BUCKLAND DR. (Street) WALNUT (City) 91789 (Zip Code)

☐ I wish to address the meeting.

☒ I wish to make a written comment.

Comment: SEE ATTACHED...

Are there outside funding sources being made available for the solar project installation – i.e. state grants, funding from the utility commission or utility companies, etc.?

There's been much talk circulating that the cost of the solar installation will exceed the cost of return over the useful life of the equipment. Have the delays in starting construction of this project, due to the legal conflicts created by the Untied Walnut Taxpayers group and the City of Walnut, caused the construction costs to go up over the original cost estimate?

Randy & Jane Smith
20632 Buckland Drive
Walnut, CA

PUBLIC COMMENT

MT. SAN ANTONIO COLLEGE

WEST PARCEL SOLAR PROJECT SCOPING SESSION

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Name Vadil Vijay
Last First Middle Initial

Address 928 N Boddle Path Ln Walnut CA 9178
Number Street City Zip Code

☐ I wish to address the meeting.

☒ I wish to make a written comment.

Comment: STOP THE SOLAR FARM

NOT GOOD IDEA FOR

COMMUNITY

PL LISTEN TO COMMUNITY

AND WORK WITH THEM,

AND ~~LOOK~~ MAKE

COMMUNITY A PARTNER,

NOT FIGHT WITH COMMUNITY

PUBLIC COMMENT

MT. SAN ANTONIO COLLEGE

WEST PARCEL SOLAR PROJECT SCOPING SESSION

If you wish to address the meeting, please fill out this card completely and give it to the moderator. Comments are limited to four (4) minutes. Alternately, you may leave a written comment below, or attach a comment.

Name MICHAEL WANG

Last First Middle Initial

Address 1064 REGAL CANYON DR WALNUT CA 91789

Number Street City Zip Code

☐ I wish to address the meeting.

☐ I wish to make a written comment.

Comment:

WHAT WAS THE IMPACT TO ~~CBS~~ OUR COMMUNITY?

CONFORMED COPY
ORIGINAL FILED
Superior Court of California
County of Los Angeles

MAY 04 2017

Sherri R. Carter, Executive Officer/Clerk

By Michael Rivera, Deputy

SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF LOS ANGELES – CENTRAL DISTRICT

UNITED WALNUT TAXPAYERS, a California Nonprofit Fictitious Business Entity, Plaintiff and Petitioner, v. MOUNT SAN ANTONIO COMMUNITY COLLEGE DISTRICT; WILLIAM SCROGGINS in his official capacity as President and CEO of Mt. San Antonio Community College, and DOES 1 through 10, inclusive, Defendants and Respondents, TILDEN-COIL CONSTRUCTORS, INC., and DOES 11 through 20, inclusive, Real Parties in Interest. *AND RELATED CONSOLIDATED ACTIONS AND CROSS ACTION*	**Case No. BC576587 [Master File]** (Consolidated with Case Nos. BS154389, BC600860 & BS159593) Assigned for All Purposes to the Honorable Judge James C. Chalfant Dept. 85 [PROPOSED] **JUDGMENT ON CONSOLIDATED ACTIONS OF UNITED WALNUT TAXPAYERS, CITY OF WALNUT, AND MOUNT SAN ANTONIO COMMUNITY COLLEGE DISTRICT** Date: March 14, 2017 Time: 1:30 p.m. Place: Department 85 [Lead Case Filed: March 24, 2015]

The hearing on the merits of this consolidated matter was heard in Department 85 of this Court before the Honorable Judge James C. Chalfant, on March 14, 2017. Craig A. Sherman appeared for plaintiff and petitioner United Walnut Taxpayers ("UWT"), John G. McClendon

of Leibold McClendon & Mann, P.C., appeared for petitioner CITY OF WALNUT ("City"), and Sean B. Absher of Stradling Yocca Carlson & Rauth, P.C., appeared for defendants and respondents MOUNT SAN ANTONIO COMMUNITY COLLEGE DISTRICT, WILLIAM SCROGGINS and BOARD OF DIRECTORS OF THE MOUNT SAN ANTONIO COMMUNITY COLLEGE DISTRICT (collectively, the "District").

After considering the pleadings, the certified *Administrative Record,* the declarations and arguments in this matter,

IT IS HEREBY ORDERED THAT:

1. For the reasons stated in the Court's March 14, 2017, *Decision* (incorporated herein by reference), UWT and the City shall have judgment against the District, and the District shall have judgment against the City, as set forth below.

2. UWT's *Second Amended Complaint* (styled a petition for writ of mandate), is granted in large part as follows:

a. As to UWT's *First Cause of Action* alleging unlawful Measure RR spending challenges against the Parking Garage Project and Solar Project, UWT has filed a dismissal of the claim, without prejudice, and dismissal has been entered.

b. As to UWT's *Second Cause of Action for Mandamus* under CEQA, that the District failed to proceed in the manner required by law by approving the Parking Garage Project and Solar Project, UWT shall have judgment against the District and a peremptory writ of mandate shall issue under seal of this Court in the form attached hereto as Exhibit A;

c. As to UWT's *Third Cause of Action for Mandamus* alleging violation of the City's zoning and grading ordinances for the Parking Garage Project (which is moot) and the Solar Project, UWT shall have judgment that the District is required to comply with the City's grading ordinance in constructing the Solar Project;

d. As to UWT's *Fourth Cause of Action* seeking to set aside the District's February 11, 2015 resolution finding the Parking Garage Project to be exempt from the City's zoning ordinances, the claim is moot;

e. As to UWT's *Fifth Cause of Action* based on a District pattern and practice of improperly using programmatic EIRs to approve master plan program projects (2002 to 2012 EIRs) in a legally defective manner, UWT is entitled to judgment for declaratory and injunctive relief that the District must prepare and circulate initial studies for its identified master plan projects as such projects come up for actual decisions for design and/or implementation; and

f. As to UWT's *Sixth Cause of Action* alleging the Lease-Leaseback arrangement between the District and Tilden-Coil Constructors, Inc. is unlawful, UWT has filed a dismissal of the claim, with prejudice, and dismissal has been entered.

3. As to the City's *First Amended Petition for Writ of Mandate; Complaint for Declaratory Relief*, it is granted in part as follows: The City is entitled to judgment against the District and a peremptory writ of mandate shall issue under seal of this Court in the form attached hereto as Exhibit A.

4. As to the District's *Second Amended Cross-Complaint for Declaratory and Injunctive Relief; Cross-Petition for Writ of Mandate*, it is granted in part as follows: The District is entitled to judgment for declaratory relief that (1) because the Solar Project is subject to the exemptions in subdivisions (d) and (e) of Government Code section 53091, and because of these exemptions the District may proceed with construction of the Solar Project without applying for zoning and building permits from the City, with the exception of grading and haul route approvals, (2) the City may not enforce the Stop Work Order by requiring land entitlements and a conditional use permit but may enforce the requirement of grading and haul route approvals, and (3) the City must review and process the grading plans for approval under its grading ordinances, but without a conditional use permit, building permits, or zoning controls other than grading and haul route approvals.

5. In accordance with Code of Civil Procedure section 1033, and Rule 3.1700 of the California Rules of Court, UWT is awarded its costs, as awarded against the District, in the amount of _____, subject to the timely submission of a Memorandum of Costs.

//

6. UWT may seek, pursuant to appropriate noticed motion, an award of its attorneys' fees awarded against the District, and this Court reserves and retains jurisdiction to determine the amount of such fees, if any. If such a motion is granted, this judgment will be amended to award the amount of $_____ [to be determined] in attorneys' fees.

7. The City may seek, pursuant to appropriate noticed motion, an award of its attorneys' fees awarded against the District, and this Court reserves and retains jurisdiction to determine the amount of such fees, if any. If such a motion is granted, this judgment will be amended to award the amount of $_____ [to be determined] in attorneys' fees.

8. The District may seek, pursuant to appropriate noticed motion, an award of its attorneys' fees awarded against the City, and this Court reserves and retains jurisdiction to determine the amount of such fees, if any. If such a motion is granted, this judgment will be amended to award the amount of $_____ [to be determined] in attorneys' fees.

9. This Court shall reserve and retain jurisdiction over this consolidated action until such time as the District files a return evidencing it has complied with the attached *Peremptory Writ of Mandate.*

IT IS SO ORDERED AND ADJUDGED.

DATED: MAY 04 2017

JAMES C. CHALFANT
Judge of the Superior Court

United Walnut Taxpayers v. Mount San Antonio Community College District, et al., BC 576587

Tentative decision on (1) United Walnut's petition for writ of mandate: granted in large part; (2) City's petition for writ of mandate: granted in part; (3) District's petition for writ of mandate: granted in part

There are three separate mandamus petitions in this consolidated action. Plaintiff United Walnut Taxpayers ("United Walnut") petitions for a writ of mandate under CEQA against Defendant and Cross-Plaintiff Mt. San Antonio Community College District ("District" or "Mt. SAC"). The City petitions for a writ of mandate against the District. Defendant and Cross-Plaintiff District seeks declaratory relief against Cross-Defendant City of Walnut ("City").

The court has read and considered the moving papers, oppositions, and replies, and renders the following tentative decision.

A. Statement of the Case

1. United Walnut Petition

Plaintiff United Walnut commenced this proceeding on March 24, 2015, seeking declaratory and injunctive relief and a writ of mandate. The operative pleading is the Second Amended Complaint ("SAC") filed on August 29, 2016. The SAC alleges in pertinent part as follows.

On November 4, 2008 Measure RR, entitled and otherwise known as the "A Mount San Antonio Community College District bond proposition," appeared as a bond proposal on the ballot for voters within the District's boundaries (which include the City). The measure authorized a $353 million bond. A supermajority of 55% of those voting was required for Measure RR to pass and it did so with approval by 69.95% of District voters. The primary published and entitled language on the Measure RR ballot stated that its purpose was for classroom repair. The District is spending Measure RR money for the grading of sites for an Athletic Complex East ("ACE") and Retail/Solar Power Generating Plant ("Solar Project"), and has allocated future Measure RR money for the planning, design, study, construction or building, and implementation of those projects. The ACE and Solar Power Projects are not listed in the Measure RR Bond Project List.

On February 11, 2015, at regularly scheduled meeting, the District Board of Trustees ("Board") decided to approve a 2,300 space parking structure project (the "Parking Garage Project") by passing a resolution purporting to exempt the Parking Project from City zoning ordinances and entering into a lease/lease back agreement for construction of the Project (the "Parking Project Approvals"). The District is currently grading areas where it plans to build the Solar Project on land subject to and in violation of the City's zoning ordinances. Defendants are spending, and will continue to spend Measure RR bond revenues on the Parking Project, the ACE Project, and the Solar Project in violation of constitutional and statutory bond spending restrictions imposed by state voters via Proposition 39 and District voters via Measure RR.

The decisions for the Parking Garage Project and Solar Project are "projects" such that compliance with the California Environmental Quality Act ("CEQA") is required. The District

has prepared one or more programmatic environmental impact reports ("EIRs") in association with campus-wide master planning efforts for facilities, as well as plan updates, but has not prepared any project-specific CEQA documents for the Projects and made no CEQA decision or determination in the February 11, 2015 Parking Project Approvals.

In the first cause of action, the SAC seeks a declaratory judgment and the issuance of an injunction to enjoin and prevent the District from misuse or waste of public money in spending Measure RR bond sales revenue for the planning, design, study, construction or building, and implementation of the Parking Project, ACE Project, and Solar Project.

In the second cause of action for mandamus under CEQA, the SAC alleges that the District failed to proceed in a manner required by law by approving the Parking Garage and Solar Projects without making a determination that the projects are within the scope of the programmatic EIR. Plaintiff requests a peremptory writ of mandamus ordering the District to rescind and set aside its February 11, 2015 and September 16, 2015 final Solar Project and Parking Project Approvals, and remanding the matter for the District to reconsider the Parking Project and Solar Project consistent with the law.

The SAC's third cause of action for mandamus alleges the District's violation of City zoning ordinances for the Parking Garage Project and Solar Project, which are located within the City in an area zoned Residential Planned Development Zone ("RPDZ"). Structures built within the RPDZ cannot exceed a height of 35 feet. Walnut Municipal Code ("WMC") §25-89.1(b)(4)(g). Neither a parking garage structure nor a solar project is a permitted or authorized use in the RPDZ, unless a variance or conditional use permit ("CUP") is obtained and the Parking Project and the Solar Project can meet special conditions and special findings can be made and adopted for the same. The District has not applied for or obtained a CUP or variance from the City for either the Parking Project or the Solar Project.

The SAC's fourth cause of action for mandamus under CEQA and Government Code section 53094(b) alleges that the District failed to proceed in a manner required by law because it made no findings concerning land use and zoning conflicts in the February 11, 2015 Parking Garage Project Approvals. Plaintiff requests a peremptory writ of mandamus ordering the District to rescind and set aside its February 11, 2015 Parking Project Approvals, and remanding the matter to the District to reconsider the approvals consistent with the law.

The SAC's fifth cause of action alleges a pattern and practice violation of CEQA. The District continues to misinterpret the spirit, intent, and purpose of CEQA. Plaintiff requests a declaratory judgment and the issuance of an injunction to enjoin and prevent any District action proceeding with the quasi-legislative policy of implementing projects without performing required environmental review and making proper and adequate CEQA determinations for its master plan and programmatic EIR projects.

The SAC's sixth cause of action for declaratory and injunctive relief alleges violations of law in the lease-leaseback arrangement between the District and Real Party-in-Interest Tilden-Coil Constructors, Inc. ("Tilden"). Plaintiff alleges that there is no actual lease, and that the District is violating Public Contract Code section 17406 *et seq*. Plaintiff seeks a declaratory judgment and the issuance of an injunction to prevent any action by the District to proceed with payments to Tilden under the lease-leaseback agreement.[1]

[1] United Walnut's first and sixth causes of action have been bifurcated and stayed.

2. The District's Cross-Complaint

The District filed a Cross-Complaint against the City and its employee, Chris Vasquez ("Vasquez"), on November 18, 2016. The operative pleading is the Second Amended Cross-Complaint ("SACC") filed December 30, 2016. The SACC alleges in pertinent part as follows.

The Solar Project is an approximately 2.0 megawatt electrical output system with ground-mounted tracking solar photovoltaic panels and a small masonry structure to house equipment. It is located on the West Parcel of the Mt. SAC campus. The District has received all regulatory and permitted approvals required for the Solar Project.

The District did not apply for a CUP or entitlement related to the hauling, grading, or construction of the Solar Project because it is exempt from local zoning and building controls pursuant to Government Code section 53091(d) and (e). The WMC contains no applicable provisions for locating and constructing a solar photovoltaic project at the campus. The WMC grading ordinance does not regulate grading on public property such as the Solar Project. The City has always interpreted its authority as limited to reviewing final engineering plans for street improvements, which does not apply to the Solar Project.

In excess of its police powers and authority, on October 20, 2016 the City, by and through Vasquez, issued a Stop Work Order against the Solar Project. The Stop Work Order was issued by Vasquez in his capacity as Associate Planner at the City's Community Development Department.

The SACC's first cause of action is for a writ of mandate against the City. The District argues that the Stop Work Order incorrectly asserts police powers to stop the Solar Project based on the City's grading controls. The City lacks the authority to issue a Stop Work Order because the Solar Project is a solar generation project exempt from local zoning ordinances under Government Code section 53091(d) and (e). The District has not violated WMC Section 25-17, which pertains to building permits, or WMC Section 25-39(f), which pertains to public utilities, because the Solar Project is exempt from the City's building permit requirements and is not within the class of uses defined as "public utilities" or "utilities operated by mutual agencies."

The SACC's second cause of action seeks declaratory and injunctive relief against the City. District seeks a declaration that the Solar Project is exempt from the City's grading ordinances under Government Code section 53091. Alternatively, if the grading ordinance is applicable to the Solar Project under Government Code section 53097, the District seeks a declaration that the City's authority is limited to reviewing and approving grading plans related to the Solar Project, and the City lacks without authority to condition approval of those grading plans on the District's compliance with City's zoning and building laws. Finally, the District seeks an injunction to enjoin any action by the City to enforce the Stop Work Order.

3. The City's Petition

On March 26, 2015, the City filed a petition for writ of mandate in Case No. BS 154389. The operative pleading is the First Amended Petition ("City FAP"), filed March 24, 2016. The City FAP alleges in pertinent part as follows.

The Solar Project includes the mass grading of the West Parcel and the acquisition and installation of a ground-mounted solar photovoltaic system to provide approximately two megawatts of energy for the Mt. SAC campus. The West Parcel is zoned Residential Planned Development ("RPD") under the City's zoning ordinance. The RPD zone incorporates the permitted and conditionally permitted uses of the R-1 zone. Title VI C.25 Section 25-89.1

allows property in an RPD zone to be used for "any permitted use in an R-1 zone...."

The Solar Project is not a permitted or authorized use in the RPD zone without first obtaining a discretionary CUP from the City. The District has not applied for or obtained a CUP from the City for the Solar Project or any other permit or entitlement relating to the hauling, grading, and construction thereof.

The District generically discussed the Solar Project in a Program EIR, which the Board certified as final at its regular meeting of December 11, 2013. On May 15, 2015, the City, through email correspondence, informed the District that the Solar Project would be subject to the City's zoning regulations and CUP requirements. On July 8, 2015, the Board adopted Resolution No. 15-01 "Assessment, Design, Installation, and Operation and Maintenance of Photovoltaic Solar System — Request for Qualifications/Request for Proposal No. 3005," and in so doing entered into a design-build agreement for the purchase and installation of a ground mounted photovoltaic solar system.

At its November 18, 2015 meeting, the Board approved a design–build agreement for the Project pursuant to Resolution No. 15-06 "New Assessment, Design, Installation, Operation, and Maintenance of a Photovoltaic Solar System." The Board also approved Action Item No. 7, which was described as a "project" that "entails grading and site improvements required to prepare the West Parcel site… for the purchase and installation of a ground -mounted solar photovoltaic system, under a separate design -build agreement." The District never applied for a grading or hauling permit from the City.

On December 18, 2015, the City's counsel informed counsel for the District that the City would be assuming the "lead agency" role under CEQA for the Solar Project due to the District's failure to comply with CEQA. Four days later, on December 22, 2015, the District published the Addendum in an apparent attempt to cut the City out of its "responsible agency" role in the CEQA review process for the Project. The Board approved the Addendum at its January 13, 2016 meeting. The Addendum includes revisions to four mitigation measures (2c, 2k, 3a, and 3i) to allow for extended dump truck traffic, require parking supply studies, remove the requirement for obtaining a grading permit, and bring paint VOC standards to current industry and state requirements. The Addendum also adds six mitigation measures to "mitigate potentially significant traffic impacts from the construction truck hauling of soil import to the West Parcel."

The City FAP's first cause of action is for a writ of mandate under CEQA. The City alleges that the District has failed to carry out adequate CEQA analysis in approving the Solar Project. The Solar Project has changed in scope, and the District has improperly continued to rely on the Program EIR. Because the Project description was not accurately represented throughout the approval process, mitigation measures were never adequately formulated or evaluated. The District's failure to conduct adequate environmental review after significantly changing the Solar Project description and mitigation measures in the Addendum constitutes a prejudicial abuse of discretion that precludes informed decision-making and informed public participation.

In a claim for violation of State Planning and Zoning Law, the City alleges that the District is required to submit to the City any public works projects recommended for planning, initiation, or construction. The District has not submitted to the City any of its public works projects, including the Solar Project, for a finding of consistency with the City's General Plan.

In a claim for violation of the WMC, the City alleges that the Solar Project is subject to its WMC, zoning ordinance, General Plan, and other land use controls. The District previously

acknowledged the City's police power jurisdiction over the Solar Project, but has now taken the position that the Solar Project is exempt from the City's land use regulations. The District cannot exempt itself under Government Code sections 53091 and 53094. The District has neither submitted a grading plan nor other plans for City approval. In attempting to use the Addendum to usurp both the City's rights as a responsible agency under CEQA and its police powers to properly regulate and control grading activities, traffic, and weight limits on City streets, the District proposes to violate the law.

The City FAP's second cause of action is for declaratory relief. The City seeks a judicial determination and declaration whether the District's Addendum was proper. The City also seeks determination whether any laws of this State, including Government Code sections 53091 and 53094, exempt the Solar Project from the City's land use police powers and regulatory authority. Finally, the City seeks a determination whether CEQA and CEQA Guidelines require or permit it to take over the lead agency role for the Solar Project.

4. <u>Course of Proceedings</u>

On April 15, 2015, Plaintiff United Walnut applied *ex parte* for a temporary restraining order ("TRO") and order to show cause re: preliminary injunction ("OSC") with respect to the Parking Project. Department 82 granted the TRO and set an OSC hearing on the preliminary injunction.

After a May 13, 2015 OSC hearing, Department 82 granted the preliminary injunction. The court found that Plaintiff United Walnut was likely to prevail on its third and fourth causes of action alleging violation of the City's zoning ordinance. A parking structure is a non-classroom facility that cannot be exempted from the City's zoning laws. As a separate ground, the court found that Plaintiff was likely to succeed on its first cause of action alleging that the parking structure was not sufficiently identified in Measure RR when presented to voters. Defendants were enjoined from performing or conducting any further construction or dirt removal activity on the proposed parking structure site, or from spending any Measure RR funds on any aspect of the Parking Project. Plaintiff was ordered to post an undertaking in the amount of $127,076 and did so on May 28, 2015.

On July 27, 2015, this action was reassigned to Department 85. On January 21, 2016, Department 85 heard United Walnut's motions to file a First Amended Complaint ("FAC") and to consolidate this matter with another case (BS 154389). United Walnut additionally moved for a preliminary injunction against the District. In turn, the Districtmoved to dismiss the Complaint and dissolve the existing preliminary injunction in this action. The court granted United Walnut's motion to file an FAC and motion to consolidate. The District's motion to dismiss and motion to dissolve the preliminary injunction was denied. The court also denied United Walnut's application for preliminary injunction against construction of the Solar Project, ruling that the Complaint did not contain a cause of action alleging that the Solar Project was a violation of CEQA or the City's zoning laws; it only made those allegations for the Parking Project. Plaintiff additionally failed to demonstrate irreparable harm.

On December 6, 2016, Department 85 heard United Walnut's application for a preliminary injunction against the District. The District simultaneously moved for a preliminary injunction against the City. The court granted United Walnut's application, ruling that Plaintiff was likely to prevail on its amended third cause of action alleging that construction of the Solar Project violates WMC's grading and draining requirements, including review and approval by

the City. The court denied the District's application, ruling that the City had the authority to issue a stop work order. Section 53097 specifically requires school districts to comply with all city ordinances regulating drainage, road improvement, and grading plans and District's Solar Project was within the scope of the City's grading ordinances.

B. Standard of Review

A party may seek to set aside an agency decision for failure to comply with CEQA by petitioning for either a writ of administrative mandamus (CCP §1094.5) or of traditional mandamus. CCP §1085. A petition for administrative mandamus is appropriate when the party seeks review of a "determination, finding, or decision of a public agency, made as a result of a proceeding in which by law a hearing is required to be given, evidence is required to be taken and discretion in the determination of facts is vested in a public agency, on the grounds of noncompliance with [CEQA]." Public Resources ("Pub. Res.") Code §21168. This is generally referred to as an "adjudicatory" or "quasi-judicial" decision. Western States Petroleum Assn. v. Superior Court, ("Western States") (1995) 9 Cal.4th 559, 566-67. A petition for traditional mandamus is appropriate in all other actions "to attack, review, set aside, void or annul a determination, finding, or decision of a public agency on the grounds of noncompliance with [CEQA]." Where an agency is exercising a quasi-legislative function, it is properly viewed as a petition for traditional mandamus. Id. at 567; Pub. Res. Code §21168.5.

Under CEQA, at issue is United Walnut's and the City's CEQA challenge to a quasi-adjudicative action taken by the District in approving the Solar Project, and United Walnut's additional challenge to the approval of the Parking Garage Project. This procedural setting, where an administrative hearing was required, is governed by administrative mandamus. In determining whether to grant a petition in a CEQA case, the court decides whether there was a prejudicial abuse of discretion. Public entities abuse their discretion if their actions or decisions do not substantially comply with the requirements of CEQA. Sierra Club v. West Side Irrigation District, (2005) 128 Cal.App.4th 690, 698. Abuse of discretion is established if the agency has not proceeded in a manner required by law or if the determination or decision is not supported by substantial evidence. Western States, *supra*, 9 Cal.4th at 568; Pub. Res. Code §21168.5.

A reviewing court must adjust its scrutiny to the nature of the alleged defect, depending on whether the claim is predominantly one of improper procedure or a dispute over the facts." (Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova, ("Vineyard") (2007) 40 Ca1.4th 412, 435. Challenges to an agency's failure to proceed in the manner required by CEQA, such as the failure to address a subject required to be covered in an EIR or to disclose information about a project's environmental effects, are subject to a less deferential standard than challenges to an agency's substantive factual conclusions. Id. at 435. In reviewing these claims, the court must "determine de novo whether the agency has employed the correct procedures, 'scrupulously enforc[ing] all legislatively mandated CEQA requirements'." Id.

The parties' land use claims that project approvals violated the WMC are governed generally by CCP section 1094.5, which does not in its face specify which cases are subject to independent review of evidentiary findings. Fukuda v. City of Angels, (1999) 20 Cal.4th 805, 811. Instead, that issue was left to the courts. In cases other than those requiring the court to exercise its independent judgment, the substantial evidence test applies. CCP §1094.5(c). Land use decisions do not typically involve vested rights requiring independent review. *See*PMI Mortgage Insurance Co. v. City of Pacific Grove, (1981) 128 Cal.App.3d 724, 729. A

requirement of a permit for a developer, public or private, under local city ordinances does not infringe on the fundamental vested rights of adjoining property owners. Bakman v. Dept. of Transportation, (1979) 99 Cal.App.3d 665, 689-90. The "substantial evidence" standard governs such review, and "substantial evidence" is relevant evidence that a reasonable mind might accept as adequate to support a conclusion (California Youth Authority v. State Personnel Board, (2002) 104 Cal.App.4th 575, 585) or evidence of ponderable legal significance, which is reasonable in nature, credible and of solid value. Mohilef v. Janovici, (1996) 51 Cal.App.4th 267, 305, n.28. The trial court considers all evidence in the administrative record, including evidence that detracts from evidence supporting the agency's decision. California Youth Authority, *supra*, 104 Cal.App.4th at 585.

Whether the agency abused its discretion must be answered with reference to the administrative record. This standard requires deference to the agency's factual and environmental conclusions based on conflicting evidence, but not to issues of law. Laurel Heights Improvement Assn. v. Regents of University of California, ("Laurel Heights") (1988) 47 Cal.3d 376, 393, 409. Argument, speculation, and unsubstantiated opinion or narrative will not suffice.[2] Guidelines §15384(a), (b).

Finally, the parties' traditional mandamus and declaratory relief claims are based on extra-record evidence and require no administrative record. A petition for traditional mandamus is appropriate in all actions "to compel the performance of an act which the law specially enjoins as a duty resulting from an office, trust, or station...." CCP §1085. A traditional writ of mandate is the method of compelling the performance of a legal, ministerial duty required by statute. *See*Rodriguez v. Solis, (1991) 1 Cal.App.4th 495, 501-02. Generally, mandamus will lie when (1) there is no plain, speedy, and adequate alternative remedy, (2) the respondent has a duty to perform, and (3) the petitioner has a clear and beneficial right to performance." Pomona Police Officers' Assn. v. City of Pomona, (1997) 58 Cal.App.4th 578, 583-84 (internal citations omitted). Whether a statute imposes a ministerial duty for which mandamus is available, or a mere obligation to perform a discretionary function, is a question of statutory interpretation. AIDS Healthcare Foundation v. Los Angeles County Dept. of Public Health, (2011) 197 Cal.App.4th 693, 701.

Traditional mandamus relief is unavailable unless the petitioner can demonstrate an abuse of that discretion. Mandamus will not lie to compel the exercise of a public agency's discretion in a particular manner. American Federation of State, County and Municipal Employees v. Metropolitan Water District of Southern California, (2005) 126 Cal.App.4th 247, 261. It is available to compel an agency to exercise discretion where it has not done so (Los Angles County Employees Assn. v. County of Los Angeles, (1973) 33 Cal.App.3d 1, 8), and to correct an abuse of discretion actually exercised. Manjares v. Newton, (1966) 64 Cal.2d 365, 370-71. In making this determination, the court may not substitute its judgment for that of the agency, whose decision must be upheld if reasonable minds may disagree as to its wisdom. Id. at 371. A agency decision is an abuse of discretion only if it is "arbitrary, capricious, entirely lacking in evidentiary support, unlawful, or procedurally unfair." Kahn v. Los Angeles City Employees'

[2]As an aid to carrying out the statute, the State Resources Agency has issued regulations called "Guidelines for the California Environmental Quality Act" ("Guidelines") contained in Code of Regulations, Title 14, Division 6, Chapter 3, beginning at section 15000.

Retirement System, (2010) 187 Cal.App.4th 98, 106. In applying this very deferential test, a court "must ensure that an agency has adequately considered all relevant factors, and has demonstrated a rational connection between those factors, the choice made, and the purposes of the enabling statute." Western States, *supra*, 9 Cal.4th at 577. A writ will lie where the agency's discretion can be exercised only in one way. Hurtado v. Superior Court, (1974) 11 Cal.3d 574, 579.

C. CEQA

The purpose of CEQA, (Pub. Res. Code §21000 *et seq*.,) is to maintain a quality environment for the people of California both now and in the future. Pub. Res. Code §21000(a). "[T]he overriding purpose of CEQA is to ensure that agencies regulating activities that may affect the quality of the environment give primary consideration to preventing environmental damage."Save Our Peninsula Committee v. Monterey County Board of Supervisors, (2001) 87 Cal.App.4th 99, 117. CEQA must be interpreted "so as to afford the fullest, broadest protection to the environment within reasonable scope of the statutory language."Friends of Mammoth v. Board of Supervisors, (1972) 8 Cal.3d 247, 259.

The Legislature chose to accomplish its environmental goals through public environmental review processes designed to assist agencies in identifying and disclosing both environmental effects and feasible alternatives and mitigations. Pub. Res. Code §21002. Public agencies must regulate both public and private projects so that "major consideration is given to preventing environmental damage, while providing a decent home and satisfying living environment for every Californian." Pub. Res. Code §21000(g).

Under CEQA, a "project" is defined as any activity which may cause either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment (1) undertaken directly by any public agency, (2) supported through contracts, grants, subsidies, loans or other public assistance, or (3) involving the issuance of a lease, permit, license, certificate, or other entitlement for use by a public agency. Pub. Res. Code §21065. The word "may" in this context means a reasonable possibility. Citizen Action to Serve All Students v. Thornley, (1990) 222 Cal.App.3d 748, 753. "Environment" means the physical conditions which exist within the area which will be affected by a proposed project, including land, air, water, minerals, flora, fauna, noise, objects of historic or aesthetic significance. Guidelines §21060.5.

The "project" is the whole of the action, not simply its constituent parts, which has the potential for resulting in either direct or reasonably foreseeable indirect physical change in the environment. Guidelines §15378. An indirect physical change must be considered if that change is a reasonably foreseeable impact which may be caused by the project. On the other hand, a change that is "speculative or unlikely to occur is not reasonably foreseeable." Guidelines §15064(d)(3). The term "project" may include several discretionary approvals by government agencies; it does not mean each separate government approval. Guidelines §15378(c).

The EIR is the "heart" of CEQA, providing agencies with in-depth review of projects with potentially significant environmental effects. Laurel Heights, *supra*, 6 Cal.4th at 1123. An EIR describes the project and its environmental setting, identifies the potential environmental impacts of the project, and identifies and analyzes mitigation measures and alternatives that may reduce significant environmental impacts. Id. Using the EIR's objective analysis, agencies "shall mitigate or avoid the significant effects on the environment... whenever it is feasible to do

so. Pub. Res. Code §21002.1. The EIR serves to "demonstrate to an apprehensive citizenry that the agency has in fact analyzed and considered the ecological implications of its actions."No Oil, Inc. v. City of Los Angeles, (1974) 13 Cal.3d 68, 86. It is not required to be perfect, merely that it be a good faith effort at full disclosure. Kings County Farm Bureau v. City of Hanford, (1990) 221 Cal.App.3d 692, 711-12. A reviewing court passes only on its sufficiency as an informational document and not the correctness of its environmental conclusions. Laurel Heights, *supra*, 47 Cal.3d at 392.

All EIRs must cover the same general content. Guidelines §§ 15120-32. An EIR should be prepared with a sufficient degree of analysis to provide decision-makers with information which enables them to make a decision which intelligently takes account of environmental consequences. The environmental effects need not be exhaustively reviewed, but the EIR's sufficiency is viewed in the light of what is reasonably feasible. Guidelines §15151. The level of specificity of an EIR is determined by the nature of the project and the "rule of reason."Al Larson Boat Shop, Inc. v. Board of Harbor Commissioners, (1993) 18 Cal.App.4th 729, 741-42. The degree of specificity "will correspond to the degree of specificity involved in the underlying activity which is described in the EIR." Guidelines §15146. The ultimate decision whether to approve a project is a nullity if based upon an EIR that does not provide decision-makers, and the public, with the information about the project required by CEQA. Santiago County Water District v. County of Orange, (1981) 118 Cal.App.3d 818, 829.

D. Statement of Facts from the Administrative Record[3]

1. Environmental Impact Reports

a. 2002 Program EIR

On December 18, 2002, the District certified the Final Program EIR ("2002 Program EIR") for the District 2002 Campus Master Plan, also known as a Facility Master Plan. AR 4388, 4395-96. The Board adopted a Statement of Overriding Considerations for the Program EIR. AR 19, 4395. The Board found that there were significant historic resource and circulation impacts that were unavoidable after incorporation of all feasible mitigation measures. AR 19. These included demolition of campus buildings potential eligible for the California Register of Historical Resources and destruction of important habitat within the Wildlife Sanctuary. AR 19-20. The Board determined that the District's limited resources were better spent on new construction rather than restoration and retrofitting of the existing buildings, many of which were damaged. AR 20-21.

b. 2005 Supplemental EIR

In December 2005, the District issued a Draft Supplement to the Program EIR ("2005 Supplemental EIR") to address new environmental effects that may be caused by implementation of the 2005 Master Plan Update. AR 4778. The 2005 Supplemental EIR was prepared as part of the 2005 Master Plan Update. AR 4778. The 2005 Master Plan Update included changes in the location of planned buildings on campus, and additional parking availability. AR 4780. Specifically, the 2005 Master Plan Update proposed a 2,250-space parking structure. AR 4780.

[3] Where the Statement of Facts does not include a citation, the page cited by the party either was not included in the Joint Appendix or was mis-scited. As the facts are undisputed, the court has set forth the pertinent fact anyway.

The issues requiring resolution in the 2005 Supplemental EIR included determining what circulation improvements were required and when the parking structure would be built. AR 4781.

In May 2006, the District responded to public comments on the 2005 Supplemental EIR. AR 97. The City had commented that the proposed mitigation measures (2i and 2cc) for dedication of land to accommodate needed improvements to the intersection of Grand/Temple were too narrowly worded to address the needed right-of-way for that and other necessary intersection improvements. AR 131. The District responded that it was willing to dedicate any lands necessary for project-related improvements at the identified intersections and would replace the language in mitigation measure 2i. AR 97.

On March 16, 2006, the District issued a Statement of Facts and Findings to approve the final Master Plan Update 2005. AR 22-79. The Statement of Facts and Findings asserted that all significant environmental effects from the Master Plan Update that can feasibly be avoided have been eliminated or substantially lessened by virtue of the mitigation measures in the Final EIR. AR 23-37. The District again determined that unavoidable impacts to historic resources on campus were acceptable due to the need to modernize facilities on campus. AR 40-41.

c. 2008 Subsequent EIR

In May 2008, the District issued a Draft Subsequent EIR ("2008 Subsequent EIR") to address environmental effects that may be caused by implementation of the 2008 Master Plan Update. AR 6050-1, 6050-8, 6050-12. The purpose of the 2008 Subsequent EIR was for the review and consideration of the 2008 Master Plan Update. AR 6050-42. The 2008 Master Plan Update revised some land plans included in the 2005 Master Plan Update and included several new projects. AR 6050-11. Both the 2005 and 2008 Master Plan Updates proposed that a Parking Garage Project would be located south of Edinger Way east of Walnut Drive. AR 6050-11. The 2008 Master Plan Update included a new plan for the ACEProject. AR 6050-11 to 6050-12. This new project replaced the Gymnasium project in the 2005 Master Plan Update. AR 6050-36.

The District responded to public comments on the 2005 Subsequent EIR. AR 6052-54. On August 27, 2008, the Board certified the 2008 Final EIR, adopted a Statement of Overriding Considerations, and adopted the 2008 Master Plan Update. AR 6159-60.

d. 2012 Subsequent EIR

In September 2013, the District issued a Draft Subsequent EIR ("2012 Subsequent EIR") to address new environmental effects that may be caused by implementation of the 2012 Facility Master Plan. AR 140, 147. The District prepared the 2012 Facilities Master Plan to revise the land plans in the 2008 Master Plan Update, complete projects that had previously been un-funded, and include new projects. AR 151.

The 2012 Subsequent EIR stated that it "addresses the project at the level of detail characteristic of a conceptual master plan." AR 155. As a Subsequent Program EIR, the 2012 Subsequent EIR addressed the environmental concerns identified from public comments and from professional evaluation by the project team. AR 155. The initial potential area of controversy included the 383,000 cubic yards of earth export due to the Parking Garage Project and the ACEProject. AR 155.

The 2012 Draft EIR lists the Parking Garage Project, BCT Project, and ACE Project as

future projects that already had CEQA clearance from previous master plan updates. AR 181, 183. The Solar Project was new as it had not been included in the 2008 Subsequent EIR for the 2008 Master Plan Update. AR 183.

On December 11, 2013, the Board certified the 2012 Subsequent EIR, adopted a Statement of Overriding Considerations, and adopted the 2012 Master Plan Update. AR 14855, 14862-64. The Board again determined that the unavoidable impacts to historic resources and Wildlife Sanctuary were acceptable due to the need to modernize facilities on campus. AR 77-78. The Board stated its intention to restore and replace the riparian areas affected by the construction. AR 79.

e. 2015 Addendum

On December 22, 2015, the District issued a draft Addendum to the 2012 Subsequent EIR for the 2012 Facility Master PlanUpdate ("Addendum"). AR 1738.

f. 2015 Subsequent EIR

Sometime in 2015, the District issued a Subsequent Program/Project EIR ("2015 Subsequent EIR") to address the potential environmental impacts of the 2015 Facilities Master Plan Update. ER 2808.

2. The Parking Garage, ACE, and BCT Projects

a. The Parking Garage Project

The 2005 and 2008 Master Plan Updates identified the 2,250-space Parking Garage Project on the south side of Edinger Way and Walnut Drive. AR 4808, 6050-11. The 2012 Subsequent EIR identified the same 2,300-space Parking Garage Project on the south side of Edinger Way and the southeast side of Mountaineer Road. AR 151.

On February 11, 2015, the District awarded a Phase I Site Work Contract to Tilden-Coilto prepare the site for the Parking Garage Project. AR 2639. The Board also adopted Resolution No. 14-05, which found the Parking Garage Project exempt from compliance with the City's development and zoning ordinances. AR 12. No initial study was prepared for the February 11, 2015 Parking Garage Project approvals. AR 5-13.

United Walnut filed suit and on April 15, 2015 obtained a TRO prohibiting the District from proceeding with the Parking Garage construction on the basis that (a) the Parking Garage was not a project authorized for Measure RR expenditures and (b) was a non-classroom facility not exempt from the City's zoning and development ordinances. Thus, Resolution No 15-01's attempted exemption pursuant to Government Code section 53094(b) was impermissible.

On July 8, 2015, the District placed the Parking Project "on hold" and diverted the allocated Measure RR funds to other projects. The Board questioned that if "litigation goes in Mt. SAC's favor, would we be able to resume with plans to build a new Parking Structure?" Board President Scroggins answered "that the Parking Structure remains in the College's Facilities Master Plan and the Environmental Impact, and there are no plans to relocate the structure to any other location."

On July 22, 2015, the District took action to terminate the facilities lease contract (but not the site lease) with Tilden-Coil. On February 17, 2016, the District took action to abandon the Parking Garage Project as a Measure RR project. AR 14078. The Board specifically stated that it would not be taking any action to construct the Parking Garage Project under the

lease/leaseback contract award to Tilden-Coil. AR 14078. The abandonment of the Parking Garage Project was without prejudice to any future action authorizing a new parking structure in the same location. AR 14078.

The District has not rescinded Resolution No. 14-05. *See* AR 5-13. The District has also not rescinded the Parking Garage Project site lease to Tilden-Coil; it has rescinded only the facilities lease. ER 2-13. The District continues to plan to construct a parking structure at the same location in the future. AR 1948, 2248, 2842; ER 2817, 2864.

b. Athletics Complex Project

The 2008 Subsequent EIR identified the ACE Project east of Bonita Drive south of Temple Avenue. AR 5986, 6050-11.

As part of the 2012 Master Plan Update, the ACE Project was expanded, moved, and renamed with new building elements and practice field areas as the new "Athletic Education Building Project", also "Athletic Complex East" (ACE). AR 153. The 2012 Subsequent EIR identified the ACE Project on the same site as proposed in 2008 but expanded the project to 44,000 square feet and alters the building's footprint. AR 256.

This required the 2012 Subsequent EIR to address two additional construction-related issues for the Project: (i) potential impacts of earth export to the Fire Training Academy site and, (ii) potential additional impacts on California Walnut Woodlands north and west of Hilmer Lodge Stadium. AR 256. Preliminary grading plans for the ACE building were shown in the 2012 Subsequent EIR. AR 257.

On February 27, 2013, the Board approved an approximate $2 million contract with HMC Architects for final ACE Project design. AR 2442-8, 7199. The District did not prepare an initial study for the ACE Project. *See* AR 2442-8, 7199.

On April 2, 2014, the Board approved $5 million of Measure RR money for grading the ACE Project site to create temporary parking for a lease–leaseback construction contract with Tilden-Coil. *See* AR 2535-16 to 2535-17.

On June 24, 2015, the Board approved the final reconciliation and completion of a contract for the ACE Project site construction grading. AR 2535-16 to 2535-17. The Board explained why it did not conduct CEQA review:

> "Trustee Bader… wanted to make sure that it's clear that this isn't against policy. Gary Nellesen, Director, Facilities Planning and Management, said… that this item is for the moving of approximately 275,000 cubic yards of earth…for temporary parking…this work was covered in our Environmental Impact Report. He said that, when looking at environmental impacts, projects are not looked at individually, but how they affect other projects, and there are multiple projects in any given area." AR 2649-11.

On July 8, 2015, the Board approved submittal of the "Final Project Proposal for the New Physical Education Complex" to the State Chancellor's Office. AR 2652.

Based on a subsequent scoping review, The District prepared a project-specific Subsequent EIR for the ACE Project to address potential new environmental effects. ER 2808, 3130, 3132, 3162. To avoid confusion, the new project was titled "Physical Education Projects" ("PEP") to distinguish it from the abandoned ACE Project. Id. The budget for the PEP Project

is $87,795,000. AR 2472.

After an extensive comment period, a Notice of Determination for the PEP was filed on October 16, 2016. AR 14932-14934.

c. Business and Computer Technology Complex Project

The Business and Computer Technology Project ("BCT Project") was addressed as a long-term project in the 2008 Master Plan Update. AR 180. The 2012 Subsequent EIR includes the BCT Project. AR 1896.

The BCT Project construction contract award was on the agenda for the October 21, 2015 Board meeting. To support the CEQA evaluation, District consultant SidLindmark ("Lindmark") prepared Appendix G, Environmental Checklist Form, Revised 2009 ("Appendix G"), with a Notice of Determination signed by District staff Mikaela Klein that no further environmental review was required for the BCT Project. AR 1878-95. Lindmark also prepared a CEQA memorandum dated October 15, 2015 and directed to Gary Nellesen. AR 1896-1917. The memorandum contains an evaluation of the adequacy of existing CEQA documentation for the BCT Project (AR 1900-09) and concludes "[b]ased on the written evidence provided herein and the analysis of the Checklist, the existing CEQA documentation for the Project[] in the Final EIR is adequate and sufficient for the potential environmental impacts of the Project[]." AR 1910.

On October 21, 2015, the Board approved multiple bid packages for the BCT Project. AR 2692-11 to 2692-12. The October 21 Board minutes do not show an initial study or other CEQA review. AR 13595-96.

On February 27, 2013, the Board approved a $2.9 million contract to Hill Partnership, Inc. to design the proposed $40 million BCT Project. AR 7197-49.

3. The Solar Project

a. Background and Description

The Solar Project site is a 27.65-acre undeveloped hillside commonly known as the "West Parcel" of the Mt. SAC campus, 8.36 acres of which are Coastal Sage Scrub which is a California gnatcatcher habitat. AR 282. The West Parcel is a triangular lot with single-family residences along its southern and western boundaries and separated from Mt. SAC's main campus by Grand and Temple Avenues. AR 282-83.

The Solar Project is an approximately 2.0 megawatt electrical output system facility with ground-mounted tracking solar photovoltaic panels and a small masonry structure to house equipment, located on a pad of approximately 10.6 acres on the West Parcel. AR 1740-41. The District will realize savings of over $15,000,000 in electrical energy over the 25-year life cycle of the, Solar Project. AR 12423. The Solar Project qualifies under the California Solar Initiative Program for performance-based incentives totaling over $750,000 in the next five years based on the system's estimated electrical energy production. The Solar Project's funding source is (1) Proposition 39 Energy funds, (2) Energy Incentives, and (3) a zero-interest $3 million California Energy Commission loan. AR 12423.

b. 2008 Subsequent EIR

While the Solar Project had not yet been identified, the 2008 Subsequent EIR contained a biological technical report by Helix Environmental Planning Inc. conducting an initial evaluation

of the biological resources on the West Parcel. AR 14975-15022. Section 3.4 of the 2008 Subsequent EIR also evaluated the anticipated construction noise from projects listed in the 2008 Master Plan Update. AR 6050-101 to 6050-106. It found that construction noise generally would not be significant because the City had determined that construction noise during certain daytime hours is acceptable. Id.

c. 2012 Subsequent EIR

The 2012 Subsequent EIR identifies the Solar Project and analyzes its potential environmental impacts. AR 282-88. As evaluated in the 2012 Subsequent EIR, the amount of fill for the Solar Project to be hauled (or imported) to the West Parcel site is approximately 261,000 cubic yards for the 9.9-acre pad. AR 283. Mitigation Measure ("MM")-2c (adopted in the 2012 Mitigation Monitoring Program, limits the hauling of earth materials to outside of peak-hour traffic periods in order to avoid significant traffic impacts.

In Table 3.2.15, the 2012 Subsequent EIR analyzes the air quality impact of importing far more than the 261,000 cubic yards for the Solar Project, and analyzes importing 383,000 cubic yards for the construction of four projects simultaneously (Fire Training Academy, Athletic Education Building, Parking Structure, and West Parcel Solar). AR 219. The Solar Project as an individual project is separately analyzed in Table 3.2.12, for pollutant emissions in importing 261,000 cubic yards pursuant to the Preliminary Grading Plan in the 2012 Subsequent EIR. AR 214.

Section 3.9 of the 2012 Subsequent EIR provides impact analyses of the Solar Project's potential aesthetic, greenhouse gas, and biological impacts, and mitigation measures are included and adopted. In the 2012 Draft EIR, in Table 2.2.2, the Solar Project is identified as, "ID number… G, West Parcel Solar." AR 183. Section 3.9, entitled "WEST PARCEL SOLAR/RETAIL", contains an overview of the Project's biological impacts. AR 282.

The Draft 2012 Subsequent EIR stated that the preliminary grading plan would require 261,000 cubic yards of imported dirt. AR 283. In the 2012 Subsequent EIR, the District revised the grading plan to increase the acreage of the Solar Project from 6.6 to 10.6 acres, which will require additional grading. AR 327. Construction of the pad for the Solar Project in its final form requires 333,980 cubic yards of imported dirt. AR 327. It also requires the importation of 163,571 cubic yards of dirt through 160 large truck trips per day along a six-mile haul route. AR 1746, 1766.

The 2012 Subsequent EIR depicts the grading plan, showing the pad area, its resultant elevation, and the slope modifications, the access roads, and storm drain. AR 284. The 2012 Subsequent EIR clarifies that the Solar Project will be 2.0 MW on 10.6 acres. The 2012 Subsequent EIR notes that that: "Grading for the solar pad on the West Parcel will result in the removal of two drainages classified as non-wetland waters of the United States by the U. S. Corps of Engineers." AR 330. The District would apply to the Corps of Engineers for permits to remove the drainages. Ibid.

The 2012 Master Plan was approved and received CEQA lead agency clearance by the Board's certification of the 2012 Subsequent EIR on December 11, 2013. AR 2495-2500. The City never raised any grading issue with the Solar Project or any other project described in the 2012 Subsequent EIR during the comment period. *See* 323-24.

d. Project Approval

In April 2015, the District issued a Request for Statement of Qualifications and Request for Detailed Proposal ("RFP") for the Solar Project. AR 340-57. The RFP states that the Solar Project is an approximately two megawatt solar generation system. AR 343. The site description and utility information states that the Solar Project will be interconnected to the Southern California Edison utility grid. AR 359. The inverters for the Solar Project must be suitable for grid interconnection. AR 366.

On July 8, 2015, the Board first discussed Resolution No. 15-01 for an award of the construction and maintenance of the Solar Project to Borrego Solar Systems, Inc. ("Borrego"). AR 2122-24, 2652. Prior to the July 8, 2015 Board meeting, District consultant Lindmark prepared a CEQA memorandum addressed to the District's Director of Facilities Gary Nellesen ("Nellesen"). AR 1817-36. The CEQA memorandum stated that there was "no evidence that the [Solar] Project will cause a new significant environmental effect or increase the severity of previously identified significant effects identified in the Final EIR." AR 1829. In September 2015, Greve & Associates prepared air-quality and noise evaluations for the Solar Project based on the most recent grading plan and construction schedules. AR 12358-402, 12403-415.

United Walnut submitted written comments objecting that local zoning and development codes needed to be followed to build the Solar Project at the West Parcel site. AR 12218-21.

At the July 8 hearing, the Board adopted Resolution 15-01 and awarded a not-to-exceed amount of $5.3 million, including a $25,000 allowance, for a contract with Borrego as the Solar Project builder and operator. AR 2122-23. Resolution 15-01 contains a CEQA finding that the Solar Project is within the scope of the 2012 Subsequent EIR and that no substantial differences were present necessitating further environmental review. AR 2123.

In order to consider an increase to the award amount and allow an opportunity for a public hearing, the Board re-noticed the award of the Solar Project for the September 9, 2015 Board meeting. AR 12416, 12420. At the hearing, the Board found that no subsequent EIR was required for the Solar Project: "The project as currently designed could have significant effects on the environment, however, all potentially significant effects have been analyzed in the 2012 Final EIR pursuant to applicable standards and have been avoided or mitigated pursuant to the 2012 Final EIR, including mitigation measures that were adopted in the 2012 Mitigation Monitoring Program that are applicable to the project." AR 12420.

An updated CEQA memorandum dated September 9, 2015 was prepared by Lindmark and addressed to Nellesen for the re-noticed meeting. AR 1837-64. The updated memorandum contained an expanded discussion of the adequacy of the existing CEQA documentation for the Solar Project. AR 1856-57. Lindmark concluded that there were no new significant effects not analyzed in the 2012 Subsequent EIR, there were no substantial increases in the severity of the previously identified effects, and the District had not declined to adopt effective mitigation measures. AR 1856-57. To further support his analysis, Linkmark prepared an Appendix G form with a Notice of Determination signed by District staff.

At the September 16, 2015 meeting, members of the public spoke in opposition to the project presenting evidence about aesthetics, sight lines, and other impacts. AR 2689-1 to 2689-4, 2689-22 to 2689-79. Mt. SAC reviewed and approved a change to the Solar Project's location, footprint, and sight lines. AR 2689-3 ("Trustee Hidalgo said... that the relocation presented tonight by the College was a good compromise."); AR 2689-4 ("Mr. Gregoryk indicated that Trustee Chyr asked how much of this information is different than what was presented previously. Mr. Gregoryk said that the footprint is a little bit farther south than

previously presented, which affected the sight lines."); AR 2689-12 (change in location of Solar Project by 300 feet).

At a November 18, 2015 meeting, the Board passed Resolution 15-06 approving the Solar Project. AR 17-18. Resolution 15-06 excluded the Solar Project from Division of the State Architect ("DSA") review and approval because "the Board of Trustees assumes responsibility for adequate inspection of the materials and work of construction to ensure compliance with the provisions of Parts 2, 3, 4, 5, 6, 7, 11, and 12, Title 24, California Code of Regulations, as adopted by the California Building Standards Commission." ER 886-88. Resolution 15-01 stated that no EIR for the Solar Project was required because all potential significant effects were already analyzed in the 2012 Master Plan EIR. AR 15.

Also on November 18, 2015, the Board awarded five individual multi-prime bid packages required to prepare the West Parcel site for the Solar Project. AR 13689. The Board item for this award concluded no additional environmental analysis was required under CEQA as the environmental impacts of the site and grading components of the Solar Project had been addressed in the 2012 Subsequent EIR. AR 14908.

As required by MM-2c adopted in the 2012 Subsequent EIR, Mt. SAC's engineer, Iteris, Inc. ("Iteris") prepared a November 18, 2015 truck hauling plan that included an analysis of hauling the 163,571 cubic yards at 20 trucks (14 cubic yards each) per hour during non -peak - hour traffic periods and confirmed that there would not be any degradation of traffic Levels Of Service. AR 13621-77.

Board President Scroggins stated at the November 18 meeting that mitigation measures for dirt hauling for the Solar and ACE Projects had recently been modified. AR 2770. The District added that:

> …since the responsible agencies are conducting their own CEQA reviews and approvals of the West Parcel Solar Project, any project changes imposed by the responsible agencies as a condition of approval will not create a potentially new significant environmental impact or exacerbate any of the existing significant environmental impacts disclosed in the 2012 Master Plan Subsequent EIR…. For these reasons, no additional environmental analysis is required under CEQA. AR 2817.

At the same November 18 meeting, District approved design and consulting contracts to Helix Environmental Planning and to WW Design & Consulting, Inc. for a line of sight study. AR 2835.

e. <u>2015 Addendum</u>

On December 22, 2015, District issued a draft Addendum to the 2012 Subsequent EIR. AR 1738-1816. The District was considering extending construction traffic for an additional two hours per day during non-peak hours and the purpose of the Addendum was to change four existing mitigation measures adopted in the 2012 Subsequent EIR that apply to the Solar Project. AR 1741.

One of those mitigation measures was MM-2c, which provided that the District would consult with the City on a Truck Route Plan for truck hauling activities with more than fifty trucks per day. AR 1743. Hauling would occur only between 9a.m. and 2p.m. Monday through

Friday, and 8a.m. to 5p.m. on Saturdays. AR 1743. Light duty trucks with a weight of less than 8,500 pounds were exempted from this restriction. AR 1743.

The Addendum contended that MM-2c will intrude into the Saturday p.m. peak hour traffic and does not have the specificity needed for assessing truck hauling activities for the Solar Project or future projects hauling large amounts of dirt. AR 1743. Based on plans for the Solar Project, the haul route was defined. AR 1743. A congestion analysis of the haul route was completed in the November 18, 2015 Iteris report. AR 1745.

Based on this analysis, the District revised MM-2c as follows. AR 1750. For hauling operations of more than 15 trucks per hour and more than 100,000 cubic yards, a Truck Haul Plan shall be implemented as approved by the Director of Facilities Planning and Management. AR 1750. The Truck Haul Plan shall specify requirements to minimize traffic congestion both on and off campus. AR 1750. If necessary, haul trucks will be required to use radio communication to improve traffic flow. AR 1750. Light duty trucks with a weight of no more than 8,500 pounds are exempt from any Truck Haul Plan. AR 1750.

The Addendum concluded that a subsequent EIR need not be prepared because the changes proposed to MM-2c were not major revisions. AR 1752. The Addendum stated that the proposed changes were meant solely to address reduction of traffic congestion during the a.m. and p.m. hours. AR 1752.

The Board approved the Addendum on January 13, 2016. AR 2298, 14918-21. It concluded that the Addendum was for a minor technical change which would not create a new significant environmental impact or substantially increase the severity of a significant impact disclosed in a previous EIR under Guidelines section 15162. AR 2363-64.

The District has obtained the following required approvals for the Solar Project: (1) Section 401 Water Quality Certification from the Los Angeles Regional Water Quality Control Board ("RWQCB"), executed May 23, 2016 (AR 14080-95), (2) California Department of Fish and Wildlife Streambed Alteration Agreement, executed August 22, 2016 (AR 14096-19), and (3) a Section 404 Nationwide Permit from the Army Corps of Engineers, executed October 13, 2016, including a United States Fish and Wildlife Service ("USFWS") Biology Opinion (AR 14120-14). The District also complied with the National Pollution Discharge Elimination System ("NPDES") permit process (AR 14215-46) and submitted a Stormwater Pollution Prevention Plan to the State Water Resources Board (AR 14247-786).

f. <u>Stop Work Order</u>

On October 20, 2016, the City issued a Stop Work Order through its Community Development Department against the Solar Project. ER 5068. The Stop Work Order refers to District's "construction of the solar generation project located on undeveloped land south of Temple Avenue/Amar Road and West of Grand Avenue, in an area commonly known as the 'West Parcel' or otherwise known as the Solar Project. ER 5068. The Stop Work Order cites various alleged violations of the City's WMC, including section 25-39(f), which governs issuance of CUPs for property in the City zoned R-1, and section 6-5.6, which governs grading and certain provisions promulgated under Appendix J to the Los Angeles County Building Code ("LACBC") in the Los Angeles County Code, and WMC. ER 5048, 5068.

E. Statement of Extra-Record Facts[4]

1. Mt. SAC EIR Policy

Mt. SAC is the largest single campus community college district in the State of California with over 421 acres and is located in the City. Lindmark Decl. ¶3. Mt. SAC construction projects go through three phases of approvals. First is CEQA approval -- the project is identified and evaluated for CEQA compliance. Second, the project is designed and engineered by Board-approved architects and/or engineers. This stage of approval will sometimes show that the scope of the project has changed, necessitating a subsequent or supplemental EIR, or negative declaration (with or without mitigation or addendum). Nellesen Decl. ¶3. For example, the ACE Project was approved in the 2012 Subsequent EIR. Due to scope changes, a project-specific EIR was later prepared. Nellesen Decl. ¶3.The third and final phase of project approval occurs when the constructioncontracts are awarded by the Board. Nellesen Decl. ¶3.

Mt. SAC is an institution of "public higher education" and is required under Public Resources Code section 21080.09 to develop long range development plans ("LRDPs") that address physical development and land use planning to meet its academic and institutional objectives. Lindmark Decl. ¶3. The use of LRDPs and related EIRs is common to institutions of public higher education. For public agencies, Facility Master Plans serve a similar purpose as master plans, specific plans, and area plans for local agencies. Lindmark Decl. ¶3.

Mt. SAC prepared LRDPs in the form of Facility Master Plans in 2002, 2005, 2008 and 2012, which were evaluated in the Final Program EIR certified in December 2002 with Supplemental or Subsequent EIRs in 2005, 2008, and 2012. Lindmark Decl. ¶4. The use of program EIRs has several advantages for public higher education institutions like Mt. SAC that are required to evaluate and coordinate long range development projects. Lindmark Decl. ¶4. The program EIR can (a) provide a more exhaustive consideration of effects and alternatives than would be practical in a project-specific EIR, (b) provide consideration of cumulative impacts that might be ignored in a series of project-specific EIRs, (c) avoid duplicative consideration of long-range development policies, (d) allow consideration of multiple projects at a time when the lead agency has greater flexibility to address cumulative impacts, and (e) provide environmental review at the earliest stage possible. Lindmark Decl. ¶4. Mt. SAC policy is to use program EIRs addressing environmental impacts at a project -level so that CEQA review can start at the earliest meaningful time and cumulative district-wide impacts of the project may be considered. This is a common practice among large public education institution with numerous ongoing projects. Nellesen Decl. ¶3.

Mt. SAC does not have a policy of avoiding CEQA compliance by using tiered program EIRs to avoid evaluating project-level impacts and mitigation. Nellesen Decl. ¶3. Mt. SAC did not use “programmatic tiering” for the Solar, BCT, Parking Garage, and ACE projects was not "programmatic tiering". Lindmark Decl. ¶5. "Tiering" is defined in Guidelines section 15152 to mean "using the analysis of general matters contained in a broader EIR (such as one prepared for a general plan or policy statement) with later EIRs and negative declarations on narrower projects, incorporating by reference the general discussions from the broader EIR, and concentrating the later EIR or negative declaration solely on the issues specific to the later project." Lindmark Decl. ¶5. Mt. SAC prepares EIRs to support its Updated Master Plans with

[4] For convenience, the extra-record evidence is presented collectively for all three Petitions even though it differs slightly for each Petition.

sufficient project-level review to reduce the need for subsequent environmental review under CEQA Guidelines section 15162, which governs the preparation of subsequent EIRs and negative declarations, and not section 15152, which governs "tiering." Lindmark Decl. ¶5; Nellesen Decl. ¶4.

2. ACE

The Board never awarded a construction contract for the ACE Project. Nellesen Decl. ¶16. Based on a subsequent scoping review of the ACE Project, Lindmark recommended that the District prepare a project-specific EIR to address potential new environmental effects. Lindmark Decl. ¶26. To avoid confusion, the new project was titled PEP to distinguish the abandoned ACE Project. Lindmark Decl. ¶26.

Both the City and United Walnut have filed legal actions challenging the 2015 Subsequent EIR for the PEP. Lindmark Decl. ¶27.

3. Parking Garage Project

Since the award of the Phase I Site Work Contract with Tilden-Coil, the Board has taken official action to abandon the Parking Garage Project. Nellesen Decl. ¶15.

4. Solar Project

The Solar Project is a solar energy generation facility. Nellesen Decl. ¶21. Mt. SAC developed the Solar Project for the purposes of reducing its electrical energy consumption and passing those fiscal and ecological savings along to its students and surrounding community. The Solar Project will produce and generate approximately 21,671,525 Kwh of clean electrical energy over the next five years, and 103,124,789 Kwh of clean electrical energy over the 25 year life cycle of the Project.

The West Parcel had been shown in the 2002 draft EIR as a "Future Asset Management Area." Lindmark Decl. ¶6. The Solar Project began in 2008. While there was no Solar Project identified at that time, Mt. SAC had Helix Environmental Planning Inc. complete initial biological resources evaluations for the West Parcel as part of the 2008 Subsequent EIR Lindmark Decl. ¶6. The anticipated noise from the construction of the Solar Project was first analyzed in Section 3.4 of the 2008 Subsequent EIR. Lindmark Decl. ¶9. In 2012, Mt. SAC approved the "Facility Master Plan 2012" to, among other things, identify six campus zones of use to guide infrastructure development and future planning. Lindmark Decl. ¶7. The 2012 Subsequent EIR identified the Solar Project and also analyzed the potential environmental impacts of the Solar Project. Lindmark Decl. ¶7. Table 3.2.15 of the 2012 Subsequent EIR analyzed the air quality impact of importing far more than the 261,000 cubic yards for the Solar Project. Lindmark Decl. ¶8. Section 3.9 of the 2012 Subsequent EIR provided impact analyses of the Solar Project's aesthetic, greenhouse gas, and biological impacts, and appropriate mitigation measures were included and adopted. Lindmark Decl. ¶10. The 2012 Subsequent EIR also depicts the grading plan, pad area, elevation, slope modifications, access roads, and storm drain. Lindmark Decl. ¶11.

The contract award for the Solar Project occurred at the July 8, 2015 Board meeting. Lindmark Decl. ¶13. At the time, the Solar Project had not significantly changed from the Project approved in the 2012 Subsequent EIR. Lindmark Decl. ¶13. To support this finding, Lindmark prepared a CEQA memo addressed to Nellesen. Lindmark Decl. ¶13.

The Board re-noticed the award of the Solar Project for the September 9, 2015 meeting and Lindmark prepared another CEQA compliance memo for Nellesen. Lindmark Decl. ¶14 Nellesen Decl. ¶7. He also prepared an Appendix G checklist for Nellesen. Lindmark Decl. ¶14; Nellesen Decl. ¶7. The Solar Project was awarded by the Board at a September 16, 2015 special meeting. Lindmark Decl. ¶14.

The location of the Solar Project along Grand Avenue was an initial potential aesthetic concern because of the high traffic volume on the street, but the pad elevation and landscape plan assured no aesthetic impact. Lindmark Decl. ¶15. Subsequent analysis determined that only approximately 163,571 cubic yards of import would be needed for the Solar Project. Lindmark Decl. ¶16. Iteris prepared a truck hauling plan for this importation of dirt, and it concluded that the plan would not cause a significant traffic impact. Lindmark Decl. ¶16.

The Board did not approve contracts for the performance of post-approval environmental studies at its November 18, 2015 meeting. Nellesen Decl. ¶8. Instead, the Board approved consultant contracts necessary to comply with the requirements of resource agencies such as USFWS and the Corps of Engineers. Nellesen Decl. ¶8.

On November 18, Mt. SAC adopted Resolution 15-06 excluding the Solar Project from DSA review based on the conditions that Mt. SAC's plans be prepared by a California architect or engineer, that the Board assumes authority for inspection of materials and construction to comply with the California Building Code, and that the photovoltaic panels shall be ground-mounted, entirely fenced from student and public use, not associated with public viewing areas and other conditions. 2/10/17 Nellesen Decl. ¶9.

DSA requires, with few exceptions, a complete set of integrated architectural and engineered development plans and drawings before it will review an application. Hussain Decl. ¶3. The exceptions are for a ministerial "pre-check" and specially labeled and titled project increments. Hussain Decl. ¶3. The DSA web-tracker is a reliable source of project information. Hussain Decl. ¶5.

5. <u>The Addendum</u>

Beginning in December 2016, Mt. SAC considered extending construction truck traffic for an additional two hours per day during non-peak hours in addition to making minor edits to four existing mitigation measures adopted in the 2012 Master Plan to: (1) accommodate the extended construction truck traffic time (MM-2c); (2) require parking supply studies on regular intervals to more precisely determine when the parking supply mitigation is required to be implemented (MM-2k); (3) remove the requirement for grading permits, since the District does not require them (MM-3a); and (4) align the paint VOC requirements with current industry practices and California Emissions Estimator Model standards (MM- 3i). Additionally, four components of the Solar Project Truck Haul Plan were proposed to reduce potential traffic congestion if other drivers make unsafe vehicular movements near trucks along the haul route. Separation of haul trucks along the haul route minimizes traffic congestion and improves traffic flow. Lindmark Decl. ¶18.

An evaluation of the proposed changes was included in the Addendum. Lindmark Decl. ¶18. The Addendum was not a *post-hoc* rationale for Solar Project impacts. Nellesen Decl. ¶9. Its purpose was to address minor revisions to the Solar Project and mitigation measures resulting in similar or lesser effects than the original Project. Nellesen Decl. ¶9; 2/17/17 Lindmark Decl. ¶17. Lindmark concluded that an Addendum was the appropriate CEQA document because it

would not cause any new significant environmental impacts or substantially exacerbate existing impacts. Lindmark Decl. ¶19.

6. The City's Concerns

Based on the District's construction plans the Solar Project's West Parcel, accessible only by a driveway on the westerly side of heavilytraveled Grand Avenue, will be subject to a 40-foot truck either slowing to enter or leave theproject site approximately every 90 seconds, for eight hours a day, Monday through Saturday. Gilbertson Decl. ¶7. The truck deceleration/acceleration will take place within a left-merging rightlane (the "Number 3" lane) of Grand Avenue so that the truck driver will not merely need topull out onto a street with a 50 mile per hour speed limit but, within a matter of feet, mergeinto the second ("Number 2") traffic lane. Gilbertson Decl. ¶8.

The City Engineer's practice is to require the responsible party proposing a mass grading operation of the magnitude proposed for the Solar Project to submit a detailed "Haul Route Plan/Construction Traffic Control Plan." Gilbertson Decl. ¶9. As part of this established process , the City Traffic Engineer has several measures that can be implemented to ensure the safety of the City's streets. Gilbertson Decl. ¶11.

The Solar Project site proximity to the Grand Avenue and Amar Road intersection is an area of concern to the City. Gilbertson Decl. ¶11. The City Traffic Engineer could address the potential sight distance concerns by reducing speed limits on southbound Grand Avenue traffic, or by imposing a "no right turn on red" restriction at the intersection. Id. The left merge of the Number 3 lane is a particular concern that could be addressed be temporarily eliminating the Number 3 lane from Grand Avenue south of Amar Road, leaving the existing lane as a dedicated deceleration/acceleration ramp for trucks. Gilbertson Decl. ¶12. Finally, the City Traffic Engineer could address the left-hand turns needed for the proposed haul route by adjusting the traffic signal timing to extend the amount of time available for left turns. Gilbertson Decl. ¶13.

At no time has Mt. SAC consulted with the City Traffic Engineer regarding the proposed haul route, and the City Engineer is unaware of any concrete safety measures for the motoring public. Gilbertson Decl. ¶14. It is irresponsible for a public or private agency to use the right-of-way for hauling 163,571 yards of fill in an urban area without the review of the haul route and traffic plan by a registered traffic engineer. Gilbertson Decl. ¶15.

7. Addendum Approval

The Addendum was on the agenda for approval by the Board at January 13, 2016 meeting. 2/17/17 Lindmark Decl. ¶18. 19. The City attended the Board meeting to oppose the adoption of the Addendum and submitted a letter authored by the City Attorney dated January 13, 2016. 2/17/17 Lindmark Decl. ¶19.

All of the objections raised by the City Attorney are addressed in the Addendum. The basic parameters of the Solar Project has not changed -- the same site, an identical use, a reduction in grading import, and a reduction in height of the building pad are factors which reduce overall environmental impacts. 2/17/17 Lindmark Decl. ¶19. The City's criticism of the Iteris' truck haul congestion memorandum is unfounded. The distance from the borrow site to the Solar Project site is approximately one mile and the proposed truck hauling return trip is approximately five miles. No feasible alternative truck hauling routes are readily available that do not include residential areas or return trips on Grand Avenue. 2/17/17 Lindmark Decl. ¶21.

Mt. SAC has consulted with the City regarding the Truck Hauling Plan through the environmental review process. 2/17/17 Lindmark Decl. ¶21.

While the City claims the Addendum ignores health risks, a health risk assessment is not needed or appropriate for either the Truck Hauling Plan or hauling impacts at the Grand Avenue and Temple Avenue intersection. 2/17/17 Lindmark Decl. ¶27. There is no requirement from SCAQMD to prepare a health risk assessment for school-type operations or for construction projects of the type proposed. The Solar Project is a relatively small construction project as indicated by the fact that the air quality analysis shows emissions will be well below SCAQMD thresholds. 2/17/17 Lindmark Decl. ¶27.

8. <u>The Stop Work Order</u>

In recent history, Mt. SAC has never applied for a CUP from the City for any of its construction projects, notwithstanding its RPD zoning designation. Nellesen Decl. ¶19. Mt. SAC never applied for a grading permit for any of its construction projects. Nor has the City ever requested review and approval of any grading plans for Mt. SAC construction projects. Nellesen Decl. ¶19.

The Solar Project was approved as part of the 2012 Master Plan Update dated February 18, 2013, and received CEQA lead agency clearance by the Board's certification of the 2012 Subsequent EIR. No representative from the City or neighborhood group or resident raised any concerns about the Solar Project at December 11, 2015 Board meeting approving the 2012 Subsequent EIR and the Solar Project. Nellesen Decl. ¶19. Based on the longstanding history with the City and the lack of any comments, the Solar Project was commenced without a CUP, building permit, or grading permit from the City. Nellesen Decl. ¶19.

Mt. SAC has received regulatory approvals from the RWQCB, California Department of Fish and Wildlife ("CDFW"), and Army Corps of Engineers. 2/17/17 Nellesen Decl. ¶10. Mt SAC also has submitted a Stormwater Pollution Prevention Plan to the Water Resources Board and complied with the NPDES permitting process. 2/17/17 Nellesen Decl. ¶10.

The construction schedule for the Solar Project depends on several time-sensitive factors, including constructing around the breeding season of federally listed (threatened) coastal California gnatcatcher, which runs from February 15 to August 31. In addition, the Section 404 Nationwide Permit from the Corps of Engineers remains valid only through March 18, 2017, with a twelve month extension if the Project has commenced the permitted activity. Nellesen Decl. ¶7.

After obtaining these state and federal approvals, the District planned to start construction of the Solar Project on October 24, 2016 but was stopped when Vasquez of the City's Community Development Department issued the Stop Work Order on October 20, 2016. Nellesen Decl. ¶12.[5]

9. <u>The Revised Grading Plan</u>

After the December 6, 2016 hearing in which United Walnut's preliminary injunction application on its third cause of action was granted and the District's motion to enjoin

[5] The court has not set forth the evidence concerning the propriety of the signature on the Stop Work Order, as that issue was raised by the District in opposing a preliminary injunction, but not in any of its papers for trial.

enforcement of the Stop Work Order was denied, the District contacted the City for information about what it would need to do to obtain a grading permit for the Solar Project in an effort to avoid potential further delays. Nellesen Decl. ¶14. City Manager Robert Wisher ("Wisher") responded in a December 7, 2016 email as follows:

> "As a follow-up to our earlier conversation, there is a 19-page ruling from the Judge that is available. Also, for your information, in order to obtain a grading permit said project must be fully entitled. Which means that the project needs to go through the zoning process and receive approvals prior to issuance of any building/grading permits. Please refer to the zoning process documents that we forwarded to you and your staff on two (2) separate occasions." Nellesen Decl. ¶15; ER 5110.

The "zoning process documents" Wisher referred to in his December 7th email are: (i) CUP application; (ii) building permit application; and (iii) a development application. Nellesen Decl. ¶16. On December 13, 2016, the District responded by informing Wisher that the court's ruling determined the Solar Project is a solar energy generation facility and exempt from all City building and zoning ordinances other than a carve-out that the Solar Project must comply with the City's grading ordinance regulating "review and approval of grading plans related to the design and construction of onsite improvements which affect drainage, road conditions or grading." Nellesen Decl. ¶16; ER 5113. Mt. SAC's Vice-President, Michael Gregoryk ("Gregoryk") informed Wisher that the City cannot impose any other zoning controls for the Solar Project, including the requirement that the District obtain a CUP or any other permit unrelated to the narrow carve-out for grading plan review and approval as quoted above. Id.

Psomas is Mt. SAC's grading engineer for the Solar Project. Barker Decl. ¶5. The original grading plans for the Solar Project were prepared by Psomas based on the California Building Standards Code set forth in Title 24 of the California Code of Regulations. Nellesen Decl. ¶11; Barker Decl. ¶8. Psomas' grading plans were submitted for review to the Army Corps of Engineers and CDFW before those agencies took regulatory action to approve the Solar Project. Nellesen Decl. ¶11; Barker Decl. ¶19.

In December 2016, the District asked Psomas to review the relevant grading provisions in the WMC and the LACBC for the purpose of revising Psomas' grading plans as required under Government Code section 53097 for the design and construction of onsite improvements which affect drainage, road conditions or grading,. Nellesen Decl. ¶18; Barker Decl. ¶8.

Psomas prepared the revised grading plans for the Solar Project to comply with Appendix J of the LACBC. Barker Decl. ¶12-14. As long as a grading plan and application complies with the relevant technical portions of the criteria in Appendix J and any local agency approvals, the County building official will process the grading plan for approval. Barker Decl. ¶16. The revised grading plans are in full compliance with Appendix J and the WMC. Barker Decl. ¶17. WMC section 6-5.3 provides: "Development standards relative to grading within the City of Walnut are hereby established to complement the provisions set forth in Appendix Chapter J of the Los Angeles Building Code as currently adopted and as may be amended from time to time…." Barker Decl. ¶10. In Psomas's opinion, the "development standards" referred to in WMC section 6-5.3 apply only when a project is subject to City discretionary approval, such as when a CUP is required. Barker Decl. ¶11.

On January 23, 2017, the District transmitted Psomas' revised grading plans to the City. ER 5199; *see* Nellesen Decl. ¶19. In the transmittal letter, Nellesen explained that the revised grading plans had been prepared pursuant to Government Code section 53097 and asked that City's Building & Safety Division review and approve the revised grading plans. Nellesen Decl. ¶19; ER 5199. Nellesen did not include a grading permit application as he was unable to locate a City grading permit application on the City's website, and after diligence search of District's records, no such grading permit application can be located. Nellesen Decl. ¶19.

On January 24, 2017, Nellesen received an email from Vasquez acknowledging receipt of the revised grading plans and advising Nellesen that the City was quickly working to review the materials and would provide written correspondence immediately following completion of the review. Nellesen Decl. ¶20; ER 5199.

On February 23, 2017, the City responded, stating that Mt. SAC's grading plans are incomplete because Mt. SAC must submit a development application for City Planning Commission review. 2/24/17 Nellesen Decl. ¶5, Ex. A. The City relied on WMC section 6-5.6(b), which provides that when a grading plan proposing an elevation change of more than five feet, a development must be submitted to the Planning Commission for discretionary approval. Nellesen Decl. ¶5, Ex. A. The City stated that Mt. SAC's grading plans are subject to discretionary review because the elevation change is greater than five feet. Nellesen Decl. ¶5, Ex. A.

E. United Walnut Petition[6]

Petitioner United Walnut argues that the District has violated CEQA by failing to conduct and circulate initial studies for the Parking Garage and Solar Projects, violated the City's land use and zoning laws, and violated CEQA by implementing a policy and practice that avoids CEQA project-specific review.

1. The Failure to Conduct Initial Studies

Petitioner United Walnut's second cause of action concerns CEQA compliance for the Parking Garage and Solar Projects. United Walnut alleges that the District failed to perform required additional environmental review for the Parking Garage and Solar Projects. Pet. Op. Br. at 7, 9-10. Rather, the District relied entirely on its Program EIR, including the 2012 Subsequent EIR. According to Petitioner, this reliance is improper because it does not comply with CEQA's requirements for tiered programmatic review. Pet. Op. Br. at 9-10.[7]

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[6] In support of its Petition, United Walnut asks the court to judicially notice pages from the DSA website (Exs. 3-4). The request is granted. Evid. Code §452(c).

The court has ruled overruled United Walnut's objections to Mt. SAC's evidence. Walnut's objection to Mt. SAC's opposition brief also was overruled as improper; a party may not make an evidentiary objection to another party's argument. Nonetheless, the court has separated relevant Administrative Record from Extra Record evidence in considering the parties' claims.

[7] The District contends (Opp. at 10) that the substantial evidence standard applies to United Walnut's claims, but that standard applies only to the adequacy of the EIRs and the District's decision-making, not whether Mt. SAC proceeded in the manner required by law, which is reviewed *de novo*. *See post.*

A program EIR is used for purposes of (1) avoiding multiple EIRs, (2) simplifying later environmental review, and (3) consideration of broad programmatic issues. Cal. Practice under CEQA, Cont. Ed. Bar 2d ed. (2016) ("CEQA Practice Guide") §10.14B. The agency must examine each activity to determine whether additional environmental review is required. Id. at §10.16a. This determination requires a two-step process: "First the agency considers whether the activity is covered by the program EIR by determining whether the activity will result in environmental effects that were not examined in the program EIR." Id., (citing CEQA Guidelines §15168(c)(1). Second, "if the agency determines the activity is covered by the program EIR, [the agency] must evaluate the proposed activity to determine whether any new environmental effects could occur, or new mitigation measures would be required due to events occurring after the Program EIR was certified." Id. (citing CEQA Guidelines §15168(c)(2)).

When program EIRs are part of a tiered programmatic review, site-specific projects trigger new environmental review under CEQA's provision for tiered EIRs. Pub. Res. Code §§ 21068.5, 21094; Friends of Mammoth v. Town of Mammoth Lakes Redevelopment Agency, ("Friends of Mammoth") (2000) 82 Cal.App.4th 511, 528. Where a tiered EIR has been prepared, "CEQA requires a lead agency to prepare an initial study to determine if the later project may cause significant environmental effects not examined in the first EIR." Friends of Mammoth, *supra*, 82 Cal.App.4th at 528. "If the subsequent project is not consistent with the program or plan, it is treated as a new project and must be fully analyzed in a project EIR, or another tiered EIR if it may have a significant effect on the environment." Friends of College of San Mateo Gardens v. San Mateo City Community College Dist., ("San Mateo Gardens") (2016) 1 Cal.5th 937, 960. The default procedure is to prepare a tiered EIR for later projects. Only where the project was examined at a sufficient level of detail in the previous EIR is a tiered EIR or other environmental review not necessary. Pub. Res. Code §21094.

Petitioner United Walnut alleges that the District has conducted environmental review through tiered supplemental and subsequent Program EIRs, and never performed an initial study prior to approving the Parking Garage Project and Solar Project as required by Public Resources Code section 21094(c). The 2012 Subsequent EIR, which states: "[T]his document is a Subsequent EIR since new potential adverse project impacts not previously evaluated in prior CEQA documents (Certified Final EIRs) ... The prior 2002, 2005 and 2008 Campus Master Plans were evaluated in Final Program EIR ..." AR 147. According to United Walnut, the record shows that Mt. SAC intended and understood its 2012 Subsequent EIR to be part of its tiered programmatic EIRs beginning in 2002. In response to a Board member's concern about a particular project during deliberations on the 2012 Subsequent EIR, Mt. SAC President Scroggins stated: "Each project in the [2012] Master Plan will be presented to the Board individually and, if another Environmental Impact Report is required, one will be done." AR 2495-10 to 2495-11.

Petitioner United Walnut contends that additional environmental review did not happen. The Parking Garage and Solar Projects were approved in the 2012 Subsequent EIR. Pursuant to Pub. Res. Code section 21094(c), Mt. SAC must conduct an initial study for its campus projects as they come up for approval. *See*San Mateo Gardens, *supra,* 1 Ca1.5th at 960. Alternatively, Mt. SAC must make a determination whether its subsequent activity is within the scope of its Program EIR. Committee for Green Foothills v. Santa Clara County Board of Supervisors, (2010) 48 Cal.4th 32, 44-45. Mt. SAC never performed an initial study for the Parking Garage Project. Mt. SAC never circulated an initial study for the Solar Project on the occasions when it

approved the Project on July 8, 2015, re-approved it on September 9, 2015, or made substantial changes on September 16, 2015. Instead, the District merely contends that both Projects were fully studied in the 2012 Subsequent EIR. Pet. Op. Br. at 10.

A project EIR must evaluate the significant environmental impacts and mitigate them to less than substantial. Pub. Res. Code §21100. A program EIR is prepared for a series of actions that are related geographically or are part of a continuing program. Guidelines §15168. Project EIRs are often tiered from program EIRs when general matters are initially covered in the Program EIR and more specific environmental documents will follow. Guidelines §§ 15152, 15385; In re Bay Delta, (2008) 43 Cal.4th 1143. Tiering allows the broad overall impacts to be analyzed at the first-tier programmatic level, which need not be reassessed when each of the project's narrower phases is approved. San Mateo Gardens, *supra*, 1 Cal.5th at 959. Moreover, if the agency addressing a specific project finds that no new effects could occur or no new mitigation measures would be required, the agency can approve the activity as within the scope of the program EIR's project and no new environmental document will be required. Guidelines §15162(c)(2). This decision must be made after preparing an initial study in consultation with responsible agencies and is governed by the substantial evidence standard. Pub. Res. Code §21094(a), (c); Guidelines §15063(g); San Mateo Gardens, *supra*, 1 Cal.5th at 959.[8]

The District denies that its Program and Subsequent/Supplemental EIRs (collectively, "Program EIRs") are tiered documents, and argues that they fully evaluate all potential environmental impacts of the projects on campus, implement full mitigation measures, and make the required CEQA findings. Opp. at 10. The District contends that it does not defer any analysis of details of linked projects until those projects are ready for approval. *See* Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova, (2007) 40 Cal.4th 412, 429. As such, no further environmental review is required under Pub. Res. Code §2166 for any project referenced in the Program EIRs unless there are substantial changes to the project affecting the severity of environmental effects, substantial changes with respect to the project's undertaking affecting the severity of significant effects, or new information appears that was not known when the Program EIR was certified. Opp. at 11.

United Walnut notes that it is not challenging the contents or sufficiency of the Program EIR, and contends that Mt. SAC's procedure is a failure to proceed in the manner required by law under CEQA, and subject to *de novo* review. Reply at 1. United Walnut criticizes Mt. SAC's approach of attempting to address specific projects in the Program EIR. Such an approach locks in projects and prevents future public review and comment. The approach also permits Mt. SAC to avoid future CEQA study when project decisions actually are being made for specific design, size, and location, and resulting site-specific impacts can be more accurately disclosed, understood, and studied. Mt. SAC's Program EIR lacks an adequate informational basis because a reasonable person reading the collective Program EIRs simply cannot tell which projects have been finally and thoroughly analyzed, mitigated, and overridden. Reply at 5.

The court agrees with all of United Walnut's criticisms, which are aggravated by Mt.

[8] If the project is not within the scope of the program EIR project, review is not governed by section 2166's substantial evidence standard. Instead, the agency must determine whether the later project might cause significant environmental effects not considered in the program EIR, and a tiered EIR must be prepared if the project arguably may have such effects. Sierra Club v. County of Sonoma, (1992) 6 Cal.App.4th 1307, 1321.

SAC's piecemealing of its impacts analysis for projects between Subsequent EIRs. For example, the Solar Project began in 2008 with a biological resources evaluations for the West Parcel as part of the 2008 Subsequent EIR even though the Solar Project had not yet even been identified. Lindmark Decl. ¶6. The noise impacts from construction of the Solar Project were first analyzed in the 2008 Subsequent EIR. Lindmark Decl. ¶9. Then the 2012 Subsequent EIR identified the Solar Project and analyzed the remaining air quality, aesthetic, greenhouse gas, and biological impacts, imposed mitigations measures and a grading plan. Lindmark Decl. ¶¶ 10-11. It is extremely difficult for any reader to read and follow the impacts analysis for a project by having to refer to a series of Subsequent EIRs.

Nonetheless, St. SAC is entitled to use a program EIR to perform project-specific analysis. There are benefits to a program EIR. As Mt. SAC contends, Guidelines section 15168 provides that a program EIRs can (a) provide a more exhaustive consideration of effects and alternatives than a project-specific EIR, (b) consider cumulative impacts that might be ignored in a series of project-specific EIRs, (c) avoid duplicative consideration of long-range development policies, (d) allow consideration of multiple projects at a time when the lead agency has greater flexibility to address cumulative impacts, and (e) provides environmental review at the earliest stage possible. *See* Lindmark Decl. ¶4.

The question is has Mt. SAC used a true program EIR with tiering, or has it used a program EIR that also has project-specific evaluations of impacts and mitigations? The answer is the former. As United Walnut notes Mt. SAC's Subsequent EIRs define their "project" as the Facilities Master Plan. *See, e.g.,* AR 147. The Subsequent EIR's environmental analysis "addresses the project at the level of detail characteristic of a conceptual master plan." AR 155. The Subsequent EIRs then provide a project description – the bedrock of an informative and legally adequate EIR – in "typically uninformative EIR doublespeak" that mentions how the Facilities Master Plan is a collection of future planned facilities, some of which have been built and some of which have been changed, along with updated statistics on expected campus wide growth and needs. *See, e.g.,* AR 180-85.The project descriptions are opaque and the Project evaluations are buried in the EIRs, if present at all. Instead, the Subsequent EIRs merely lump the common types of impacts arising from the collective FMP projects and set forth mitigation measures to address those types of impacts. AR 2649-11. The EIRs do not address the details of the specific projects, they merely lists the projects that are part of the Facilities Master Plan. *See* AR 181-183. These are all characteristic of a programmatic EIR, not a project-specific EIR.[9]

Mt. SAC's Facilities Master Plans are the equivalent of the LRDPs required of public school districts. Pub. Res. Code §21080.09; Lindmark Decl. ¶3. The Legislature has expressly authorized school districts to tier from an LRDP's environmental review. Pub. Res. Code §21080.09(c). That is exactly what Mt. SAC's Program EIRs are: environmental documents from which Mt. SAC may tier.

[9] United Walnut provides as an example that the BCT Project is identified in the 2002 Program EIR and Supplemental/Subsequent 2005, 2008, and 2012 EIRs only by reference and without a project-specific identification, disclosure and analysis of project-specific impacts, and analysis of a particular mitigation related to it. Then the BCT project merely appears in the 2008 Subsequent EIR in a Table 3 list of projects. *Compare* AR 178 (2012 Subsequent EIR states that the BCT was reviewed in the 2008 Subsequent EIR) *and* AR 5374-85 (Notice of Preparation for the 2008 Subsequent EIR says nothing about the BCT). Reply at 5, n. 2.

Mt. SAC's Program EIRs are an environmental evaluation that can be used for use in tiering and not project-specific review. Mt. SAC's Program EIR actually is a campus-wide evaluations of common impacts that can be anticipated from projected growth (principally students, parking, greenhouse gases, and traffic), and future implementation of the collective proposed Facilities Master Plans.

As Nellesen accurately explained to the Board on June 24, 2015:

> "[W]hen looking at environmental impacts, projects are not looked at individually, but how they affect other projects, and there are multiple projects in any given area." AR 2649-11 (emphasis added).

Nellesen's description is that of a program EIR, not a project-specific EIR. *See* In re Bay-Delta et al. (2008) 43 Cal.4th 1143, 1170.

As a result of the fact that the Program EIR is a true tiering document, Mt. SAC must prepare and circulate initial studies to responsible agencies (at an appropriate time) as projects come up for an actual decision on design and implementation. Pub. Res. Code §21068.5, §21094(a), (c). The District was required to, at minimum, prepare and circulate an initial study for each of the Solar Project and the Parking Garage Project to determine whether the individual projects would cause significant environmental effects not examined in the Program EIR. Contrary to this requirement, the District did not properly prepare and circulate initial studies for those Projects. The initial studies for the Solar Project and BCT described by the District as CEQA memoranda, were prepared by Lindmark and provided only to Nellesen. Lindmark Decl. ¶¶ 13, 14, 20; Nellesen Decl. ¶¶ 7, 10. There is no evidence that the initial studies were presented to the Board or any responsible agencies.

The District failed to proceed in the manner required by law by failing to properly circulate initial studies for the Parking Garage and Solar Projects. However, the Parking Garage Project is now moot. *See post*.

2. Statute of Limitations

Pub. Res. Code section 21167 establishes statutes of limitations for all actions alleging violations of CEQA. When an agency approves a project without determining whether it will have a significant effect on the environment, the limitations period is 180 days from project approval. Pub. Res. Code §21167(a). The limitations period starts running on the date the project is approved, and is not re-triggered on each subsequent date that the public agency takes action toward implementing the project. Van de Kamps Coalition v. Board of Trustees of Los Angeles Community College District, (2012) 206 Cal.App.4th 1036, 1045.

On February 11, 2015, the District awarded a contract to Tilden-Coilto prepare the site for the Parking Garage Project. AR 2639. The Board also adopted Resolution No. 14-05, which found the Parking Garage project exempt from compliance with the City's development and zoning ordinances. AR 12. No initial study was prepared for the February 11, 2015 Parking Garage approvals. AR 5-13. United Walnut filed suit a little over two months later, on April 15, 2015, and obtained a TRO prohibiting the District from proceeding with the Parking Garage construction. The Parking Garage claim is timely. The District does not dispute that the second cause of action is timely for the Parking Garage Project.

The District argues that the Solar Project claim is time-barred. According to the District,

the Board approved the 2012 Subsequent EIR containing the Solar Project on December 11, 2013. United Walnut's First Amended Complaint alleging CEQA non-compliance for the Solar Project was not filed until January 2016. Opp. at 9.

United Walnut responds that the Solar Project claim is not time-barred because its CEQA cause of action for the Solar Project does not challenge the 2012 Subsequent EIR. Reply at 2. United Walnut also disputes that the District approved the Solar Project as part of the 2012 Subsequent EIR because the District expressly withheld approval as part of the 2012 Facility Master Plan. AR 2495-11 (President Scroggins: "there haven't been any changes except for the solar item, on which the Board reserves the right to approve in the future). Rather, United Walnut contends that its claim arises from the District's July 8, 2015 approval of the Solar Project. Although United Walnut did not file the First Amended Complaint until January 21, 2016, it sought permission from the court to do so much earlier on July 16, 2015. Reply at 2.

The timeliness of United Walnut's CEQA claim concerning the Solar Project is muddied by the fact that the Program EIR required tiered environmental evaluation. As the court discussed *ante*, the District was obligated to prepare an initial study for the Solar Project despite the 2012 Subsequent EIR. The operative dates triggering United Walnut's claim are the dates Mt. SAC failed to prepare an initial study. The Board initially approved an award of the Solar Project contract to Borrego on July 8, 2015, re-noticed the award to Borrego on September 9, 2015, passed Resolution 15-06 approving the Solar Project the November 18, 2015, and approved the Addendum on January 13, 2016.

United Walnut's July 16, 2015 *ex parte* application to amend its complaint to add the Solar Project claims occurred before or shortly after all of these dates. The *ex parte* application was deferred to a noticed motion, which was initially scheduled to be heard on September 10, 2015, and was delayed to January 21, 2016due to the transfer of the case to this Department.

United Walnut's second cause of action is not time-barred.

3. Mootness

The District argues that the Parking Garage Profect claim is moot. Opp. at 11. After Department 86 issued the May 13, 2015 preliminary injunction enjoining construction of the Parking Garage and use of Measure RR funds, the Board took action on July 8, 2015 to cease the expenditure of Measure RR funds for the Parking Garage Project and remove it from the Measure RR project list. AR 2653-55. Measure RR funds for the Parking Garage Project were diverted to the new Student Center. Id.

After United Walnut filed its First Amended Complaint, the Board again took official action to render the Parking Garage dispute moot. On February 17, 2016, the Board acted to "confirm the Parking Structure Project that is the subject of the Act has been abandoned by the Board of Trustees as a Measure RR project, and the Board of Trustees will not be taking any action to construct the parking Project under the lease/leaseback contract award to Tilden-Coil Constructors, Inc." AR 14078.

United Walnut argues that Mt. SAC has not formally rescinded Resolution 14-05 approving the Parking Garage Project. Pet. Op. Br. at 11-12. This is true. Prior to February 17, the District had not rescinded the Parking Garage Structure site lease to Tilden-Coil, only the facilities lease. ER 2-13. And the District continued to plan to construct a parking structure at the same location. AR 1948, 2248, 2842; ER 2817, 2864.

But now the Board has formally abandoned the Parking Garage Project. This

abandonment negates Resolution 14-05 approving the Project and the lease/leaseback with Tilden-Coil. "Although a case may originally present an existing controversy, if before decision it has, through the acts of the parties or other cause, occurring after commencement of the action, lost that essential character, it becomes a moot case or question which will not be considered by the court." Wilson v. Los Angeles County Civil Service Com., (1952) 112 Cal.App.2d 450, 453.

Because the claim is moot, United Walnut is not entitled to mandamus under CEQA ordering the District to rescind and set aside its Parking Approvals and requiring the District to consider the environmental consequences of the Parking Garage Project in the manner required by law. United Walnut also is not entitled to a declaration under the City's zoning and development ordinances. *See post*.

3. City Zoning and Development Ordinances

United Walnut's third and fourth causes of action concern compliance with the WMC. United Walnut alleges that the Parking Garage Project violates City Zoning, WMC, and General Plan height restrictions and cannot be exempted. Pet. Op. Br. at 10. Judge Lavin in Department 82 granted a preliminary injunction on the grounds that the Parking Garage Project (a) violates WMC section 25-89.1 (35 foot maximum height), (b) is not a permitted use in the residential planned zone (WMC §25-89.1(b)(4)(g)) and requires a CUP, and (c) is not exempt by Government Code section 53094 from the City's zoning laws because the Project is a non-classroom facility. Despite Judge Lavin's ruling, the District has failed to rescind and set aside Resolution 14-05. Pet. Op. Br. at 11. The District has also refused to rescind its approval of all contracts, and characterizes the Parking Garage Project as merely "on hold" and has included the Parking Garage Project in its latest Facility Management Plan. Pet. Op. Br. at 11-12.[10]

All claims related to the Parking Garage Project are moot because the District has abandoned the Parking Garage Project. *See ante*.

United Walnut argues that the Solar Project violates WMC grading requirements because the District is required by Government Code section 53097 to comply with the grading requirements of WMC sections 1-5.5 and 6-5.6. WMC unambiguously applies to all properties and owners. WMC §6-5.4. The WMC's adoption of the LACBC does not change the express terms of WMC 6-5.4. Pet. Op. Br. at 12-13.

The District contends that it is absolutely exempt from local zoning controls under Government Code section 53091. Opp. at 12. Government Code section 53091(d) and (e) provides that building ordinances and zoning ordinances shall not apply to the location or construction of facilities for the generation of electrical energy and the Solar Project falls squarely within this exception. Opp. at 12. The District acknowledges that it is a school district, but asserts that it is acting in its capacity as a local agency in building the Solar Project. Opp. at 12.

The District additionally argues that LACBC Appendix J explicitly applies only to private property and therefore does not govern the Solar Project. Opp. at 13. The City grading ordinances, which incorporate Appendix J, make no scope change to J101.1, which limits application of Appendix J to private property. WMC section 6-5.4's reference to "all grading work" does not modify the "private property" scope language in section J101.1. Opp. at 13.

[10] United Walnut cannot rely on Judge Lavin's preliminary injunction; a preliminary injunction does not bind a trial court's merits decision.

Allowing WMC section 6-5.4 to prevail over section J101.1 would violate settled rules of statutory interpretation.

As discussed in detail for the City's Petition *post*, section 53091's exemption permits location and construction of the Solar Project, but does not exempt the Project from grading because Government Code section 53097 specifically requires school districts to comply with all city ordinances regulating drainage, road improvement, and grading plans. To the extent there is any ambiguity as to scope, the WMC controls over Appendix J. *See* WMC §6-4. The scope of the WMC building code is broader than Appendix J. At a minimum, all projects, whether on public or private property, must comply with the additional provisions of WMC section 6-5.5 and 6-5.6.

United Walnut is correct that the District is required to comply with the City's grading ordinances in constructing the Solar Project.

4. Pattern and Practice

United Walnut's fifth cause of action is for declaratory relief and injunction. United Walnut argues that District has a pattern and practice of failing to prepare and circulate an initial study or perform required environmental review for its 2002 Program EIR projects at any time prior to approving the projects. By adding supplemental and subsequent program EIRS only for Facilities Master Plan Updates, the District avoids project specific and timely initial studies, environmental review, and final CEQA certifications. The tiered Program EIR issued in 2002, and the Subsequent/Supplemental EIRs issued in 2005, 2008, 2012, and 2015 broadly study general, campus-wide impacts for the Facilities Master Plan, but do not perform sufficient project-specific review. Pet. Op. Br. at 13.

CEQA requires that an agency determine whether a project may have significant environmental impacts before the project is approved. Laurel Heights Improvement Assn. v. Regents of Univ. of Cal., (1998) 57 Cal.3d 376, 394. A project is "approved" when a public agency "commits the agency to a definite course of action in regards to a project" or proposes to approve a project. Pub. Res. Code §21080(a). United Walnut contends that Mt. SAC's procedure is a *post hoc* rationalization to support actions already taken, arguing that the District's final design contracts, DSA submittals, and approval of site preparations and grading are "approvals" under CEQA that occurred before any environmental review was conducted. Pet. Op. Br. at 15.

The District responds that United Walnut has failed to show a District policy to deliberately violate CEQA. Opp. at 14-15. The District does not perform tiered programmatic review; the evidence shows that District prepares program EIRs that contain project-level CEQA review. Each program EIRs evaluates all of the environmental impacts, adopts mitigation measures as necessary, and the District issues findings when necessary. When there is new environmental impacts that meet the test of Guidelines section 15162, the District prepares additional environmental documentation. Opp. at 15.

As United Walnut correctly points out, there are two problems with the District's practice. *See* Reply at 4.

First, as discussed *ante*, Mt. SAC's program EIRs are programmatic CEQA documents that can be used for tiering, but they are not project-specific documents. Mt. SAC's program EIRs actually are campus-wide evaluations of common type of impacts that can be anticipated from projected growth (principally students and parking and greenhouse gases and traffic), and

future implementation of the collective proposed master plan facilities. As Nellesen accurately explained to the Board on June 24, 2015, the Program EIRs do not look at projects individually, but rather how they affect other projects in a given area. AR 2649-11. *See*In re Bay-Delta et al. (2008) 43 Cal.4th 1143, 1170. Mt. SAC's Facilities Master Plans are the equivalent of the LRDPs required of public school districts. Pub. Res. Code §21080.09; Lindmark Decl. ¶3. The Legislature has expressly authorized school districts to tier from an LRDP's environmental review. Pub. Res. Code §21080.09(c). That is exactly what Mt. SAC's Program EIRs are: environmental documents from which Mt. SAC may tier.

Second, as a consequence of the failure of its Program EIRs to perform a project-specific assessment, Mt. SAC's timing on project-specific evaluations is too late. Mt. SAC presents evidence that its projects go through three phases of approval: (a) the project is identified and evaluated for CEQA compliance, (b) the project is designed and engineered by Board-approved architects and/or engineers, and (c) the constructioncontracts are awarded by the Board. Nellesen Decl. ¶3. Yet, the District's practice is to submit DSA plans for approval and prepare final designs for its projects before assessing the projects as required by CEQA. *See* Reply at 9. The only environmental review that occurs before the completion of plans is the Program EIRs which are not project specific.

For example, the BCT Project was submitted for DSA approval on October 2, 2014 and received final approval on May 1, 2015. AR 7194-49. Lindmark prepared and circulated to Nellesen only a project-specific CEQA memo on October 21, 2015. AR 1896-1917. Similarly, the District issued an RFP for the Solar Project and decided to award the contract before Lindmark's CEQA memo to Nellesen of July 8, 2015. AR 343, 1817-1836. Only when Mt. SAC sees a change in project scope – such as with the ACE Project -- does it prepare a project-specific EIR. *See* Nellesen Decl. ¶3. But this is too late in the process.

In sum, the District has a practice of preparing Program EIRs which can be used for tiering, but are not project specific. As a result, any project specific analysis that does occur comes too late. Because it uses programmatic EIRs, Mt. SAC must prepare and circulate initial studies to responsible agencies (at an appropriate time) as projects come up for actual decisions for design and implementation. Pub. Res. Code §§ 21068.5, 21094(a), (c).

F. The City's Petition[11]

The City argues that the Solar Project is subject to WMC regulations regarding grading, hauling, and zoning. It further asserts that the District failed to comply with CEQA in approving the Solar Project by using *post-hoc* addendums. The City seeks to assume the lead agency role for the Solar Project due to District's failure to comply with CEQA.

1. Is the Solar Project Subject to Local Ordinances?

The City argues that the Solar Project is subject to the City's grading and haul route

[11] The City asks the court to judicially notice provisions of the WMC (Exs. A-B) and LACC sections J101-J112 (Ex. C). The requests are granted. Evid. Code §452(b).

In opposition to the City's Petition, Mt. Sac asks the court to judicially notice an excerpt from the Prop 39 California Energy Commission Guidelines (Ex. A). The request is granted. Evid. Code §452(c).

requirements because the District is a school district under Government Code[12] section 53097, and the Solar Project is a transmission facility under section 53091. Pet. Op. Br. at 4.

As a general matter, neither the State nor its agencies are subject to local building or zoning regulations unless the Constitution requires it or the Legislature consents to such regulation. City of Orange v. Valenti, (1974) 37 Ca1.App.3d 240, 245. In Article 5 of the Government Code (§§ 53090-53097.5), the Legislature consented to a limited form of such local regulation. The statutory scheme was enacted in response to opinions which broadly immunized all state agencies from local regulatory control. City of Lafayette v. East Bay Municipal Utility District, ("Lafayette") (1993) 16 Cal.App.4th 1005, 1013-14 (citations omitted).

Section 53097 requires that a school district comply with local ordinances (a) regulating drainage, (b) regulating road improvements and conditions, and (c) requiring the review and approval of grading plans as the ordinances relate to the design and construction of onsite improvements which affect drainage, road conditions or grading.[13]

Section 53091(a) requires each local agency to comply with city or county building and zoning ordinances. Section 53091(d) and (e)[14] contains an exception to this requirement, respectively providing that local building and zoning ordinances shall not apply to the location or construction of facilities for the generation of electrical energy. Specifically, section 53091(e) states that "[z]oning ordinances of a county or city shall not apply to the location or construction of facilities for… the production or generation of electrical energy." (Emphasis added.) However, zoning ordinances do apply to the location or construction of facilities for the storage or transmission of electrical energy if the zoning ordinances make provision for those facilities. §53091(e).

A "local agency" is defined as an agency of the state, not including the state, a city, a

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[12] All statutory references in this subsection are to the Government Code unless otherwise stated.

[13] Section 53097 provides: "Notwithstanding any other provisions of this article, the governing board of a school district shall comply with any city or county ordinance (1) regulating drainage improvements and conditions, (2) regulating road improvements and conditions, or (3) requiring the review and approval of grading plans as these ordinance provisions relate to the design and construction of onsite improvements which affect drainage, road conditions, or grading, and shall give consideration to the specific requirements and conditions of city or county ordinances relating to the design and construction of offsite improvements. If a school district elects not to comply with the requirements of city or county ordinances relating to the design and construction of offsite improvements, the city or county shall not be liable for any injuries or for any damage to property caused by the failure of the school district to comply with those ordinances."

[14] Section 53091(e) provides: "Zoning ordinances of a county or city shall not apply to the location or construction of facilities for the production, generation, storage, treatment, or transmission of water, or for the production or generation of electrical energy, facilities that are subject to Section 12808.5 of the Public Utilities Code, or electrical substations in an electrical transmission system that receives electricity at less than 100,000 volts. Zoning ordinances of a county or city shall apply to the location or construction of facilities for the storage or transmission of electrical energy by a local agency, if the zoning ordinances make provision for those facilities."

county, a rapid transit district, certain rail transit districts, or a bridge and highway district. §53090.

Section 53091 evinces a legislative intent to vest cities and counties with control over zoning and building restrictions. Lafayette, *supra*, 16 Cal.App.4th at 1014. The exceptions were intended to strike a balance between the value of local zoning control and the state interest in the production of water and electricity, and the exemptions are absolute. *See*Id. (section 53091 exemption does not apply to a support facility that does not generate, transmit, or store water).

The City admits that section 53091(e)exempts the location or construction of facilities for the generation of electrical energyand relies on section 53091(e)'s carve-out to that exception for zoning ordinances that provide for the construction of facilities for the storage or transmission of electrical energy if the zoning ordinances make provision for those facilities. The City argues that the Solar Project will transmit energy because it will be interconnected with Southern California Edison ("SCE") California Independent System Operator's Controlled Grid, and will transmit power to that grid. AR 371. This interconnection is provided for in the District's RFP for the Solar Project. Id. SCE's Rule 21 defines an "interconnection" as a physical connection of a Generating Facility… so that "Parallel Operation with [SCE's] Distribution or Transmission System can occur…." The City concludes that, because the Solar Project will be interconnected with SCE's grid so that parallel operation can occur, the Solar Project will transmit power to the grid and is within section 53091(e)'s exception to the exception. Pet. Op. Br. at 8. The Solar Project will also be interconnected to the main campus gear switch, requiring transmission lines from the West Parcel to the main campus. AR 340, 344, 366. A common sense meaning for the word "transmission" means the use of power lines for the transmission or distribution of electrical energy. Pet. Op. Br. at 9.

The City also concludes that the WMC "provides for" facilities that store or transmit energy as required by section 53091(e). The West Parcel is zoned for Residential Planned Development ("RPD") which incorporates the permitted and conditionally permitted uses of the R-1 zone. WMC section 25-89.1 allows property in an RPD zone to be used for "any permitted use in an R-1 zone...." City RJN, p. 3-15. This incorporation of the R-1 zone subjects the Solar Project to the applicable regulations of WMC section 25-39(e), which requires a CUP for premises in zone R-1 that will be used for "Public buildings and uses". City RJN, p. B-14. The Solar Project is a "public building" as defined by section 4217.11(k).[15] In light of WMC section 25-39(e)'s inclusion of the Solar Project as a public building, the City's zoning ordinances unquestionably "make[s] provision" it. The City concludes that, because the Solar Project is a facility that transmits electrical energy and because the City's zoning ordinance makes provision for such a facility, the Solar Project is subject to the carve-out in section 53091(e). Therefore, Mt. SAC must apply for a CUP before moving forward with the Solar Project. Pet. Op. Br. at 9-10.

There are two problems with the City's argument. First, as the District contends (Opp. at 6-7), section 53091(e)'s carve-out applies to facilities intended for the purpose of storing or

[15] Section 4217.11(k) provides: "Public building" includes any structure, building, facility, or work which a public agency is authonzed to construct or use, and automobile parking lots, landscaping, and other facilities, including furnishings and equipment, incidental to the use of any structure, building, facility, or work, and also includes the site thereof, and anyeasements, rights -of -way appurtenant thereto, or necessary for its full use."

transmitting electrical energy. The Solar Project is not a facility for the transmission or storage of electrical energy simply because it has the ability to transmit energy. Instead, the Solar Project's purpose is to produce and generate solar energy for Mt. SAC. Any transmission as described by City is incidental to the Solar Project and does not define its purpose. *See* AR 343.

This conclusion is supported by the purpose and legislative history of section 53091(e)'s carve-out. According to the legislative history, the carve-out permits a city to remove the zoning exemption of facilities for the storage or transmission of electrical energy where the zoning ordinance makes provision for the location of those types of facilities. Delta Wetlands Properties v. County of San Joaquin, (2004) 121 Cal.App.4th 128, 139 (quoting legislative history). There is no suggestion in the legislative history that the carve-out should apply to any facility that is merely capable of transmitting energy unless storage or transmission is its purpose.

Nor would it meet the statutory purpose to do so. The statutory scheme was enacted as a legislative consent to a limited form of local zoning regulation over state agencies, and the carve-out was intended to encourage state agencies to generate solar power without local zoning regulation. Lafayette, *supra*, 16 Cal.App.4th at 1013-14 (reaching same conclusion for water storage and transmitting facilities). It would make little sense for local zoning to control every solar energy facility that was hooked up to the electrical transmission grid.

Second, the City has not met the other prong of the carve-out. The zoning ordinance must make "provision" for the construction of facilities for the storage or transmission of electrical energy. It is not enough that the Solar Project would be included within the general provisions of WMC section 25-39(e) requiring a CUP for public buildings and uses in the R-1 zone. All property uses are included, generally or specifically, in a typical zoning code. The plain intent of section 53091(e) is to exempt the construction of facilities for the storage or transmission of electrical energy except where the zoning ordinance makes special provision for the location of those types of facilities. The City's WMC does not do so.

All of the evidence indicates that the Solar Project is an energy generation project that is exempt from the City's zoning ordinances under section 53091(e). The District is correct that the minor transmission capability identified by City is not sufficient to turn the Solar Project into a transmission facility. Nor does the WMC make special provision for the Solar Project facility. Therefore, the City's zoning ordinances do not apply to the location and construction of the Solar Project unless some California statute provides to the contrary.

The City contends that section 53097 is such a statute and the District must at least comply with the WMC grading ordinances. Pet. Op. Br. at 4.

In pertinent part, section 53097 provides: "Notwithstanding any other provisions of this article, the governing board of a school district shall comply with any city or county ordinance…(3) requiring the review and approval of grading plans as these ordinance provisions relate to the design and construction of onsite improvements which affect drainage, road conditions, or grading…"

The District admits that it is a school district, but asserts that it is constructing the Solar Project in its capacity as a local agency under 53090. The legislative history of section 53097 (SB 1681) shows that it was intended to rectify the fact that local agencies, but not school boards, must follow local ordinances for public works because a school district can override local control through a 2/3 board vote (§53094). SB 1681 was adopted as a result of storm runoff damage from a school site that wiped out part of a neighborhood. ER 5221. According to the District, SB 1681 was intended to modify section 53094 and not section 53097. Opp. at 8.

This argument flies in the face of the plain language of section 53097, and consequently there is no need to resort to the legislative history of SB 1681. *See* Brown v. Kelly Broadcasting Co., (1989) 48 Cal 3d 711, 724 (courts first look to the language of statute). The phrase "Notwithstanding any other provisions of this article" includes any other provision in Article 5. Sections 53091 is in Article 5. Section 53097 applies notwithstanding the exception to local zoning regulation in section 53091. Section 53097 was added to Article 5 to require school districts to comply with city ordinances regulating drainage, road improvement, and approval of grading plans relating to the design and construction of facilities. The Attorney General has opined that section 53097 was intended to address a particular undesirable situation and requires school district compliance with local ordinances for drainage, road improvement, and grading plans. 71 Ops.Cal.Atty.Gen. (1988) 332, 336, 341.

The District cannot elect to act as a public agency in some circumstances and as a school district in another. It is a school district, and is subject to section 53097. The Legislature has consented to municipal grading controls over school districts. The District's Solar Project is subject to the City's grading ordinances.

2. The WMC's Grading Ordinances

The City seeks to require District to comply with its grading and haul route requirements. The City argues that the District's planned haul route for the Solar Project will create a safety hazard because it requires trucks to turn in or out of the driveway every 90 seconds. Op. Br. at 5. The City can impose critical safety measures on the haul route if it is permitted to go through the normal process of analyzing the haul route, and has the authority to require the District to implement those safety measures. Pet. Op. Br. at 6.

WMC section 6-4, as amended by a 2016 Urgency Ordinance ("Urgency Ordinance"), adopts by reference the Los Angeles County Building Code ("LACBC") effective January 1, 2017, including Appendix J. City RJN, Ex. A, p. 4.

Appendix J addresses storm water concerns related to grading activities. Section J101.7 ("Storm water control measures"), requires a property owner to adopt precautionary measures to protect public or private property from damage by flooding during grading and construction activities. City RJN, Ex. C, p. 2.[16] Section J111 ("National Pollutant Discharge Elimination System (NPDES) Compliance") requires the property owner, and all grading plans and permits, to perform best management practices to prevent erosion and to control constructed-related pollutants from discharging from the project site. [17]

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[16] J101.7 provides: "Both the permittee and the owner of the property on which the grading is performed shall put into effect and maintain all precautionary measures necessary to protect adjacent water courses and public or private property from damage by erosion, flooding, and deposition of mud, debris, and construction -related pollutants originating from the site during grading and related construction activities." Ibid.

[17] Section J111 ("National Pollutant Discharge Elimination System (NPDES) Compliance") provides: "All grading plans and permits and the owner of any property on which such grading is performed shall comply with the provisions of this section for NPDES compliance. [¶] All best management practices shall be installed before grading begins. As grading progresses, all best management practices shall be updated as necessary to prevent

WMC 6-5.4(b), as amended and clarified in 2016, requires "[a]ll grading work [t]o conform to the Walnut Building Code, Municipal Code sections 6-5.3 through 6-5.9, Section 6-8 regarding the hauling of earth materials, and all city rules and regulations." City RJN, Ex. A, p.5.

WMC section 6-5.6, as amended in 2016, provides detailed regulation of grading activities, including requirements to mark boundaries to allow proper clearances, construction fencing, drainage protection devices, erosion control planting, soil analysis, and geologic and soils investigation, engineering. City RJN, Ex. A, p. 5, Ex. B, p. 4.

WMC section 6-8, as added in 2016 to codify existing practices, ("Hauling of Earth Materials") has been added to the Chapter 6 of Article II and provides in pertinent part:

> "(a) Any person, firm, association or corporation (hereinafter "permittee") moving or causing to be moved more than 5,000 cubic yards of earth material per project from or to the site of a grading operation on any public roadway within the City of Walnut shall be subject to the following requirements: (1) Haul Route…; (2) Access Roads…; (3) Signs…; (4) Inspection…; (5) Time of Hauling Operations…; (6) Notification…; (7) Dust Control…; (8) Debris on City Roadways…; (9) Load Limits…; (10) Financial Responsibility for Damage to Streets…; (11) Bonds for Grading to Include Street Repairs…; (12) Other Conditions…." City RJN, Ex. A, pp. 9-11.

Based on the above provisions, the City argues that its regulation of grading is extensive and consists of three components: storm water management, grading, and hauling. Section J101.7 regulates storm water during grading and construction, J111 regulates grading, and WMC section 6-8 regulates hauling. Pet. Op. Br. at 4-5.

The City contends that Mt. SAC's compliance with its grading and hauling requirements is critical to public safety. The Solar Project's site, the West Parcel, is accessed by a driveway off of busy Grand Avenue and will be subject to a 40 -foot truck either slowing to turn in or turning out of the drive way every 90 seconds, 8 hours a day, Monday through Saturday for three months. The truck de-acceleration/acceleration will take place within a merging right lane (Number 3) of Grand Avenue so that the truck driver must pull out onto a street with a 50 mile per hour speed limit and merge into the second (Number 2) traffic lane within a matter of feet. This is a huge safety hazard. Pet. Op. Br. at 4-5.

The City argues that, by analyzing the haul route, it can allow for the implementation of critical safety measures on its public streets. The City could address potential sight distance concerns by reducing speed limits on southbound Grand Avenue, impose a "no right turn on red" restriction from Amar Road onto southbound Grand Avenue in order to create more traffic "gaps" for trucks entering and leaving the West Parcel driveway, temporarily eliminate the Number 3 lane from Grand Avenue just south of Amar so that trucks would have exclusive use of the driveway for deacceleration/acceleration, or set the traffic signals to extend the amount of

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erosion and to control constructed related pollutants from discharging from the site. All best management practices shall be maintained in good working order to the satisfaction of the Building Official until final grading approval has been granted by the Building Official and all permanent drainage and erosion control systems, if required, are in place.

time for those vehicles and trucks making left turns. Gilbertson Dec., ¶¶ 12-13. The City traffic engineer also could adjust the hours of the truck traffic or reduce the number of truck trips during that time. Pet. Op. Br. at 6.

The District responds that the City's grading ordinances do not apply to the Solar Project because they fail to regulate public property. The 2013 California Building Code defined Appendix J's scope in J101.1 as "apply[ing] to grading, excavation, and earthwork construction, including fills and embankments. Where conflicts occur between the technical requirements of this chapter and the geotechnical report, the geotechnical report shall govern." ER 5227.

The County adopted the 2013 California Building Code Appendix J with modifications. One of the modifications was to amend J101.1 in part by setting forth its purpose:

> "The provisions of this Chapter [Appendix J] apply to grading, excavation, and earthwork construction, including fills and embankments and the control of runoff from graded sites, including erosion sediments and construction-related pollutants. The purpose of this Chapter is to safeguard life, limb, property, and the public welfare by regulating grading on private property." ER 5227, 5230.

According to the District, the County's LACBC Appendix J's scope was expressly limited to private property.[18] The City adopted this same limited private property scope when it adopted the County's 2013 LACBC in WMC section 6-4. City RJN, Ex. B, p. 1. The District acknowledges that the County recently amended Appendix J101.1 to state that it regulates all property, public and private. ER 5234. The City's Urgency Ordinance amends WMC section 6-4 to adopt by reference the 2017 version of the LACBC. City RJN, Ex. A, p. 4. Thus, it is clear that the City now regulates grading on both public and private property. But the District contends that the City cannot retroactively apply Appendix J to the Solar Project, relying on Melton v. City of San Pablo, ("Melton") (1967) 252 Cal.App.2d 797, 804 (citing Tevis v. City & County of San Francisco, ("Tevis") (1954) 43 Cal.2d 190, 195). Opp. at 9.

The City's reply does not address the issue of retroactivity. *See* Reply at 1. The ordinary rule is that legislative enactments become operative upon their passage, unless there is some express provision of law to the contrary. Midway Orchards v. County of Butte, (1990) 220 Cal.App.3d 765, 780. This legislative intent for retroactivity must be clearly apparent. Tevis, *supra*, 43 Cal.2d at 195; Melton, *supra*, 252 Cal.App.2d at 804. While the Urgency Ordinance provides that certain amendments merely clarify the law (*e.g.,* WMC §6-5.4(b)), it does not purport to apply any amendment retroactively.

The simple fact is that the City is not applying the Urgency Ordinance's grading and hauling provisions retroactively to the Solar Project, which has yet to begin. Mt. SAC has

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[18] As it existed before 2016, WMC section 6-4 provided: "There is hereby adopted by reference, except as hereinafter provided, that certain Building Code known and designated as Title 26 of the Los Angeles County Code…adopted November 26, 2013…as amended by Los Angeles County Ordinance No.l13-5076, effective January 1, 2014, and such code shall be and become the Building Code of the city…."

"In the event of any conflict or ambiguity between any provisions contained in the Building Code and any provisions of the Walnut Municipal Code, the Walnut Municipal Code shall control." City RJN WMC §6-4.

received regulatory approvals from various agencies, and planned to start construction on October 24, 2016 when construction was halted by the City's Stop Work Order. Nellesen Decl. ¶¶ 10, 12. There is no reason not to apply the City's grading ordinances to this unstarted Solar Project. In this regard, Mt. SAC makes no argument that it has a vested right to proceed with grading despite the City's Urgency Ordinance amending the WMC. The failure to raise an issue constitutes waiver. *See* Badie v. Bank of America (1998) 67 Cal.App.4th 779, 784, 85 (when a party fails to support issue with reasoned argument and citation, it is waived). More important, Mt. SAC has no vested right, which arises only after a property owner has performed substantial work and incurred substantial liabilities in good faith reliance on a properly obtained, valid permit. Avco Community Developers Inc. v. South Coast Regional Com., (1976) 17 Cal.3d 785, 791. Mt. SAC has no grading permit from the City on which it can rely.

Assuming *arguendo* that the City's pre-2017 adopted Appendix J applies, the City may make the WMC broader than Appendix J. The District argues that the WMC does not actually do so, and distinguishes WMC section 6-5.4's reference to "all grading work" as not modifying the limited scope of Appendix J to private property. According to the District, it would violate settled rules of statutory interpretation to allow WMC section 6-5.4 to trump the express purpose of Appendix J. Opp. at 10.

The previous WMC incorporated by reference Appendix J, but also supplemented Appendix J with the City's own development standards and grading permit procedures. WMC §§ 6-5.3, 6-5.5, 6-5.6 (City RJN Ex. B, pp. 2-5). The WMC further provided that all grading shall conform to the Municipal Building Code, sections 6-5.3-6-5.8, and all city rules and regulations. WMC §6-5.4 (Id.). To the extent there is any ambiguity as to scope, the WMC controls over Appendix J. WMC §6-4 (City RJN Ex. B, p.1). As a consequence, it does not fly in the face of statutory interpretation principles to conclude that the scope of the WMC's Municipal Building Code is broader than Appendix J. At a minimum, all projects, whether on public or private property, must comply with the additional grading provisions of WMC section 6-5.5 and 6-5.6.

The District argues that, whatever the WMC's application to grading, the scope of this lawsuit does not include the hauling requirements of WMC section 6-8 which were added in 2016. The hauling ordinance is not included in the City's First Amended Petition and is not cited in the Stop Work Order. Opp. at 10.[19]

Again, the City does not reply. WMC section 6-8 does provide that it was passed to codify existing practices, and the City Engineer's practice is to require a haul plan for mass grading operations for which a number of safety measures may be imposed. Gilbertson Decl. ¶9. The City Engineer's customary practice does not explain his authority for imposing a haul plan prior to WMC section 6-8. More important, the haul plan issue apparently is not included in either the City's First Amended Complaint or the Stop Work Order. As such, it is beyond the scope of this lawsuit.

In sum, the District must comply with the City's grading requirements. Whether it must also comply with the City's haul route requirements is not within the scope of this Petition (but is within the scope of the District's SACC). *See post.*

[19] The parties failed to include the Stop Work Order, cited as (ER 5068-70), in the Joint Appendix.

3. CEQA

The City argues that the District violated CEQA by approving the Solar Project on September 16, 2015 through Resolution 15-01, and subsequently publishing and approving an Addendum to the Program EIR on January 13, 2016. The City points out that it filed this action challenging Mt. SAC's approval of the Solar Project on December 21, 2015 and the next day Mt. SAC published the Addendum, adopting it three weeks later. Pet. Op. Br. at 12. The City describes the Addendum as a *post hoc* rationalization which is a classic failure to conduct environmental review before a project is approved in violation of CEQA. *See* Laurel Heights, *supra*, 47 Cal.3d at 394.

The District responds that the City wrongly proposes an incorrect standard of review. The substantial evidence standard applies to judicial review of whether a lead agency should have conducted additional environmental review for a changed project under Guidelines section 21166. San Mateo Gardens, *supra*, 1 Cal.5th at 960. "The court decides only whether the administrative record as a whole demonstrates substantial evidence to support the determination that the changes in the project or its circumstances were not so substantial as to require major modifications to the EIR." Sierra Club v. County of Sonoma, (1992) 6 Cal.App.4th 1307, 1318. Opp. at 10-11. The court must uphold the lead agency's decision if there is some evidentiary support, even in the face of equal or greater conflicting evidence to the contrary. San Mateo Gardens, *supra*, 1 Cal.5th at 953. The City's contention that the Addendum is a *post hoc* approval is dressed as a procedural violation, but is based on substantial evidence. Opp. at 11.

The District is wrong. The Supreme Court in San Mateo Gardens explained that whether a proposed activity is a CEQA project is a legal question because it depends on whether "undisputed data in the record" satisfy the detailed statutory definition of a project. 1 Cal.5th at 952. Whether an initial environmental document remains relevant despite changed plans or circumstances is predominantly a factual question for the agency to answer, drawing on its particular expertise. Id. at 953 (citation omitted). This case involves an issue similar to the question whether a proposed activity is a project – whether the District's 2002 Program EIR as modified by its Supplemental/Subsequent EIRs is program EIR with tiering or whether it has used a program EIR with project-specific evaluation of impacts and mitigations. This is an issue of law for the court to decide on undisputed facts. Only if the court were to determine that the documents contained project specific evaluations would the substantial evidence test apply to whether there had been changes plans or circumstances requiring additional environmental review under Pub. Res. Code section 21166 and Guidelines section 15162.

The court decided *ante* as a matter of law that Mt. SAC has prepared a programmatic EIR, not a project-specific EIR. Mt. SAC's Subsequent EIRs define the "project" as the Facilities Master Plan. *See, e.g.,* AR 147. Mt. SAC's Facilities Master Plans are the equivalent of the LRDPs required of public school districts. Pub. Res. Code §21080.09. The Legislature has expressly authorized school districts to tier from an LRDP's environmental review. Pub. Res. Code §21080.09(c). That is exactly what Mt. SAC's Program EIRs are: environmental documents from which Mt. SAC may tier.

The Subsequent EIR's environmental analysis "addresses the project at the level of detail characteristic of a conceptual master plan." AR 155. The Subsequent EIRs then provide a project description – the bedrock of an informative and legally adequate EIR – that mentions how the Facilities Master Plan is a collection of future planned facilities, some of which have been built and some of which have been changed, along with updated statistics on expected

campus wide growth and needs. *See, e.g.,* AR 180-85. The project descriptions are opaque and the project evaluations are buried in the EIRs, if present at all. Instead, the Subsequent EIRs merely lump the common types of impacts arising from the collective FMP projects and set forth mitigation measures to address those types of impacts. AR 2649-11. The EIRs do not address the details of the specific programs, they merely lists the projects that are part of the Facilities Master Plan. *See* AR 181-183. These are all characteristic of a programmatic EIR, not a project-specific EIR.

Mt. SAC's Program EIRs actually are campus-wide evaluations of common type of impacts that can be anticipated from projected growth (principally students, parking, greenhouse gases, and traffic), and future implementation of the collective proposed master plan facilities a fact which Nellesen accurately explained to the Board on June 24, 2015. AR 2649-11. Mt. SAC's Program EIRs are an environmental evaluation that can be used for use in tiering, but not project-specific review. *See*In re Bay-Delta et al. (2008) 43 Cal.4th 1143, 1170.

As a result, Mt. SAC must prepare and circulate initial studies to responsible agencies (at an appropriate time) as projects come up for actual decisions for design and implementation. Pub. Res. Code §21068.5, §21094(a), (c). The District is required to, at minimum, prepare and circulate an initial study for the Solar Project to determine whether it would cause significant environmental effects not examined in the Program EIR. Contrary to this requirement, the District did not prepare and circulate an initial study for the Solar Project. The District failed to proceed in the manner required by law by failing to prepare and circulate an initial study for the Solar Project.

The District's failure means that the court need not address in detail the defects in the Addendum. Nonetheless, it is defective. The Addendum attempted to delete the requirement in the 2012 Subsequent EIR's MM-2c that the District consult with the City on a Truck Haul Route for the Solar Project. AR 1743, 1750. However, the Addendum falls short because it fails to address MM AQ-03, which includes the identical consultation language:

> "AQ-03: Prior to issuance of a grading permit, Facilities Planning & Management shall consult with the City of Walnut on a Truck Route Plan for truck hauling activities with more than fifty (50) trucks per day. Hauling of earth materials shall only occur between 9:00 am and 2:00 pm Monday through Friday and between 8:00 am to 5:00 pm on Saturdays to void peak hour traffic. Light duty trucks with a weight of no more than 8,500 pounds are exempted from this restriction. Facilities Planning & Management shall ensure compliance." AR 221.

Under CEQA, mitigation measures must be fully enforced by the agency. Federation of Hillside & Canyon Associations v. City of Los Angeles, (2000) 83 Cal.App.4th 1252, 1260-61.

Mt. SAC's only response is to argue that AQ-03, the truck hauling mitigation, was "indexed" as MM-2c in the 2102 Subsequent EIR. Opp. at 11. Nothing in the 2012 Subsequent EIR or the Addendum explains any indexing. The District's opposition provides no explanation of this indexing either, which the City ridicules as completely unsupported. Reply at 8-9.[20] As

[20] Mt. SAC purports to rely on the Lindmark declaration, which is not part of the Administrative Record, but Lindmark only says that the two mitigation measures were indexed without further explanation and cites to AR970 which provides no pertinent information. *See*

the City argues, Mt. SAC must comply with AQ-03, which mandates consultation with the City for a Truck Haul Plan and imposes strictly limited hauling hours.

The City further argues that Mt. SAC improperly used an Addendum. An addendum to a previously certified EIR is allowed only if no conditions calling for the preparation of a subsequent EIR have occurred. Guidelines §15164(a). The Solar Project was only vaguely described in the 2012 Subsequent EIR. The Addendum contains substantial revisions to mitigation measures, including an acknowledgement that MM-2c was inadequate because it "will intrude into the Saturday pm peak hour" and lacked specificity for assessing truck hauling activities for both the Solar Project and future projects moving a large amount of earth. AR 1743. The City's opening brief concludes that use of the Addendum was improper. Pet. Op. Br. at 14-15.

The City adds considerable detail to this argument in its reply. The City contends that Mt. SAC rewrote MM-2c to materially increase its hauling operations and save money. Reply at 1. The original MM-2c (identical to AQ-03 above) required consultation with the City for truck hauling activities of more than 50 trucks a day, which works out to 10 trucks per hour based on the Monday-Friday, 9:00a.m.-2:00p.m. schedule. In contrast, revised MM-2c imposes no mitigation unless there are more than 15 trucks per hour and the project involves hauling more than 100,000 cubic yards.[21] Reply at 3. The City is a responsible agency for the Solar Project and has police power over its streets. Yet, the revised MM-2c does not require any consultation with the City and permits the Director of Facilities Planning (Nellesen) to make the haul plan decision. Reply at 4. The City further criticizes the revised MM-2c as imposing no mitigation at all because it does not require anything to be done when thresholds are met. Instead, the haul plan need only consider various factors. Thus, the revised MM-2c permits 120 trucks a day to "rumble down" City streets any time of day and any day of the week, overseen by an administrator with no heavy truck traffic experience. Reply at 7. The City concludes that the Addendum fails because it (a) authorizes a "massive expansion" of truck traffic that was undisclosed in the 2012 Subsequent EIR, and (b) eliminates the mitigation set out in the original MM-2c. Reply at 8.

The District responds by noting that Guidelines section 15164(b) authorizes a lead

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Lindmark Decl. ¶17.

[21] Revised MM-2c provides:

> "For hauling operations of more than 15 trucks per hour and more than 100,000 cubic yards, a Truck Haul Plan (THP) approved by the Director of Facilities Planning & Management, shall be implemented. The THP shall consider traffic counts, haul routes, hours/days of hauling, avoidance of peak hours, intersection geometrics, access/egress constraints, truck load capacity, and pieces of construction equipment on-site and shall specify requirements to minimize traffic and pedestrian congestion on-campus and off-campus. The THP shall be required in all applicable construction logistics plans. If necessary, all haul trucks shall utilize radio communication to improve traffic flow and minimize congestion. Light duty trucks with a weight of no more than 8,500 pounds are exempted from a THP. Facilities Planning & Management shall ensure compliance."
>
> (AR 1740; hereinafter, the "Revised MM 2c.")

agency to prepare an addendum to an EIR "if only minor technical changes or additions are necessary or none of the conditions described in Section 15162 calling for preparation of a subsequent EIR or negative declaration have occurred." Section 15162 does not require a subsequent EIR or negative declaration where the proposed changes will not create a new significant environmental impact or substantially increase the severity of a significant environmental impact disclosed in a previous EIR.

The District points out that the 2012 Subsequent EIR includes 104 mitigations, and the Addendum changes only four of them. Two of the revisions deal with minor air quality issues (3a, .3i) and one revision addressed future parking supply (2k).[22] These minor edits to four existing mitigation measures (1) accommodate an extended construction truck traffic time (MM-2c); (2) require parking supply studies on regular intervals to more precisely determine when the parking supply mitigation is required to be implemented (MM-2k); (3) remove the requirement for grading permits, since the District does not require them (MM-3a); and (4) align the paint VOC requirements with current industry practices and California Emissions Estimator Model standards (MM-3i). Additionally, four components of the Truck Haul Plan specific to the Solar Project were proposed to reduce potential traffic congestion if other drivers make unsafe vehicular movements near trucks along the haul route for soil import to the West Parcel. Separation of haul trucks along the haul route minimizes traffic congestion and improves traffic flow. Opp. at 13. The District notes that Guidelines section 15074.1 allows substitution of mitigation measures when the lead agency determines they are equivalent or more effective, and argues that the four revised mitigation measures meet that standard. Opp. at 11.

The District concludes that the changes in the Solar Project addressed in the Addendum did not result in any additional or more severe environmental impacts requiring an EIR under Pub. Res. Code section 21166 and Guidelines section 15162. Opp. at 14. The revised Solar Project and revised and mitigation measures will result in similar or lesser effects than the original project and will not cause any new significant environmental impacts or substantially exacerbate the significant and unavoidable impacts disclosed in the 2012 Subsequent EIR. Opp. at 14.

The City has the better argument. While not all of its criticisms are valid, the Addendum is defective because (a) the revised MM-2c does not require any consultation with the City even though it has police power over its streets, (b) the revised MM-2c imposes no actual mitigation, and (c) authorizes an expansion of truck traffic that was undisclosed in the 2012 Subsequent EIR. These are not minor changes supporting an addendum under Guidelines section 15164(b).

The City argues that it should be authorized to assume the lead agency role and prepare a subsequent EIR for the Solar Project under Guidelines section 15052. Pet. Op. Br. at 15. The District contends that a shift in lead agency designation occurs only where the normal CEQA process breaks down, and there has not been a breakdown in the process. Opp. at 15.

Again, the City does not address this issue in reply. A responsible agency may assume lead agency status, *inter alia*, where the statute of limitations for challenging the lead agency's approval have expired and (a) new circumstances require a supplemental or subsequent EIR or (b) the lead agency has prepared an inadequate document and failed to consult with the responsible agency. Guidelines §15052.

[22] Again, the District attempts to rely on the extra-record declarations of Lindmark and Klein without explaining why it is admissible. Opp. at 11.

These provisions generally apply where a project has been approved by the lead agency and the responsible agency is required to act but cannot do so until it has considered the project's environmental effects as shown in the EIR. Guidelines §15096(f). If the agency is time-barred from bringing a lawsuit to challenge the EIR, yet must prepare a subsequent EIR before granting its discretionary approval, it may take lead status. Similarly, if an EIR was prepared without the responsible agency's consultation and the statute of limitations prevents a legal challenge, the responsible agency can assume the role of lead agency. Remy, Thomas, Moose, and Manley, Guide to CEQA: California Environmental Quality Act , (11th ed. 2006) p. 409. As the statute of limitations to challenge the District's actions has not expired, the City may not act as lead agency.[23]

In sum, the City's Petition must be granted in part. The District failed to proceed in the manner required by law by preparing and circulating an initial study for the Solar Project. The Addendum also was improperly issued and relied upon. The District must set aside Solar Project approvals and prepare and circulate an initial study for the Solar Project before approving it. The City may not act as lead agency for the Solar Project. The City's challenge to the Parking Garage Project is moot.

G. The District'sSACC[24]

The District argues that the City's Stop Work Order cannot be enforced because the Solar Project is an electrical generating facility absolutely exempt from local building and zoning controls. Even assuming that local grading ordinances apply, the grading plans must be reviewed and approved consistent with Government Code[25] section 53097. Subjecting the grading plans to the City's development standards rather than to the County's Appendix J would swallow section 53097's limited exception for local grading controls.

The District notes that the Stop Work Notice states that the Solar Project is a generating facility. ER 5068. The District contends that the Solar Project is exempt from all zoning ordinances under section 53091(e)'s provision that zoning ordinances do not apply to the location or construction of facilities for the production or generation of electrical energy. Pet. Op. Br. at 7-9.

As discussed in City's Petition *ante*, the "location [and] construction" of electrical facilities exemption under section 53091 permits the location construction of the Solar Project, but does not exempt the Project from grading – which would otherwise be part of the exemption -- because section 53097 expressly requires school districts to comply with all city ordinances regulating drainage, road improvement, and grading plans. The District's argument that it is a local agency under 53090, not a school district under section 53097, is inconsistent with the plain language of section 53097. *See also* Opp. at 11-12.

The District further asserts that the Stop Work Notice cannot be enforced against it because the Solar Project is not subject to the grading requirements of Appendix J, which only

[23] The City's challenge to the Parking Garage Project is moot for the reasons stated *ante* with respect to United Walnut's Petition.

[24] In support of its Cross-Petition, District asks the court to judicially notice legislative history of SB 1681 (Exs. A-B). The request is granted. Evid. Code §452(b).

[25] All statutory references in this subsection are to the Government Code unless otherwise stated.

applies to private property. Pet. Op. Br. at 9-10. The District adds that the City has not imposed its grading ordinance on the District for the past 30 years. Nellesen Decl. ¶4. The City lacks any criteria for review and approval of grading plans submitted pursuant to section 53097 (ER 5111, 5115, 5116, 5118), and no public agency has submitted a grading plan to the city between January 1, 2013 to at least year-end 2016. Id. Pet. Op. Br. at 10-11.

The court also addressed this issue in the City's Petition *ante*. The court agrees with the District (Reply at 8-9) that the fact that the City has not imposed its grading ordinance on the District or any other public entity for 30 years shows a custom and practice that supports the District's interpretation of the WMC and the City has wrongly characterized the District's position as an estoppel argument. *See* Opp. at 6-7. Nonetheless, the grading ordinance applies to the District. The City explains why it is now enforcing its grading requirements against Mt. SAC: Mt. SAC initially agreed in MM-2c to consult with the City on a haul route for its trucks, and then revised that mitigation measure (but not the identical AQ-03) in an attempt to withdraw that requirement. Mt. SAC has, in fact, never consulted with the City on the haul route for the Solar Project. The City remains concerned about the safety issues of the Solar Project grading and hauling of dirt. Gilbertson Decl. ¶¶ 7, 12-15. Because of Mt. SAC's failures, the City for the first time has asserted its grading ordinance to Mt. SAC's public project. Opp. at 7-9.

The City's explanation why it is deviating from its previous practice is a strong argument for public safety, but less so for purposes of interpreting the grading ordinance. However, its failure to previously assert grading authority over Mt. SAC projects also is not compelling for purposes of statutory interpretation. A mere failure to assert authority is not an admission that such authority does not exist. The more important point is that the City's grading ordinances, interpreted collectively, permit their application to public projects. The County's recent amendment to Appendix J and the City's Urgency Ordinance also provide a seo\parate basis to apply the City's grading requirements to the Solar Project. *See ante*.

The District argues that, if the City's grading ordinances do apply, the City cannot force the District through the Stop Work Order to apply for a CUP or other entitlements in order to approve the grading plan for the Solar Project. Pet. Op. Br. at 11.

The District has created revised grading plans for the Solar Project that comply with the City's geotechnical and engineering design and construction criteria of Appendix J and referred to in WMC section 6-5.3. Barker Decl. ¶10; Nellesen Decl. ¶¶ 18-19. Specifically, the revised grading plans address and satisfy all relevant ordinances in Appendix J that relate to grading and drainage, taking into account the topography of the west parcel area, including all erosion issues. Barker Decl. ¶13. The revised grading plans meet the requirements of Appendix J sections J101.7, J108, J109, J110, and J111. Barker Decl. ¶17.[26] The revised grading plans also comply with the permitting requirements of responsible federal and state agencies. Pet. Op. Br. at 13.

WMC section 6-5.3 provides:

> "Development standards relative to grading within the City of Walnut are hereby established to complement the provisions set forth in Appendix Chapter J of the Los Angeles Building Code as currently adopted and as may be amended from time to time. In cases of conflict between the provisions of said Building Code and these development standards, the development standards shall prevail as to

[26] Appendix J sections J101.3, J101.4, J101.6, and J103.1 are not design-related. Id

> design concepts and nature and scope of permitted earthwork development. The Building Code shall prevail as to geotechnical and engineering design and construction and to administration of the permit process." *See* City RJN, Ex. A, p. 5.

The District argues that the "development standards" in WMC section 6-5.3 only apply where a project is subject to the City's discretionary land use approval. For example, such development standards would apply to a project that requires issuance of a CUP. Barker Decl., ¶11. Pet. Op. Br. at 15.As the revised grading plan complies with the relevant provisions of Appendix J, the District contends that the City should ministerially approve it. Pet. Op. Br. at 12-13. Subjecting the grading plans to the full development standards of the WMC would swallow the limited exception in for grading controls in section 53097.

The City opposes on the ground that it is still in the process of reviewing the grading plans submitted by District. Mt. SAC filed its SACC on December 30, 2016 and only transmitted its revised grading plans to the City on January 23, 2017. Opp. at 3, 4. Any discussion as to the adequacy of those plans seeks an advisory opinion on the adequacy of the revised grading plans and is not ripe because the City has not completed its review. *See* California Water & Telephone Co. v. County of Los Angeles, (1967) 253 Cal.App.2d 16, 22 (matter is ripe when facts are sufficiently congealed to permit useful decision). Opp. at 5, 14. The City also contends that Mt. SAC seeks relief that cannot be granted. It is entirely proper for the Stop Work Order to remain in place while the City reviews Mt. SAC's revised grading plans. According to the City, Mt. SAC improperly seeks to control the City's exercise of discretion through declaratory relief compelling it to issue grading approvals for the Solar Project. Opp. at 5-6.

The test for ripeness is (1) whether the dispute is sufficiently concrete so that declaratory relief is appropriate and (2) whether the parties will suffer hardship if judicial consideration is withheld. Farm Sanctuary, Inc. v. Department of Food & Agriculture, (1998) 63 Cal.App.4th 495, 502 (citation omitted).

While the City is correct that the adequacy of the revised grading plans is not ripe for review, there is a portion of the Stop Work Order that is ripe for declaratory relief. The Stop Work Order apparently states that no work may begin until ALL required land use entitlements, building permits, and approved truck haul routes, etc. have been issued by the City of Walnut."[27] Reply at 1. The District provides evidence that the City is refusing to issue any grading permit until the Solar Project is fully entitled. Nellesen Decl. ¶15; ER 5110. This would include applying for a CUP, a building permit, and a development application. Nellesen Decl. ¶16. The City also recently deemed District's submitted grading plans "incomplete" and stated that they need to be submitted to the Planning Commission for discretionary approval. Reply Nellesen Decl. ¶¶ 3-5. The issue of the City's right to require discretionary entitlements for the Solar Project is sufficient concrete, and Mt. SAC would suffer hardship from a delay in resolving that issue. *See* Reply at 3-4.

The District is entitled to a declaration regarding the scope of the Stop Work Order and the City's review of the revised grading plan, but not its adequacy. The District describes this scope as (1) whether it may proceed with construction without applying for zoning and building

[27] Again, the Stop Work Order was not included at ER 5068.

permits because it is exempt under section 53091 (decided *ante*), (2) whether the City may not enforce the Stop Work Order by requiring land entitlements and a CUP, and (3) alternatively, whether the City must review and process the grading plans for approval under its grading ordinances as defined and limited by section 53097 without a CUP, building permits, or zoning controls. Reply at 4.

The District challenges the City's attempts to impose truck haul route restrictions and any discretionary approvals by the Planning Commission. Waivers of sovereign immunity "must be express" and may not be "inferred by implication." Bame v. City of Del Mar, (2001) 86 Cal.App.4th 1346, 1358. An express waiver of sovereign immunity must be strictly construed in favor of the state. Coso Energy Developers v. County of Inyo, (2004) 122 Cal.App.4th 1512, 1533. Mt. SAC contends that the City's interpretation of Code section 53097 is too expansive, and violates these sovereign immunity principles. Reply at 5.

The District is correct that the City's attempts to force the District to obtain a CUP and comply with the City's development standards is beyond the scope of section 53097's exception. The Solar Project is generally exempt from local building ordinances under section 53091. The exception under 53097 permits the City to regulate the Solar Project only through ordinances that regulate drainage or road improvements and conditions, or that require the review and approval of grading plans as they relate to the design and construction of onsite improvements which affect drainage, road conditions, or grading. The District is not required to obtain a CUP or comply with any other discretionary land use standards outside this limited exception. Thus, the District need not comply with City ordinances regulating a usage of property that might impact drainage or road conditions. As applied to the Solar Project, section 53097 means what it says -- the City may regulate grading plans.

The District argues that the City's review and approval of the grading plan should not include the truck haul route, but does not really say why. Instead, the District only points out that section 53097 does not mention roadway activities as a harm. Reply at 5-6.

The District's position crops the photograph too closely. As a matter of practice as well as practicality, a haul route is part and parcel of grading. While some projects can be graded without importing or exporting dirt, any grading project of significant size cannot. Section 53097 also permits a city ordinance to regulate grading plans as they relate to the design and construction of onsite improvements which affect "road conditions." Heavy truck hauling for project grading could impact both a road's surface and its traffic conditions. The City explains that the Solar Project's haul route presents several safety issues. The District makes no showing that a haul route is not subsumed within the grading plan exception of section 53097.

The City can, therefore, review Mt. SAC's grading plan for compliance with its grading ordinances, including its haul route ordinance. The issue becomes whether this review is a discretionary or ministerial. The District argues that it is ministerial in nature because the technical and ministerial criteria in Appendix J apply, not the development standards in WMC section 6-5.3, which only apply to CUPs and other discretionary entitlements which must be reviewed by the City's Planning Commission. Pet. Op. Br. at 12-13; Reply at 6-7.

The City does not respond to this argument. While grading permits are generally ministerial, that is not always true. WMC section 6-5.3 provides that the City's development standards with respect to design and the nature and scope of permitted earthwork development control over Appendix J. City RJN Ex. B, p. 2. WMC section 6-5.4 requires all grading to conform to sections 6-5.3 through 6-5.8. WMC section 6-5.5 imposes specific grading

requirements for, *inter alia*, minimizing mass grading and the cutting and shaping of slopes. WMC section 6-5.6 provides that if a grading plan imposes a change in elevation of five feet or more it shall be submitted to the Planning Commission for approval. New WMC section 6-8 provides specific provisions for a haul route.

Based on these provisions, the court cannot say that the approval of the Solar Project's grading plans, including the haul route, is a ministerial task that need not be submitted to the Planning Commission. At least the haul route ordinance appears to be discretionary in nature. The District has presented the only evidence or argument on this issue, and it is not ripe for review. The court, therefore, will not provide an advisory opinion.

The District's petition is granted in part. The District is entitled to declaratory relief that (1) because it is exempt under section 53091, Mt. SAC may proceed with construction of the Solar Project without applying for zoning and building permits from the City, with the exception of grading and haul route approvals, (2) the City may not enforce the Stop Work Order by requiring land entitlements and a CUP,[28] but may enforce the requirement of grading and haul route approvals, and (3) the City must review and process the grading plans for approval under its grading ordinances, but without a CUP, building permits, or zoning controls other than grading and haul route approvals. The court offers no current opinion whether the City's grading plan and haul route approvals are ministerial or discretionary in nature.

H. Conclusion

United Walnut's Petition against the District is granted in large part. The Parking Garage Project is moot and United Walnut's claims concerning it are denied. For the Solar Project, the District failed to proceed in the manner required by law by failing to properly circulate initial study. The District also is required to comply with the City's grading ordinances in constructing the Solar Project. Finally, the District has a practice of preparing Program EIRs which can be used for tiering, but are not project-specific. Because it uses programmatic EIRs, United Walnut is entitled to declaratory and injunctive relief that Mt. SAC must prepare and circulate initial studies to responsible agencies (at an appropriate time) as projects come up for actual decisions for design and implementation.

United Walnut's first and sixth causes of action have been bifurcated and stayed and no judgment or writ can issue on its Petition, or on the District's SACC, until those claims are resolved. United Walnut's Petition is ordered transferred to Department 1 for reassignment to an I/C court.

The City FAP against the District is granted in part. The District's Solar Project must comply with the City's grading requirements, but the City's haul route requirements is not within the scope of the City's Petition (it is within the scope of the District's SACC). The District need not comply with the City's other zoning requirements. Additionally, the District failed to proceed in the manner required by CEQA in failing to prepare and circulate an initial study for the Solar Project. The District also improperly relied upon the Addendum. The District must set aside Solar Project approvals and Addendum, and prepare and circulate an initial study for the Solar Project before approving it. The City may not act as lead agency for the Solar Project. The

[28] The City does not dispute the District's contention that the Stop Work Order improperly relies on WMC sections 18-8 (business permits), and section 16-7.1 (regulating street parking). Pet. Op. Br. at 11.

City's challenge to the Parking Garage Project is denied as moot.

The District's SACC against the City is granted in part. The District is entitled to declaratory relief that (1) it is exempt under section 53091 and SAC may proceed with construction of the Solar Project without applying for zoning and building permits from the City, with the exception of grading and haul route approvals (2) the City may not enforce the Stop Work Order by requiring land use entitlements and a CUP, but may enforce the requirement of grading and haul route approvals, and (3) the City must review and process the grading plans for approval under its grading ordinances, but without a CUP, building permits, or zoning controls other than grading and haul route approvals. The court offers no current opinion whether the City's grading plan and haul route approvals are ministerial or discretionary in nature.

The City is entitled to a judgment and writ on its FAP and the District is entitled to declaratory relief against the City. The City's counsel is ordered to prepare a proposed judgment and writ of mandate, serve them on counsel for the District for approval as to form, wait ten days after service for any objections, meet and confer if there are objections, and then submit the proposed judgment and writ along with a declaration stating the existence/non-existence of any unresolved objections. An OSC re: judgment on the City/District matter is set for April 20, 2017 at 9:30 a.m.

United Walnut Taxpayers v. Mount San Antonio Community College District, et al., BC 576587

Tentative decision on (1) United Walnut's petition for writ of mandate: granted in large part; (2) City's petition for writ of mandate: granted in part; (3) District's petition for writ of mandate: granted in part

There are three separate mandamus petitions in this consolidated action. Plaintiff United Walnut Taxpayers ("United Walnut") petitions for a writ of mandate under CEQA against Defendant and Cross-Plaintiff Mt. San Antonio Community College District ("District" or "Mt. SAC"). The City petitions for a writ of mandate against the District. Defendant and Cross-Plaintiff District seeks declaratory relief against Cross-Defendant City of Walnut ("City").

The court has read and considered the moving papers, oppositions, and replies, and renders the following tentative decision.

A. Statement of the Case

1. United Walnut Petition

Plaintiff United Walnut commenced this proceeding on March 24, 2015, seeking declaratory and injunctive relief and a writ of mandate. The operative pleading is the Second Amended Complaint ("SAC") filed on August 29, 2016. The SAC alleges in pertinent part as follows.

On November 4, 2008 Measure RR, entitled and otherwise known as the "A Mount San Antonio Community College District bond proposition," appeared as a bond proposal on the ballot for voters within the District's boundaries (which include the City). The measure authorized a $353 million bond. A supermajority of 55% of those voting was required for Measure RR to pass and it did so with approval by 69.95% of District voters. The primary published and entitled language on the Measure RR ballot stated that its purpose was for classroom repair. The District is spending Measure RR money for the grading of sites for an Athletic Complex East ("ACE") and Retail/Solar Power Generating Plant ("Solar Project"), and has allocated future Measure RR money for the planning, design, study, construction or building, and implementation of those projects. The ACE and Solar Power Projects are not listed in the Measure RR Bond Project List.

On February 11, 2015, at regularly scheduled meeting, the District Board of Trustees ("Board") decided to approve a 2,300 space parking structure project (the "Parking Garage Project") by passing a resolution purporting to exempt the Parking Project from City zoning ordinances and entering into a lease/lease back agreement for construction of the Project (the "Parking Project Approvals"). The District is currently grading areas where it plans to build the Solar Project on land subject to and in violation of the City's zoning ordinances. Defendants are spending, and will continue to spend Measure RR bond revenues on the Parking Project, the ACE Project, and the Solar Project in violation of constitutional and statutory bond spending restrictions imposed by state voters via Proposition 39 and District voters via Measure RR.

The decisions for the Parking Garage Project and Solar Project are "projects" such that compliance with the California Environmental Quality Act ("CEQA") is required. The District

has prepared one or more programmatic environmental impact reports ("EIRs") in association with campus-wide master planning efforts for facilities, as well as plan updates, but has not prepared any project-specific CEQA documents for the Projects and made no CEQA decision or determination in the February 11, 2015 Parking Project Approvals.

In the first cause of action, the SAC seeks a declaratory judgment and the issuance of an injunction to enjoin and prevent the District from misuse or waste of public money in spending Measure RR bond sales revenue for the planning, design, study, construction or building, and implementation of the Parking Project, ACE Project, and Solar Project.

In the second cause of action for mandamus under CEQA, the SAC alleges that the District failed to proceed in a manner required by law by approving the Parking Garage and Solar Projects without making a determination that the projects are within the scope of the programmatic EIR. Plaintiff requests a peremptory writ of mandamus ordering the District to rescind and set aside its February 11, 2015 and September 16, 2015 final Solar Project and Parking Project Approvals, and remanding the matter for the District to reconsider the Parking Project and Solar Project consistent with the law.

The SAC's third cause of action for mandamus alleges the District's violation of City zoning ordinances for the Parking Garage Project and Solar Project, which are located within the City in an area zoned Residential Planned Development Zone ("RPDZ"). Structures built within the RPDZ cannot exceed a height of 35 feet. Walnut Municipal Code ("WMC") §25-89.1(b)(4)(g). Neither a parking garage structure nor a solar project is a permitted or authorized use in the RPDZ, unless a variance or conditional use permit ("CUP") is obtained and the Parking Project and the Solar Project can meet special conditions and special findings can be made and adopted for the same. The District has not applied for or obtained a CUP or variance from the City for either the Parking Project or the Solar Project.

The SAC's fourth cause of action for mandamus under CEQA and Government Code section 53094(b) alleges that the District failed to proceed in a manner required by law because it made no findings concerning land use and zoning conflicts in the February 11, 2015 Parking Garage Project Approvals. Plaintiff requests a peremptory writ of mandamus ordering the District to rescind and set aside its February 11, 2015 Parking Project Approvals, and remanding the matter to the District to reconsider the approvals consistent with the law.

The SAC's fifth cause of action alleges a pattern and practice violation of CEQA. The District continues to misinterpret the spirit, intent, and purpose of CEQA. Plaintiff requests a declaratory judgment and the issuance of an injunction to enjoin and prevent any District action proceeding with the quasi-legislative policy of implementing projects without performing required environmental review and making proper and adequate CEQA determinations for its master plan and programmatic EIR projects.

The SAC's sixth cause of action for declaratory and injunctive relief alleges violations of law in the lease-leaseback arrangement between the District and Real Party-in-Interest Tilden-Coil Constructors, Inc. ("Tilden"). Plaintiff alleges that there is no actual lease, and that the District is violating Public Contract Code section 17406 *et seq*. Plaintiff seeks a declaratory judgment and the issuance of an injunction to prevent any action by the District to proceed with payments to Tilden under the lease-leaseback agreement.[1]

[1] United Walnut's first and sixth causes of action have been bifurcated and stayed.

2. The District's Cross-Complaint

The District filed a Cross-Complaint against the City and its employee, Chris Vasquez ("Vasquez"), on November 18, 2016. The operative pleading is the Second Amended Cross-Complaint ("SACC") filed December 30, 2016. The SACC alleges in pertinent part as follows.

The Solar Project is an approximately 2.0 megawatt electrical output system with ground-mounted tracking solar photovoltaic panels and a small masonry structure to house equipment. It is located on the West Parcel of the Mt. SAC campus. The District has received all regulatory and permitted approvals required for the Solar Project.

The District did not apply for a CUP or entitlement related to the hauling, grading, or construction of the Solar Project because it is exempt from local zoning and building controls pursuant to Government Code section 53091(d) and (e). The WMC contains no applicable provisions for locating and constructing a solar photovoltaic project at the campus. The WMC grading ordinance does not regulate grading on public property such as the Solar Project. The City has always interpreted its authority as limited to reviewing final engineering plans for street improvements, which does not apply to the Solar Project.

In excess of its police powers and authority, on October 20, 2016 the City, by and through Vasquez, issued a Stop Work Order against the Solar Project. The Stop Work Order was issued by Vasquez in his capacity as Associate Planner at the City's Community Development Department.

The SACC's first cause of action is for a writ of mandate against the City. The District argues that the Stop Work Order incorrectly asserts police powers to stop the Solar Project based on the City's grading controls. The City lacks the authority to issue a Stop Work Order because the Solar Project is a solar generation project exempt from local zoning ordinances under Government Code section 53091(d) and (e). The District has not violated WMC Section 25-17, which pertains to building permits, or WMC Section 25-39(f), which pertains to public utilities, because the Solar Project is exempt from the City's building permit requirements and is not within the class of uses defined as "public utilities" or "utilities operated by mutual agencies."

The SACC's second cause of action seeks declaratory and injunctive relief against the City. District seeks a declaration that the Solar Project is exempt from the City's grading ordinances under Government Code section 53091. Alternatively, if the grading ordinance is applicable to the Solar Project under Government Code section 53097, the District seeks a declaration that the City's authority is limited to reviewing and approving grading plans related to the Solar Project, and the City lacks without authority to condition approval of those grading plans on the District's compliance with City's zoning and building laws. Finally, the District seeks an injunction to enjoin any action by the City to enforce the Stop Work Order.

3. The City's Petition

On March 26, 2015, the City filed a petition for writ of mandate in Case No. BS 154389. The operative pleading is the First Amended Petition ("City FAP"), filed March 24, 2016. The City FAP alleges in pertinent part as follows.

The Solar Project includes the mass grading of the West Parcel and the acquisition and installation of a ground-mounted solar photovoltaic system to provide approximately two megawatts of energy for the Mt. SAC campus. The West Parcel is zoned Residential Planned Development ("RPD") under the City's zoning ordinance. The RPD zone incorporates the permitted and conditionally permitted uses of the R-1 zone. Title VI C.25 Section 25-89.1

allows property in an RPD zone to be used for "any permitted use in an R-1 zone...."

The Solar Project is not a permitted or authorized use in the RPD zone without first obtaining a discretionary CUP from the City. The District has not applied for or obtained a CUP from the City for the Solar Project or any other permit or entitlement relating to the hauling, grading, and construction thereof.

The District generically discussed the Solar Project in a Program EIR, which the Board certified as final at its regular meeting of December 11, 2013. On May 15, 2015, the City, through email correspondence, informed the District that the Solar Project would be subject to the City's zoning regulations and CUP requirements. On July 8, 2015, the Board adopted Resolution No. 15-01 "Assessment, Design, Installation, and Operation and Maintenance of Photovoltaic Solar System — Request for Qualifications/Request for Proposal No. 3005," and in so doing entered into a design-build agreement for the purchase and installation of a ground mounted photovoltaic solar system.

At its November 18, 2015 meeting, the Board approved a design–build agreement for the Project pursuant to Resolution No. 15-06 "New Assessment, Design, Installation, Operation, and Maintenance of a Photovoltaic Solar System." The Board also approved Action Item No. 7, which was described as a "project" that "entails grading and site improvements required to prepare the West Parcel site… for the purchase and installation of a ground -mounted solar photovoltaic system, under a separate design -build agreement." The District never applied for a grading or hauling permit from the City.

On December 18, 2015, the City's counsel informed counsel for the District that the City would be assuming the "lead agency" role under CEQA for the Solar Project due to the District's failure to comply with CEQA. Four days later, on December 22, 2015, the District published the Addendum in an apparent attempt to cut the City out of its "responsible agency" role in the CEQA review process for the Project. The Board approved the Addendum at its January 13, 2016 meeting. The Addendum includes revisions to four mitigation measures (2c, 2k, 3a, and 3i) to allow for extended dump truck traffic, require parking supply studies, remove the requirement for obtaining a grading permit, and bring paint VOC standards to current industry and state requirements. The Addendum also adds six mitigation measures to "mitigate potentially significant traffic impacts from the construction truck hauling of soil import to the West Parcel."

The City FAP's first cause of action is for a writ of mandate under CEQA. The City alleges that the District has failed to carry out adequate CEQA analysis in approving the Solar Project. The Solar Project has changed in scope, and the District has improperly continued to rely on the Program EIR. Because the Project description was not accurately represented throughout the approval process, mitigation measures were never adequately formulated or evaluated. The District's failure to conduct adequate environmental review after significantly changing the Solar Project description and mitigation measures in the Addendum constitutes a prejudicial abuse of discretion that precludes informed decision-making and informed public participation.

In a claim for violation of State Planning and Zoning Law, the City alleges that the District is required to submit to the City any public works projects recommended for planning, initiation, or construction. The District has not submitted to the City any of its public works projects, including the Solar Project, for a finding of consistency with the City's General Plan.

In a claim for violation of the WMC, the City alleges that the Solar Project is subject to its WMC, zoning ordinance, General Plan, and other land use controls. The District previously

acknowledged the City's police power jurisdiction over the Solar Project, but has now taken the position that the Solar Project is exempt from the City's land use regulations. The District cannot exempt itself under Government Code sections 53091 and 53094. The District has neither submitted a grading plan nor other plans for City approval. In attempting to use the Addendum to usurp both the City's rights as a responsible agency under CEQA and its police powers to properly regulate and control grading activities, traffic, and weight limits on City streets, the District proposes to violate the law.

The City FAP's second cause of action is for declaratory relief. The City seeks a judicial determination and declaration whether the District's Addendum was proper. The City also seeks determination whether any laws of this State, including Government Code sections 53091 and 53094, exempt the Solar Project from the City's land use police powers and regulatory authority. Finally, the City seeks a determination whether CEQA and CEQA Guidelines require or permit it to take over the lead agency role for the Solar Project.

4. <u>Course of Proceedings</u>

On April 15, 2015, Plaintiff United Walnut applied *ex parte* for a temporary restraining order ("TRO") and order to show cause re: preliminary injunction ("OSC") with respect to the Parking Project. Department 82 granted the TRO and set an OSC hearing on the preliminary injunction.

After a May 13, 2015 OSC hearing, Department 82 granted the preliminary injunction. The court found that Plaintiff United Walnut was likely to prevail on its third and fourth causes of action alleging violation of the City's zoning ordinance. A parking structure is a non-classroom facility that cannot be exempted from the City's zoning laws. As a separate ground, the court found that Plaintiff was likely to succeed on its first cause of action alleging that the parking structure was not sufficiently identified in Measure RR when presented to voters. Defendants were enjoined from performing or conducting any further construction or dirt removal activity on the proposed parking structure site, or from spending any Measure RR funds on any aspect of the Parking Project. Plaintiff was ordered to post an undertaking in the amount of $127,076 and did so on May 28, 2015.

On July 27, 2015, this action was reassigned to Department 85. On January 21, 2016, Department 85 heard United Walnut's motions to file a First Amended Complaint ("FAC") and to consolidate this matter with another case (BS 154389). United Walnut additionally moved for a preliminary injunction against the District. In turn, the Districtmoved to dismiss the Complaint and dissolve the existing preliminary injunction in this action. The court granted United Walnut's motion to file an FAC and motion to consolidate. The District's motion to dismiss and motion to dissolve the preliminary injunction was denied. The court also denied United Walnut's application for preliminary injunction against construction of the Solar Project, ruling that the Complaint did not contain a cause of action alleging that the Solar Project was a violation of CEQA or the City's zoning laws; it only made those allegations for the Parking Project. Plaintiff additionally failed to demonstrate irreparable harm.

On December 6, 2016, Department 85 heard United Walnut's application for a preliminary injunction against the District. The District simultaneously moved for a preliminary injunction against the City. The court granted United Walnut's application, ruling that Plaintiff was likely to prevail on its amended third cause of action alleging that construction of the Solar Project violates WMC's grading and draining requirements, including review and approval by

the City. The court denied the District's application, ruling that the City had the authority to issue a stop work order. Section 53097 specifically requires school districts to comply with all city ordinances regulating drainage, road improvement, and grading plans and District's Solar Project was within the scope of the City's grading ordinances.

B. Standard of Review

A party may seek to set aside an agency decision for failure to comply with CEQA by petitioning for either a writ of administrative mandamus (CCP §1094.5) or of traditional mandamus. CCP §1085. A petition for administrative mandamus is appropriate when the party seeks review of a "determination, finding, or decision of a public agency, made as a result of a proceeding in which by law a hearing is required to be given, evidence is required to be taken and discretion in the determination of facts is vested in a public agency, on the grounds of noncompliance with [CEQA]." Public Resources ("Pub. Res.") Code §21168. This is generally referred to as an "adjudicatory" or "quasi-judicial" decision. Western States Petroleum Assn. v. Superior Court, ("Western States") (1995) 9 Cal.4th 559, 566-67. A petition for traditional mandamus is appropriate in all other actions "to attack, review, set aside, void or annul a determination, finding, or decision of a public agency on the grounds of noncompliance with [CEQA]." Where an agency is exercising a quasi-legislative function, it is properly viewed as a petition for traditional mandamus. Id. at 567; Pub. Res. Code §21168.5.

Under CEQA, at issue is United Walnut's and the City's CEQA challenge to a quasi-adjudicative action taken by the District in approving the Solar Project, and United Walnut's additional challenge to the approval of the Parking Garage Project. This procedural setting, where an administrative hearing was required, is governed by administrative mandamus. In determining whether to grant a petition in a CEQA case, the court decides whether there was a prejudicial abuse of discretion. Public entities abuse their discretion if their actions or decisions do not substantially comply with the requirements of CEQA. Sierra Club v. West Side Irrigation District, (2005) 128 Cal.App.4th 690, 698. Abuse of discretion is established if the agency has not proceeded in a manner required by law or if the determination or decision is not supported by substantial evidence. Western States, *supra*, 9 Cal.4th at 568; Pub. Res. Code §21168.5.

A reviewing court must adjust its scrutiny to the nature of the alleged defect, depending on whether the claim is predominantly one of improper procedure or a dispute over the facts." (Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova, ("Vineyard") (2007) 40 Ca1.4th 412, 435. Challenges to an agency's failure to proceed in the manner required by CEQA, such as the failure to address a subject required to be covered in an EIR or to disclose information about a project's environmental effects, are subject to a less deferential standard than challenges to an agency's substantive factual conclusions. Id. at 435. In reviewing these claims, the court must "determine de novo whether the agency has employed the correct procedures, 'scrupulously enforc[ing] all legislatively mandated CEQA requirements'." Id.

The parties' land use claims that project approvals violated the WMC are governed generally by CCP section 1094.5, which does not in its face specify which cases are subject to independent review of evidentiary findings. Fukuda v. City of Angels, (1999) 20 Cal.4th 805, 811. Instead, that issue was left to the courts. In cases other than those requiring the court to exercise its independent judgment, the substantial evidence test applies. CCP §1094.5(c). Land use decisions do not typically involve vested rights requiring independent review. *See*PMI Mortgage Insurance Co. v. City of Pacific Grove, (1981) 128 Cal.App.3d 724, 729. A

requirement of a permit for a developer, public or private, under local city ordinances does not infringe on the fundamental vested rights of adjoining property owners. Bakman v. Dept. of Transportation, (1979) 99 Cal.App.3d 665, 689-90. The "substantial evidence" standard governs such review, and "substantial evidence" is relevant evidence that a reasonable mind might accept as adequate to support a conclusion (California Youth Authority v. State Personnel Board, (2002) 104 Cal.App.4th 575, 585) or evidence of ponderable legal significance, which is reasonable in nature, credible and of solid value. Mohilef v. Janovici, (1996) 51 Cal.App.4th 267, 305, n.28. The trial court considers all evidence in the administrative record, including evidence that detracts from evidence supporting the agency's decision. California Youth Authority, *supra*, 104 Cal.App.4th at 585.

Whether the agency abused its discretion must be answered with reference to the administrative record. This standard requires deference to the agency's factual and environmental conclusions based on conflicting evidence, but not to issues of law. Laurel Heights Improvement Assn. v. Regents of University of California, ("Laurel Heights") (1988) 47 Cal.3d 376, 393, 409. Argument, speculation, and unsubstantiated opinion or narrative will not suffice.[2] Guidelines §15384(a), (b).

Finally, the parties' traditional mandamus and declaratory relief claims are based on extra-record evidence and require no administrative record. A petition for traditional mandamus is appropriate in all actions "to compel the performance of an act which the law specially enjoins as a duty resulting from an office, trust, or station...." CCP §1085. A traditional writ of mandate is the method of compelling the performance of a legal, ministerial duty required by statute. *See*Rodriguez v. Solis, (1991) 1 Cal.App.4th 495, 501-02. Generally, mandamus will lie when (1) there is no plain, speedy, and adequate alternative remedy, (2) the respondent has a duty to perform, and (3) the petitioner has a clear and beneficial right to performance." Pomona Police Officers' Assn. v. City of Pomona, (1997) 58 Cal.App.4th 578, 583-84 (internal citations omitted). Whether a statute imposes a ministerial duty for which mandamus is available, or a mere obligation to perform a discretionary function, is a question of statutory interpretation. AIDS Healthcare Foundation v. Los Angeles County Dept. of Public Health, (2011) 197 Cal.App.4th 693, 701.

Traditional mandamus relief is unavailable unless the petitioner can demonstrate an abuse of that discretion. Mandamus will not lie to compel the exercise of a public agency's discretion in a particular manner. American Federation of State, County and Municipal Employees v. Metropolitan Water District of Southern California, (2005) 126 Cal.App.4th 247, 261. It is available to compel an agency to exercise discretion where it has not done so (Los Angles County Employees Assn. v. County of Los Angeles, (1973) 33 Cal.App.3d 1, 8), and to correct an abuse of discretion actually exercised. Manjares v. Newton, (1966) 64 Cal.2d 365, 370-71. In making this determination, the court may not substitute its judgment for that of the agency, whose decision must be upheld if reasonable minds may disagree as to its wisdom. Id. at 371. A agency decision is an abuse of discretion only if it is "arbitrary, capricious, entirely lacking in evidentiary support, unlawful, or procedurally unfair." Kahn v. Los Angeles City Employees'

[2]As an aid to carrying out the statute, the State Resources Agency has issued regulations called "Guidelines for the California Environmental Quality Act" ("Guidelines") contained in Code of Regulations, Title 14, Division 6, Chapter 3, beginning at section 15000.

Retirement System, (2010) 187 Cal.App.4th 98, 106. In applying this very deferential test, a court "must ensure that an agency has adequately considered all relevant factors, and has demonstrated a rational connection between those factors, the choice made, and the purposes of the enabling statute." Western States, *supra*, 9 Cal.4th at 577. A writ will lie where the agency's discretion can be exercised only in one way. Hurtado v. Superior Court, (1974) 11 Cal.3d 574, 579.

C. CEQA

The purpose of CEQA, (Pub. Res. Code §21000 *et seq*.,) is to maintain a quality environment for the people of California both now and in the future. Pub. Res. Code §21000(a). "[T]he overriding purpose of CEQA is to ensure that agencies regulating activities that may affect the quality of the environment give primary consideration to preventing environmental damage."Save Our Peninsula Committee v. Monterey County Board of Supervisors, (2001) 87 Cal.App.4th 99, 117. CEQA must be interpreted "so as to afford the fullest, broadest protection to the environment within reasonable scope of the statutory language."Friends of Mammoth v. Board of Supervisors, (1972) 8 Cal.3d 247, 259.

The Legislature chose to accomplish its environmental goals through public environmental review processes designed to assist agencies in identifying and disclosing both environmental effects and feasible alternatives and mitigations. Pub. Res. Code §21002. Public agencies must regulate both public and private projects so that "major consideration is given to preventing environmental damage, while providing a decent home and satisfying living environment for every Californian." Pub. Res. Code §21000(g).

Under CEQA, a "project" is defined as any activity which may cause either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment (1) undertaken directly by any public agency, (2) supported through contracts, grants, subsidies, loans or other public assistance, or (3) involving the issuance of a lease, permit, license, certificate, or other entitlement for use by a public agency. Pub. Res. Code §21065. The word "may" in this context means a reasonable possibility. Citizen Action to Serve All Students v. Thornley, (1990) 222 Cal.App.3d 748, 753. "Environment" means the physical conditions which exist within the area which will be affected by a proposed project, including land, air, water, minerals, flora, fauna, noise, objects of historic or aesthetic significance. Guidelines §21060.5.

The "project" is the whole of the action, not simply its constituent parts, which has the potential for resulting in either direct or reasonably foreseeable indirect physical change in the environment. Guidelines §15378. An indirect physical change must be considered if that change is a reasonably foreseeable impact which may be caused by the project. On the other hand, a change that is "speculative or unlikely to occur is not reasonably foreseeable." Guidelines §15064(d)(3). The term "project" may include several discretionary approvals by government agencies; it does not mean each separate government approval. Guidelines §15378(c).

The EIR is the "heart" of CEQA, providing agencies with in-depth review of projects with potentially significant environmental effects. Laurel Heights, *supra*, 6 Cal.4th at 1123. An EIR describes the project and its environmental setting, identifies the potential environmental impacts of the project, and identifies and analyzes mitigation measures and alternatives that may reduce significant environmental impacts. Id. Using the EIR's objective analysis, agencies "shall mitigate or avoid the significant effects on the environment... whenever it is feasible to do

so. Pub. Res. Code §21002.1. The EIR serves to "demonstrate to an apprehensive citizenry that the agency has in fact analyzed and considered the ecological implications of its actions."No Oil, Inc. v. City of Los Angeles, (1974) 13 Cal.3d 68, 86. It is not required to be perfect, merely that it be a good faith effort at full disclosure. Kings County Farm Bureau v. City of Hanford, (1990) 221 Cal.App.3d 692, 711-12. A reviewing court passes only on its sufficiency as an informational document and not the correctness of its environmental conclusions. Laurel Heights, *supra*, 47 Cal.3d at 392.

All EIRs must cover the same general content. Guidelines §§ 15120-32. An EIR should be prepared with a sufficient degree of analysis to provide decision-makers with information which enables them to make a decision which intelligently takes account of environmental consequences. The environmental effects need not be exhaustively reviewed, but the EIR's sufficiency is viewed in the light of what is reasonably feasible. Guidelines §15151. The level of specificity of an EIR is determined by the nature of the project and the "rule of reason."Al Larson Boat Shop, Inc. v. Board of Harbor Commissioners, (1993) 18 Cal.App.4th 729, 741-42. The degree of specificity "will correspond to the degree of specificity involved in the underlying activity which is described in the EIR." Guidelines §15146. The ultimate decision whether to approve a project is a nullity if based upon an EIR that does not provide decision-makers, and the public, with the information about the project required by CEQA. Santiago County Water District v. County of Orange, (1981) 118 Cal.App.3d 818, 829.

D. Statement of Facts from the Administrative Record[3]

1. Environmental Impact Reports

a. 2002 Program EIR

On December 18, 2002, the District certified the Final Program EIR ("2002 Program EIR") for the District 2002 Campus Master Plan, also known as a Facility Master Plan. AR 4388, 4395-96. The Board adopted a Statement of Overriding Considerations for the Program EIR. AR 19, 4395. The Board found that there were significant historic resource and circulation impacts that were unavoidable after incorporation of all feasible mitigation measures. AR 19. These included demolition of campus buildings potential eligible for the California Register of Historical Resources and destruction of important habitat within the Wildlife Sanctuary. AR 19-20. The Board determined that the District's limited resources were better spent on new construction rather than restoration and retrofitting of the existing buildings, many of which were damaged. AR 20-21.

b. 2005 Supplemental EIR

In December 2005, the District issued a Draft Supplement to the Program EIR ("2005 Supplemental EIR") to address new environmental effects that may be caused by implementation of the 2005 Master Plan Update. AR 4778. The 2005 Supplemental EIR was prepared as part of the 2005 Master Plan Update. AR 4778. The 2005 Master Plan Update included changes in the location of planned buildings on campus, and additional parking availability. AR 4780. Specifically, the 2005 Master Plan Update proposed a 2,250-space parking structure. AR 4780.

[3] Where the Statement of Facts does not include a citation, the page cited by the party either was not included in the Joint Appendix or was mis-scited. As the facts are undisputed, the court has set forth the pertinent fact anyway.

The issues requiring resolution in the 2005 Supplemental EIR included determining what circulation improvements were required and when the parking structure would be built. AR 4781.

In May 2006, the District responded to public comments on the 2005 Supplemental EIR. AR 97. The City had commented that the proposed mitigation measures (2i and 2cc) for dedication of land to accommodate needed improvements to the intersection of Grand/Temple were too narrowly worded to address the needed right-of-way for that and other necessary intersection improvements. AR 131. The District responded that it was willing to dedicate any lands necessary for project-related improvements at the identified intersections and would replace the language in mitigation measure 2i. AR 97.

On March 16, 2006, the District issued a Statement of Facts and Findings to approve the final Master Plan Update 2005. AR 22-79. The Statement of Facts and Findings asserted that all significant environmental effects from the Master Plan Update that can feasibly be avoided have been eliminated or substantially lessened by virtue of the mitigation measures in the Final EIR. AR 23-37. The District again determined that unavoidable impacts to historic resources on campus were acceptable due to the need to modernize facilities on campus. AR 40-41.

c. 2008 Subsequent EIR

In May 2008, the District issued a Draft Subsequent EIR ("2008 Subsequent EIR") to address environmental effects that may be caused by implementation of the 2008 Master Plan Update. AR 6050-1, 6050-8, 6050-12. The purpose of the 2008 Subsequent EIR was for the review and consideration of the 2008 Master Plan Update. AR 6050-42. The 2008 Master Plan Update revised some land plans included in the 2005 Master Plan Update and included several new projects. AR 6050-11. Both the 2005 and 2008 Master Plan Updates proposed that a Parking Garage Project would be located south of Edinger Way east of Walnut Drive. AR 6050-11. The 2008 Master Plan Update included a new plan for the ACEProject. AR 6050-11 to 6050-12. This new project replaced the Gymnasium project in the 2005 Master Plan Update. AR 6050-36.

The District responded to public comments on the 2005 Subsequent EIR. AR 6052-54. On August 27, 2008, the Board certified the 2008 Final EIR, adopted a Statement of Overriding Considerations, and adopted the 2008 Master Plan Update. AR 6159-60.

d. 2012 Subsequent EIR

In September 2013, the District issued a Draft Subsequent EIR ("2012 Subsequent EIR") to address new environmental effects that may be caused by implementation of the 2012 Facility Master Plan. AR 140, 147. The District prepared the 2012 Facilities Master Plan to revise the land plans in the 2008 Master Plan Update, complete projects that had previously been un-funded, and include new projects. AR 151.

The 2012 Subsequent EIR stated that it "addresses the project at the level of detail characteristic of a conceptual master plan." AR 155. As a Subsequent Program EIR, the 2012 Subsequent EIR addressed the environmental concerns identified from public comments and from professional evaluation by the project team. AR 155. The initial potential area of controversy included the 383,000 cubic yards of earth export due to the Parking Garage Project and the ACEProject. AR 155.

The 2012 Draft EIR lists the Parking Garage Project, BCT Project, and ACE Project as

future projects that already had CEQA clearance from previous master plan updates. AR 181, 183. The Solar Project was new as it had not been included in the 2008 Subsequent EIR for the 2008 Master Plan Update. AR 183.

On December 11, 2013, the Board certified the 2012 Subsequent EIR, adopted a Statement of Overriding Considerations, and adopted the 2012 Master Plan Update. AR 14855, 14862-64. The Board again determined that the unavoidable impacts to historic resources and Wildlife Sanctuary were acceptable due to the need to modernize facilities on campus. AR 77-78. The Board stated its intention to restore and replace the riparian areas affected by the construction. AR 79.

e. 2015 Addendum

On December 22, 2015, the District issued a draft Addendum to the 2012 Subsequent EIR for the 2012 Facility Master PlanUpdate ("Addendum"). AR 1738.

f. 2015 Subsequent EIR

Sometime in 2015, the District issued a Subsequent Program/Project EIR ("2015 Subsequent EIR") to address the potential environmental impacts of the 2015 Facilities Master Plan Update. ER 2808.

2. The Parking Garage, ACE, and BCT Projects

a. The Parking Garage Project

The 2005 and 2008 Master Plan Updates identified the 2,250-space Parking Garage Project on the south side of Edinger Way and Walnut Drive. AR 4808, 6050-11. The 2012 Subsequent EIR identified the same 2,300-space Parking Garage Project on the south side of Edinger Way and the southeast side of Mountaineer Road. AR 151.

On February 11, 2015, the District awarded a Phase I Site Work Contract to Tilden-Coilto prepare the site for the Parking Garage Project. AR 2639. The Board also adopted Resolution No. 14-05, which found the Parking Garage Project exempt from compliance with the City's development and zoning ordinances. AR 12. No initial study was prepared for the February 11, 2015 Parking Garage Project approvals. AR 5-13.

United Walnut filed suit and on April 15, 2015 obtained a TRO prohibiting the District from proceeding with the Parking Garage construction on the basis that (a) the Parking Garage was not a project authorized for Measure RR expenditures and (b) was a non-classroom facility not exempt from the City's zoning and development ordinances. Thus, Resolution No 15-01's attempted exemption pursuant to Government Code section 53094(b) was impermissible.

On July 8, 2015, the District placed the Parking Project "on hold" and diverted the allocated Measure RR funds to other projects. The Board questioned that if "litigation goes in Mt. SAC's favor, would we be able to resume with plans to build a new Parking Structure?" Board President Scroggins answered "that the Parking Structure remains in the College's Facilities Master Plan and the Environmental Impact, and there are no plans to relocate the structure to any other location."

On July 22, 2015, the District took action to terminate the facilities lease contract (but not the site lease) with Tilden-Coil. On February 17, 2016, the District took action to abandon the Parking Garage Project as a Measure RR project. AR 14078. The Board specifically stated that it would not be taking any action to construct the Parking Garage Project under the

lease/leaseback contract award to Tilden-Coil. AR 14078. The abandonment of the Parking Garage Project was without prejudice to any future action authorizing a new parking structure in the same location. AR 14078.

The District has not rescinded Resolution No. 14-05. *See* AR 5-13. The District has also not rescinded the Parking Garage Project site lease to Tilden-Coil; it has rescinded only the facilities lease. ER 2-13. The District continues to plan to construct a parking structure at the same location in the future. AR 1948, 2248, 2842; ER 2817, 2864.

b. Athletics Complex Project

The 2008 Subsequent EIR identified the ACE Project east of Bonita Drive south of Temple Avenue. AR 5986, 6050-11.

As part of the 2012 Master Plan Update, the ACE Project was expanded, moved, and renamed with new building elements and practice field areas as the new "Athletic Education Building Project", also "Athletic Complex East" (ACE). AR 153. The 2012 Subsequent EIR identified the ACE Project on the same site as proposed in 2008 but expanded the project to 44,000 square feet and alters the building's footprint. AR 256.

This required the 2012 Subsequent EIR to address two additional construction-related issues for the Project: (i) potential impacts of earth export to the Fire Training Academy site and, (ii) potential additional impacts on California Walnut Woodlands north and west of Hilmer Lodge Stadium. AR 256. Preliminary grading plans for the ACE building were shown in the 2012 Subsequent EIR. AR 257.

On February 27, 2013, the Board approved an approximate $2 million contract with HMC Architects for final ACE Project design. AR 2442-8, 7199. The District did not prepare an initial study for the ACE Project. *See* AR 2442-8, 7199.

On April 2, 2014, the Board approved $5 million of Measure RR money for grading the ACE Project site to create temporary parking for a lease–leaseback construction contract with Tilden-Coil. *See* AR 2535-16 to 2535-17.

On June 24, 2015, the Board approved the final reconciliation and completion of a contract for the ACE Project site construction grading. AR 2535-16 to 2535-17. The Board explained why it did not conduct CEQA review:

> "Trustee Bader… wanted to make sure that it's clear that this isn't against policy. Gary Nellesen, Director, Facilities Planning and Management, said… that this item is for the moving of approximately 275,000 cubic yards of earth…for temporary parking…this work was covered in our Environmental Impact Report. He said that, when looking at environmental impacts, projects are not looked at individually, but how they affect other projects, and there are multiple projects in any given area." AR 2649-11.

On July 8, 2015, the Board approved submittal of the "Final Project Proposal for the New Physical Education Complex" to the State Chancellor's Office. AR 2652.

Based on a subsequent scoping review, The District prepared a project-specific Subsequent EIR for the ACE Project to address potential new environmental effects. ER 2808, 3130, 3132, 3162. To avoid confusion, the new project was titled "Physical Education Projects" ("PEP") to distinguish it from the abandoned ACE Project. Id. The budget for the PEP Project

is $87,795,000. AR 2472.

After an extensive comment period, a Notice of Determination for the PEP was filed on October 16, 2016. AR 14932-14934.

c. Business and Computer Technology Complex Project

The Business and Computer Technology Project ("BCT Project") was addressed as a long-term project in the 2008 Master Plan Update. AR 180. The 2012 Subsequent EIR includes the BCT Project. AR 1896.

The BCT Project construction contract award was on the agenda for the October 21, 2015 Board meeting. To support the CEQA evaluation, District consultant SidLindmark ("Lindmark") prepared Appendix G, Environmental Checklist Form, Revised 2009 ("Appendix G"), with a Notice of Determination signed by District staff Mikaela Klein that no further environmental review was required for the BCT Project. AR 1878-95. Lindmark also prepared a CEQA memorandum dated October 15, 2015 and directed to Gary Nellesen. AR 1896-1917. The memorandum contains an evaluation of the adequacy of existing CEQA documentation for the BCT Project (AR 1900-09) and concludes "[b]ased on the written evidence provided herein and the analysis of the Checklist, the existing CEQA documentation for the Project[] in the Final EIR is adequate and sufficient for the potential environmental impacts of the Project[]." AR 1910.

On October 21, 2015, the Board approved multiple bid packages for the BCT Project. AR 2692-11 to 2692-12. The October 21 Board minutes do not show an initial study or other CEQA review. AR 13595-96.

On February 27, 2013, the Board approved a $2.9 million contract to Hill Partnership, Inc. to design the proposed $40 million BCT Project. AR 7197-49.

3. The Solar Project

a. Background and Description

The Solar Project site is a 27.65-acre undeveloped hillside commonly known as the "West Parcel" of the Mt. SAC campus, 8.36 acres of which are Coastal Sage Scrub which is a California gnatcatcher habitat. AR 282. The West Parcel is a triangular lot with single-family residences along its southern and western boundaries and separated from Mt. SAC's main campus by Grand and Temple Avenues. AR 282-83.

The Solar Project is an approximately 2.0 megawatt electrical output system facility with ground-mounted tracking solar photovoltaic panels and a small masonry structure to house equipment, located on a pad of approximately 10.6 acres on the West Parcel. AR 1740-41. The District will realize savings of over $15,000,000 in electrical energy over the 25-year life cycle of the, Solar Project. AR 12423. The Solar Project qualifies under the California Solar Initiative Program for performance-based incentives totaling over $750,000 in the next five years based on the system's estimated electrical energy production. The Solar Project's funding source is (1) Proposition 39 Energy funds, (2) Energy Incentives, and (3) a zero-interest $3 million California Energy Commission loan. AR 12423.

b. 2008 Subsequent EIR

While the Solar Project had not yet been identified, the 2008 Subsequent EIR contained a biological technical report by Helix Environmental Planning Inc. conducting an initial evaluation

of the biological resources on the West Parcel. AR 14975-15022. Section 3.4 of the 2008 Subsequent EIR also evaluated the anticipated construction noise from projects listed in the 2008 Master Plan Update. AR 6050-101 to 6050-106. It found that construction noise generally would not be significant because the City had determined that construction noise during certain daytime hours is acceptable. Id.

c. 2012 Subsequent EIR

The 2012 Subsequent EIR identifies the Solar Project and analyzes its potential environmental impacts. AR 282-88. As evaluated in the 2012 Subsequent EIR, the amount of fill for the Solar Project to be hauled (or imported) to the West Parcel site is approximately 261,000 cubic yards for the 9.9-acre pad. AR 283. Mitigation Measure ("MM")-2c (adopted in the 2012 Mitigation Monitoring Program, limits the hauling of earth materials to outside of peak-hour traffic periods in order to avoid significant traffic impacts.

In Table 3.2.15, the 2012 Subsequent EIR analyzes the air quality impact of importing far more than the 261,000 cubic yards for the Solar Project, and analyzes importing 383,000 cubic yards for the construction of four projects simultaneously (Fire Training Academy, Athletic Education Building, Parking Structure, and West Parcel Solar). AR 219. The Solar Project as an individual project is separately analyzed in Table 3.2.12, for pollutant emissions in importing 261,000 cubic yards pursuant to the Preliminary Grading Plan in the 2012 Subsequent EIR. AR 214.

Section 3.9 of the 2012 Subsequent EIR provides impact analyses of the Solar Project's potential aesthetic, greenhouse gas, and biological impacts, and mitigation measures are included and adopted. In the 2012 Draft EIR, in Table 2.2.2, the Solar Project is identified as, "ID number… G, West Parcel Solar." AR 183. Section 3.9, entitled "WEST PARCEL SOLAR/RETAIL", contains an overview of the Project's biological impacts. AR 282.

The Draft 2012 Subsequent EIR stated that the preliminary grading plan would require 261,000 cubic yards of imported dirt. AR 283. In the 2012 Subsequent EIR, the District revised the grading plan to increase the acreage of the Solar Project from 6.6 to 10.6 acres, which will require additional grading. AR 327. Construction of the pad for the Solar Project in its final form requires 333,980 cubic yards of imported dirt. AR 327. It also requires the importation of 163,571 cubic yards of dirt through 160 large truck trips per day along a six-mile haul route. AR 1746, 1766.

The 2012 Subsequent EIR depicts the grading plan, showing the pad area, its resultant elevation, and the slope modifications, the access roads, and storm drain. AR 284. The 2012 Subsequent EIR clarifies that the Solar Project will be 2.0 MW on 10.6 acres. The 2012 Subsequent EIR notes that that: "Grading for the solar pad on the West Parcel will result in the removal of two drainages classified as non-wetland waters of the United States by the U. S. Corps of Engineers." AR 330. The District would apply to the Corps of Engineers for permits to remove the drainages. Ibid.

The 2012 Master Plan was approved and received CEQA lead agency clearance by the Board's certification of the 2012 Subsequent EIR on December 11, 2013. AR 2495-2500. The City never raised any grading issue with the Solar Project or any other project described in the 2012 Subsequent EIR during the comment period. *See* 323-24.

d. Project Approval

In April 2015, the District issued a Request for Statement of Qualifications and Request for Detailed Proposal ("RFP") for the Solar Project. AR 340-57. The RFP states that the Solar Project is an approximately two megawatt solar generation system. AR 343. The site description and utility information states that the Solar Project will be interconnected to the Southern California Edison utility grid. AR 359. The inverters for the Solar Project must be suitable for grid interconnection. AR 366.

On July 8, 2015, the Board first discussed Resolution No. 15-01 for an award of the construction and maintenance of the Solar Project to Borrego Solar Systems, Inc. ("Borrego"). AR 2122-24, 2652. Prior to the July 8, 2015 Board meeting, District consultant Lindmark prepared a CEQA memorandum addressed to the District's Director of Facilities Gary Nellesen ("Nellesen"). AR 1817-36. The CEQA memorandum stated that there was "no evidence that the [Solar] Project will cause a new significant environmental effect or increase the severity of previously identified significant effects identified in the Final EIR." AR 1829. In September 2015, Greve & Associates prepared air-quality and noise evaluations for the Solar Project based on the most recent grading plan and construction schedules. AR 12358-402, 12403-415.

United Walnut submitted written comments objecting that local zoning and development codes needed to be followed to build the Solar Project at the West Parcel site. AR 12218-21.

At the July 8 hearing, the Board adopted Resolution 15-01 and awarded a not-to-exceed amount of $5.3 million, including a $25,000 allowance, for a contract with Borrego as the Solar Project builder and operator. AR 2122-23. Resolution 15-01 contains a CEQA finding that the Solar Project is within the scope of the 2012 Subsequent EIR and that no substantial differences were present necessitating further environmental review. AR 2123.

In order to consider an increase to the award amount and allow an opportunity for a public hearing, the Board re-noticed the award of the Solar Project for the September 9, 2015 Board meeting. AR 12416, 12420. At the hearing, the Board found that no subsequent EIR was required for the Solar Project: "The project as currently designed could have significant effects on the environment, however, all potentially significant effects have been analyzed in the 2012 Final EIR pursuant to applicable standards and have been avoided or mitigated pursuant to the 2012 Final EIR, including mitigation measures that were adopted in the 2012 Mitigation Monitoring Program that are applicable to the project." AR 12420.

An updated CEQA memorandum dated September 9, 2015 was prepared by Lindmark and addressed to Nellesen for the re-noticed meeting. AR 1837-64. The updated memorandum contained an expanded discussion of the adequacy of the existing CEQA documentation for the Solar Project. AR 1856-57. Lindmark concluded that there were no new significant effects not analyzed in the 2012 Subsequent EIR, there were no substantial increases in the severity of the previously identified effects, and the District had not declined to adopt effective mitigation measures. AR 1856-57. To further support his analysis, Linkmark prepared an Appendix G form with a Notice of Determination signed by District staff.

At the September 16, 2015 meeting, members of the public spoke in opposition to the project presenting evidence about aesthetics, sight lines, and other impacts. AR 2689-1 to 2689-4, 2689-22 to 2689-79. Mt. SAC reviewed and approved a change to the Solar Project's location, footprint, and sight lines. AR 2689-3 ("Trustee Hidalgo said... that the relocation presented tonight by the College was a good compromise."); AR 2689-4 ("Mr. Gregoryk indicated that Trustee Chyr asked how much of this information is different than what was presented previously. Mr. Gregoryk said that the footprint is a little bit farther south than

previously presented, which affected the sight lines."); AR 2689-12 (change in location of Solar Project by 300 feet).

At a November 18, 2015 meeting, the Board passed Resolution 15-06 approving the Solar Project. AR 17-18. Resolution 15-06 excluded the Solar Project from Division of the State Architect ("DSA") review and approval because "the Board of Trustees assumes responsibility for adequate inspection of the materials and work of construction to ensure compliance with the provisions of Parts 2, 3, 4, 5, 6, 7, 11, and 12, Title 24, California Code of Regulations, as adopted by the California Building Standards Commission." ER 886-88. Resolution 15-01 stated that no EIR for the Solar Project was required because all potential significant effects were already analyzed in the 2012 Master Plan EIR. AR 15.

Also on November 18, 2015, the Board awarded five individual multi-prime bid packages required to prepare the West Parcel site for the Solar Project. AR 13689. The Board item for this award concluded no additional environmental analysis was required under CEQA as the environmental impacts of the site and grading components of the Solar Project had been addressed in the 2012 Subsequent EIR. AR 14908.

As required by MM-2c adopted in the 2012 Subsequent EIR, Mt. SAC's engineer, Iteris, Inc. ("Iteris") prepared a November 18, 2015 truck hauling plan that included an analysis of hauling the 163,571 cubic yards at 20 trucks (14 cubic yards each) per hour during non -peak - hour traffic periods and confirmed that there would not be any degradation of traffic Levels Of Service. AR 13621-77.

Board President Scroggins stated at the November 18 meeting that mitigation measures for dirt hauling for the Solar and ACE Projects had recently been modified. AR 2770. The District added that:

> …since the responsible agencies are conducting their own CEQA reviews and approvals of the West Parcel Solar Project, any project changes imposed by the responsible agencies as a condition of approval will not create a potentially new significant environmental impact or exacerbate any of the existing significant environmental impacts disclosed in the 2012 Master Plan Subsequent EIR…. For these reasons, no additional environmental analysis is required under CEQA. AR 2817.

At the same November 18 meeting, District approved design and consulting contracts to Helix Environmental Planning and to WW Design & Consulting, Inc. for a line of sight study. AR 2835.

e. <u>2015 Addendum</u>

On December 22, 2015, District issued a draft Addendum to the 2012 Subsequent EIR. AR 1738-1816. The District was considering extending construction traffic for an additional two hours per day during non-peak hours and the purpose of the Addendum was to change four existing mitigation measures adopted in the 2012 Subsequent EIR that apply to the Solar Project. AR 1741.

One of those mitigation measures was MM-2c, which provided that the District would consult with the City on a Truck Route Plan for truck hauling activities with more than fifty trucks per day. AR 1743. Hauling would occur only between 9a.m. and 2p.m. Monday through

Friday, and 8a.m. to 5p.m. on Saturdays. AR 1743. Light duty trucks with a weight of less than 8,500 pounds were exempted from this restriction. AR 1743.

The Addendum contended that MM-2c will intrude into the Saturday p.m. peak hour traffic and does not have the specificity needed for assessing truck hauling activities for the Solar Project or future projects hauling large amounts of dirt. AR 1743. Based on plans for the Solar Project, the haul route was defined. AR 1743. A congestion analysis of the haul route was completed in the November 18, 2015 Iteris report. AR 1745.

Based on this analysis, the District revised MM-2c as follows. AR 1750. For hauling operations of more than 15 trucks per hour and more than 100,000 cubic yards, a Truck Haul Plan shall be implemented as approved by the Director of Facilities Planning and Management. AR 1750. The Truck Haul Plan shall specify requirements to minimize traffic congestion both on and off campus. AR 1750. If necessary, haul trucks will be required to use radio communication to improve traffic flow. AR 1750. Light duty trucks with a weight of no more than 8,500 pounds are exempt from any Truck Haul Plan. AR 1750.

The Addendum concluded that a subsequent EIR need not be prepared because the changes proposed to MM-2c were not major revisions. AR 1752. The Addendum stated that the proposed changes were meant solely to address reduction of traffic congestion during the a.m. and p.m. hours. AR 1752.

The Board approved the Addendum on January 13, 2016. AR 2298, 14918-21. It concluded that the Addendum was for a minor technical change which would not create a new significant environmental impact or substantially increase the severity of a significant impact disclosed in a previous EIR under Guidelines section 15162. AR 2363-64.

The District has obtained the following required approvals for the Solar Project: (1) Section 401 Water Quality Certification from the Los Angeles Regional Water Quality Control Board ("RWQCB"), executed May 23, 2016 (AR 14080-95), (2) California Department of Fish and Wildlife Streambed Alteration Agreement, executed August 22, 2016 (AR 14096-19), and (3) a Section 404 Nationwide Permit from the Army Corps of Engineers, executed October 13, 2016, including a United States Fish and Wildlife Service ("USFWS") Biology Opinion (AR 14120-14). The District also complied with the National Pollution Discharge Elimination System ("NPDES") permit process (AR 14215-46) and submitted a Stormwater Pollution Prevention Plan to the State Water Resources Board (AR 14247-786).

f. <u>Stop Work Order</u>

On October 20, 2016, the City issued a Stop Work Order through its Community Development Department against the Solar Project. ER 5068. The Stop Work Order refers to District's "construction of the solar generation project located on undeveloped land south of Temple Avenue/Amar Road and West of Grand Avenue, in an area commonly known as the 'West Parcel' or otherwise known as the Solar Project. ER 5068. The Stop Work Order cites various alleged violations of the City's WMC, including section 25-39(f), which governs issuance of CUPs for property in the City zoned R-1, and section 6-5.6, which governs grading and certain provisions promulgated under Appendix J to the Los Angeles County Building Code ("LACBC") in the Los Angeles County Code, and WMC. ER 5048, 5068.

E. Statement of Extra-Record Facts[4]

1. Mt. SAC EIR Policy

Mt. SAC is the largest single campus community college district in the State of California with over 421 acres and is located in the City. Lindmark Decl. ¶3. Mt. SAC construction projects go through three phases of approvals. First is CEQA approval -- the project is identified and evaluated for CEQA compliance. Second, the project is designed and engineered by Board-approved architects and/or engineers. This stage of approval will sometimes show that the scope of the project has changed, necessitating a subsequent or supplemental EIR, or negative declaration (with or without mitigation or addendum). Nellesen Decl. ¶3. For example, the ACE Project was approved in the 2012 Subsequent EIR. Due to scope changes, a project-specific EIR was later prepared. Nellesen Decl. ¶3.The third and final phase of project approval occurs when the constructioncontracts are awarded by the Board. Nellesen Decl. ¶3.

Mt. SAC is an institution of "public higher education" and is required under Public Resources Code section 21080.09 to develop long range development plans ("LRDPs") that address physical development and land use planning to meet its academic and institutional objectives. Lindmark Decl. ¶3. The use of LRDPs and related EIRs is common to institutions of public higher education. For public agencies, Facility Master Plans serve a similar purpose as master plans, specific plans, and area plans for local agencies. Lindmark Decl. ¶3.

Mt. SAC prepared LRDPs in the form of Facility Master Plans in 2002, 2005, 2008 and 2012, which were evaluated in the Final Program EIR certified in December 2002 with Supplemental or Subsequent EIRs in 2005, 2008, and 2012. Lindmark Decl. ¶4. The use of program EIRs has several advantages for public higher education institutions like Mt. SAC that are required to evaluate and coordinate long range development projects. Lindmark Decl. ¶4. The program EIR can (a) provide a more exhaustive consideration of effects and alternatives than would be practical in a project-specific EIR, (b) provide consideration of cumulative impacts that might be ignored in a series of project-specific EIRs, (c) avoid duplicative consideration of long-range development policies, (d) allow consideration of multiple projects at a time when the lead agency has greater flexibility to address cumulative impacts, and (e) provide environmental review at the earliest stage possible. Lindmark Decl. ¶4. Mt. SAC policy is to use program EIRs addressing environmental impacts at a project -level so that CEQA review can start at the earliest meaningful time and cumulative district-wide impacts of the project may be considered. This is a common practice among large public education institution with numerous ongoing projects. Nellesen Decl. ¶3.

Mt. SAC does not have a policy of avoiding CEQA compliance by using tiered program EIRs to avoid evaluating project-level impacts and mitigation. Nellesen Decl. ¶3. Mt. SAC did not use “programmatic tiering” for the Solar, BCT, Parking Garage, and ACE projects was not "programmatic tiering". Lindmark Decl. ¶5. "Tiering" is defined in Guidelines section 15152 to mean "using the analysis of general matters contained in a broader EIR (such as one prepared for a general plan or policy statement) with later EIRs and negative declarations on narrower projects, incorporating by reference the general discussions from the broader EIR, and concentrating the later EIR or negative declaration solely on the issues specific to the later project." Lindmark Decl. ¶5. Mt. SAC prepares EIRs to support its Updated Master Plans with

[4] For convenience, the extra-record evidence is presented collectively for all three Petitions even though it differs slightly for each Petition.

sufficient project-level review to reduce the need for subsequent environmental review under CEQA Guidelines section 15162, which governs the preparation of subsequent EIRs and negative declarations, and not section 15152, which governs "tiering." Lindmark Decl. ¶5; Nellesen Decl. ¶4.

2. ACE

The Board never awarded a construction contract for the ACE Project. Nellesen Decl. ¶16. Based on a subsequent scoping review of the ACE Project, Lindmark recommended that the District prepare a project-specific EIR to address potential new environmental effects. Lindmark Decl. ¶26. To avoid confusion, the new project was titled PEP to distinguish the abandoned ACE Project. Lindmark Decl. ¶26.

Both the City and United Walnut have filed legal actions challenging the 2015 Subsequent EIR for the PEP. Lindmark Decl. ¶27.

3. Parking Garage Project

Since the award of the Phase I Site Work Contract with Tilden-Coil, the Board has taken official action to abandon the Parking Garage Project. Nellesen Decl. ¶15.

4. Solar Project

The Solar Project is a solar energy generation facility. Nellesen Decl. ¶21. Mt. SAC developed the Solar Project for the purposes of reducing its electrical energy consumption and passing those fiscal and ecological savings along to its students and surrounding community. The Solar Project will produce and generate approximately 21,671,525 Kwh of clean electrical energy over the next five years, and 103,124,789 Kwh of clean electrical energy over the 25 year life cycle of the Project.

The West Parcel had been shown in the 2002 draft EIR as a "Future Asset Management Area." Lindmark Decl. ¶6. The Solar Project began in 2008. While there was no Solar Project identified at that time, Mt. SAC had Helix Environmental Planning Inc. complete initial biological resources evaluations for the West Parcel as part of the 2008 Subsequent EIR Lindmark Decl. ¶6. The anticipated noise from the construction of the Solar Project was first analyzed in Section 3.4 of the 2008 Subsequent EIR. Lindmark Decl. ¶9. In 2012, Mt. SAC approved the "Facility Master Plan 2012" to, among other things, identify six campus zones of use to guide infrastructure development and future planning. Lindmark Decl. ¶7. The 2012 Subsequent EIR identified the Solar Project and also analyzed the potential environmental impacts of the Solar Project. Lindmark Decl. ¶7. Table 3.2.15 of the 2012 Subsequent EIR analyzed the air quality impact of importing far more than the 261,000 cubic yards for the Solar Project. Lindmark Decl. ¶8. Section 3.9 of the 2012 Subsequent EIR provided impact analyses of the Solar Project's aesthetic, greenhouse gas, and biological impacts, and appropriate mitigation measures were included and adopted. Lindmark Decl. ¶10. The 2012 Subsequent EIR also depicts the grading plan, pad area, elevation, slope modifications, access roads, and storm drain. Lindmark Decl. ¶11.

The contract award for the Solar Project occurred at the July 8, 2015 Board meeting. Lindmark Decl. ¶13. At the time, the Solar Project had not significantly changed from the Project approved in the 2012 Subsequent EIR. Lindmark Decl. ¶13. To support this finding, Lindmark prepared a CEQA memo addressed to Nellesen. Lindmark Decl. ¶13.

The Board re-noticed the award of the Solar Project for the September 9, 2015 meeting and Lindmark prepared another CEQA compliance memo for Nellesen. Lindmark Decl. ¶14 Nellesen Decl. ¶7. He also prepared an Appendix G checklist for Nellesen. Lindmark Decl. ¶14; Nellesen Decl. ¶7. The Solar Project was awarded by the Board at a September 16, 2015 special meeting. Lindmark Decl. ¶14.

The location of the Solar Project along Grand Avenue was an initial potential aesthetic concern because of the high traffic volume on the street, but the pad elevation and landscape plan assured no aesthetic impact. Lindmark Decl. ¶15. Subsequent analysis determined that only approximately 163,571 cubic yards of import would be needed for the Solar Project. Lindmark Decl. ¶16. Iteris prepared a truck hauling plan for this importation of dirt, and it concluded that the plan would not cause a significant traffic impact. Lindmark Decl. ¶16.

The Board did not approve contracts for the performance of post-approval environmental studies at its November 18, 2015 meeting. Nellesen Decl. ¶8. Instead, the Board approved consultant contracts necessary to comply with the requirements of resource agencies such as USFWS and the Corps of Engineers. Nellesen Decl. ¶8.

On November 18, Mt. SAC adopted Resolution 15-06 excluding the Solar Project from DSA review based on the conditions that Mt. SAC's plans be prepared by a California architect or engineer, that the Board assumes authority for inspection of materials and construction to comply with the California Building Code, and that the photovoltaic panels shall be ground-mounted, entirely fenced from student and public use, not associated with public viewing areas and other conditions. 2/10/17 Nellesen Decl. ¶9.

DSA requires, with few exceptions, a complete set of integrated architectural and engineered development plans and drawings before it will review an application. Hussain Decl. ¶3. The exceptions are for a ministerial "pre-check" and specially labeled and titled project increments. Hussain Decl. ¶3. The DSA web-tracker is a reliable source of project information. Hussain Decl. ¶5.

5. <u>The Addendum</u>

Beginning in December 2016, Mt. SAC considered extending construction truck traffic for an additional two hours per day during non-peak hours in addition to making minor edits to four existing mitigation measures adopted in the 2012 Master Plan to: (1) accommodate the extended construction truck traffic time (MM-2c); (2) require parking supply studies on regular intervals to more precisely determine when the parking supply mitigation is required to be implemented (MM-2k); (3) remove the requirement for grading permits, since the District does not require them (MM-3a); and (4) align the paint VOC requirements with current industry practices and California Emissions Estimator Model standards (MM- 3i). Additionally, four components of the Solar Project Truck Haul Plan were proposed to reduce potential traffic congestion if other drivers make unsafe vehicular movements near trucks along the haul route. Separation of haul trucks along the haul route minimizes traffic congestion and improves traffic flow. Lindmark Decl. ¶18.

An evaluation of the proposed changes was included in the Addendum. Lindmark Decl. ¶18. The Addendum was not a *post-hoc* rationale for Solar Project impacts. Nellesen Decl. ¶9. Its purpose was to address minor revisions to the Solar Project and mitigation measures resulting in similar or lesser effects than the original Project. Nellesen Decl. ¶9; 2/17/17 Lindmark Decl. ¶17. Lindmark concluded that an Addendum was the appropriate CEQA document because it

would not cause any new significant environmental impacts or substantially exacerbate existing impacts. Lindmark Decl. ¶19.

6. The City's Concerns

Based on the District's construction plans the Solar Project's West Parcel, accessible only by a driveway on the westerly side of heavilytraveled Grand Avenue, will be subject to a 40-foot truck either slowing to enter or leave theproject site approximately every 90 seconds, for eight hours a day, Monday through Saturday. Gilbertson Decl. ¶7. The truck deceleration/acceleration will take place within a left-merging rightlane (the "Number 3" lane) of Grand Avenue so that the truck driver will not merely need topull out onto a street with a 50 mile per hour speed limit but, within a matter of feet, mergeinto the second ("Number 2") traffic lane. Gilbertson Decl. ¶8.

The City Engineer's practice is to require the responsible party proposing a mass grading operation of the magnitude proposed for the Solar Project to submit a detailed "Haul Route Plan/Construction Traffic Control Plan." Gilbertson Decl. ¶9. As part of this established process , the City Traffic Engineer has several measures that can be implemented to ensure the safety of the City's streets. Gilbertson Decl. ¶11.

The Solar Project site proximity to the Grand Avenue and Amar Road intersection is an area of concern to the City. Gilbertson Decl. ¶11. The City Traffic Engineer could address the potential sight distance concerns by reducing speed limits on southbound Grand Avenue traffic, or by imposing a "no right turn on red" restriction at the intersection. Id. The left merge of the Number 3 lane is a particular concern that could be addressed be temporarily eliminating the Number 3 lane from Grand Avenue south of Amar Road, leaving the existing lane as a dedicated deceleration/acceleration ramp for trucks. Gilbertson Decl. ¶12. Finally, the City Traffic Engineer could address the left-hand turns needed for the proposed haul route by adjusting the traffic signal timing to extend the amount of time available for left turns. Gilbertson Decl. ¶13.

At no time has Mt. SAC consulted with the City Traffic Engineer regarding the proposed haul route, and the City Engineer is unaware of any concrete safety measures for the motoring public. Gilbertson Decl. ¶14. It is irresponsible for a public or private agency to use the right-of-way for hauling 163,571 yards of fill in an urban area without the review of the haul route and traffic plan by a registered traffic engineer. Gilbertson Decl. ¶15.

7. Addendum Approval

The Addendum was on the agenda for approval by the Board at January 13, 2016 meeting. 2/17/17 Lindmark Decl. ¶18. 19. The City attended the Board meeting to oppose the adoption of the Addendum and submitted a letter authored by the City Attorney dated January 13, 2016. 2/17/17 Lindmark Decl. ¶19.

All of the objections raised by the City Attorney are addressed in the Addendum. The basic parameters of the Solar Project has not changed -- the same site, an identical use, a reduction in grading import, and a reduction in height of the building pad are factors which reduce overall environmental impacts. 2/17/17 Lindmark Decl. ¶19. The City's criticism of the Iteris' truck haul congestion memorandum is unfounded. The distance from the borrow site to the Solar Project site is approximately one mile and the proposed truck hauling return trip is approximately five miles. No feasible alternative truck hauling routes are readily available that do not include residential areas or return trips on Grand Avenue. 2/17/17 Lindmark Decl. ¶21.

Mt. SAC has consulted with the City regarding the Truck Hauling Plan through the environmental review process. 2/17/17 Lindmark Decl. ¶21.

While the City claims the Addendum ignores health risks, a health risk assessment is not needed or appropriate for either the Truck Hauling Plan or hauling impacts at the Grand Avenue and Temple Avenue intersection. 2/17/17 Lindmark Decl. ¶27. There is no requirement from SCAQMD to prepare a health risk assessment for school-type operations or for construction projects of the type proposed. The Solar Project is a relatively small construction project as indicated by the fact that the air quality analysis shows emissions will be well below SCAQMD thresholds. 2/17/17 Lindmark Decl. ¶27.

8. <u>The Stop Work Order</u>

In recent history, Mt. SAC has never applied for a CUP from the City for any of its construction projects, notwithstanding its RPD zoning designation. Nellesen Decl. ¶19. Mt. SAC never applied for a grading permit for any of its construction projects. Nor has the City ever requested review and approval of any grading plans for Mt. SAC construction projects. Nellesen Decl. ¶19.

The Solar Project was approved as part of the 2012 Master Plan Update dated February 18, 2013, and received CEQA lead agency clearance by the Board's certification of the 2012 Subsequent EIR. No representative from the City or neighborhood group or resident raised any concerns about the Solar Project at December 11, 2015 Board meeting approving the 2012 Subsequent EIR and the Solar Project. Nellesen Decl. ¶19. Based on the longstanding history with the City and the lack of any comments, the Solar Project was commenced without a CUP, building permit, or grading permit from the City. Nellesen Decl. ¶19.

Mt. SAC has received regulatory approvals from the RWQCB, California Department of Fish and Wildlife ("CDFW"), and Army Corps of Engineers. 2/17/17 Nellesen Decl. ¶10. Mt SAC also has submitted a Stormwater Pollution Prevention Plan to the Water Resources Board and complied with the NPDES permitting process. 2/17/17 Nellesen Decl. ¶10.

The construction schedule for the Solar Project depends on several time-sensitive factors, including constructing around the breeding season of federally listed (threatened) coastal California gnatcatcher, which runs from February 15 to August 31. In addition, the Section 404 Nationwide Permit from the Corps of Engineers remains valid only through March 18, 2017, with a twelve month extension if the Project has commenced the permitted activity. Nellesen Decl. ¶7.

After obtaining these state and federal approvals, the District planned to start construction of the Solar Project on October 24, 2016 but was stopped when Vasquez of the City's Community Development Department issued the Stop Work Order on October 20, 2016. Nellesen Decl. ¶12.[5]

9. <u>The Revised Grading Plan</u>

After the December 6, 2016 hearing in which United Walnut's preliminary injunction application on its third cause of action was granted and the District's motion to enjoin

[5] The court has not set forth the evidence concerning the propriety of the signature on the Stop Work Order, as that issue was raised by the District in opposing a preliminary injunction, but not in any of its papers for trial.

enforcement of the Stop Work Order was denied, the District contacted the City for information about what it would need to do to obtain a grading permit for the Solar Project in an effort to avoid potential further delays. Nellesen Decl. ¶14. City Manager Robert Wisher ("Wisher") responded in a December 7, 2016 email as follows:

> "As a follow-up to our earlier conversation, there is a 19-page ruling from the Judge that is available. Also, for your information, in order to obtain a grading permit said project must be fully entitled. Which means that the project needs to go through the zoning process and receive approvals prior to issuance of any building/grading permits. Please refer to the zoning process documents that we forwarded to you and your staff on two (2) separate occasions." Nellesen Decl. ¶15; ER 5110.

The "zoning process documents" Wisher referred to in his December 7th email are: (i) CUP application; (ii) building permit application; and (iii) a development application. Nellesen Decl. ¶16. On December 13, 2016, the District responded by informing Wisher that the court's ruling determined the Solar Project is a solar energy generation facility and exempt from all City building and zoning ordinances other than a carve-out that the Solar Project must comply with the City's grading ordinance regulating "review and approval of grading plans related to the design and construction of onsite improvements which affect drainage, road conditions or grading." Nellesen Decl. ¶16; ER 5113. Mt. SAC's Vice-President, Michael Gregoryk ("Gregoryk") informed Wisher that the City cannot impose any other zoning controls for the Solar Project, including the requirement that the District obtain a CUP or any other permit unrelated to the narrow carve-out for grading plan review and approval as quoted above. Id.

Psomas is Mt. SAC's grading engineer for the Solar Project. Barker Decl. ¶5. The original grading plans for the Solar Project were prepared by Psomas based on the California Building Standards Code set forth in Title 24 of the California Code of Regulations. Nellesen Decl. ¶11; Barker Decl. ¶8. Psomas' grading plans were submitted for review to the Army Corps of Engineers and CDFW before those agencies took regulatory action to approve the Solar Project. Nellesen Decl. ¶11; Barker Decl. ¶19.

In December 2016, the District asked Psomas to review the relevant grading provisions in the WMC and the LACBC for the purpose of revising Psomas' grading plans as required under Government Code section 53097 for the design and construction of onsite improvements which affect drainage, road conditions or grading,. Nellesen Decl. ¶18; Barker Decl. ¶8.

Psomas prepared the revised grading plans for the Solar Project to comply with Appendix J of the LACBC. Barker Decl. ¶12-14. As long as a grading plan and application complies with the relevant technical portions of the criteria in Appendix J and any local agency approvals, the County building official will process the grading plan for approval. Barker Decl. ¶16. The revised grading plans are in full compliance with Appendix J and the WMC. Barker Decl. ¶17. WMC section 6-5.3 provides: "Development standards relative to grading within the City of Walnut are hereby established to complement the provisions set forth in Appendix Chapter J of the Los Angeles Building Code as currently adopted and as may be amended from time to time…." Barker Decl. ¶10. In Psomas's opinion, the "development standards" referred to in WMC section 6-5.3 apply only when a project is subject to City discretionary approval, such as when a CUP is required. Barker Decl. ¶11.

On January 23, 2017, the District transmitted Psomas' revised grading plans to the City. ER 5199; *see* Nellesen Decl. ¶19. In the transmittal letter, Nellesen explained that the revised grading plans had been prepared pursuant to Government Code section 53097 and asked that City's Building & Safety Division review and approve the revised grading plans. Nellesen Decl. ¶19; ER 5199. Nellesen did not include a grading permit application as he was unable to locate a City grading permit application on the City's website, and after diligence search of District's records, no such grading permit application can be located. Nellesen Decl. ¶19.

On January 24, 2017, Nellesen received an email from Vasquez acknowledging receipt of the revised grading plans and advising Nellesen that the City was quickly working to review the materials and would provide written correspondence immediately following completion of the review. Nellesen Decl. ¶20; ER 5199.

On February 23, 2017, the City responded, stating that Mt. SAC's grading plans are incomplete because Mt. SAC must submit a development application for City Planning Commission review. 2/24/17 Nellesen Decl. ¶5, Ex. A. The City relied on WMC section 6-5.6(b), which provides that when a grading plan proposing an elevation change of more than five feet, a development must be submitted to the Planning Commission for discretionary approval. Nellesen Decl. ¶5, Ex. A. The City stated that Mt. SAC's grading plans are subject to discretionary review because the elevation change is greater than five feet. Nellesen Decl. ¶5, Ex. A.

E. United Walnut Petition[6]

Petitioner United Walnut argues that the District has violated CEQA by failing to conduct and circulate initial studies for the Parking Garage and Solar Projects, violated the City's land use and zoning laws, and violated CEQA by implementing a policy and practice that avoids CEQA project-specific review.

1. The Failure to Conduct Initial Studies

Petitioner United Walnut's second cause of action concerns CEQA compliance for the Parking Garage and Solar Projects. United Walnut alleges that the District failed to perform required additional environmental review for the Parking Garage and Solar Projects. Pet. Op. Br. at 7, 9-10. Rather, the District relied entirely on its Program EIR, including the 2012 Subsequent EIR. According to Petitioner, this reliance is improper because it does not comply with CEQA's requirements for tiered programmatic review. Pet. Op. Br. at 9-10.[7]

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[6] In support of its Petition, United Walnut asks the court to judicially notice pages from the DSA website (Exs. 3-4). The request is granted. Evid. Code §452(c).

The court has ruled overruled United Walnut's objections to Mt. SAC's evidence. Walnut's objection to Mt. SAC's opposition brief also was overruled as improper; a party may not make an evidentiary objection to another party's argument. Nonetheless, the court has separated relevant Administrative Record from Extra Record evidence in considering the parties' claims.

[7] The District contends (Opp. at 10) that the substantial evidence standard applies to United Walnut's claims, but that standard applies only to the adequacy of the EIRs and the District's decision-making, not whether Mt. SAC proceeded in the manner required by law, which is reviewed *de novo*. *See post.*

A program EIR is used for purposes of (1) avoiding multiple EIRs, (2) simplifying later environmental review, and (3) consideration of broad programmatic issues. Cal. Practice under CEQA, Cont. Ed. Bar 2d ed. (2016) ("CEQA Practice Guide") §10.14B. The agency must examine each activity to determine whether additional environmental review is required. Id. at §10.16a. This determination requires a two-step process: "First the agency considers whether the activity is covered by the program EIR by determining whether the activity will result in environmental effects that were not examined in the program EIR." Id., (citing CEQA Guidelines §15168(c)(1). Second, "if the agency determines the activity is covered by the program EIR, [the agency] must evaluate the proposed activity to determine whether any new environmental effects could occur, or new mitigation measures would be required due to events occurring after the Program EIR was certified." Id. (citing CEQA Guidelines §15168(c)(2)).

When program EIRs are part of a tiered programmatic review, site-specific projects trigger new environmental review under CEQA's provision for tiered EIRs. Pub. Res. Code §§ 21068.5, 21094; Friends of Mammoth v. Town of Mammoth Lakes Redevelopment Agency, ("Friends of Mammoth") (2000) 82 Cal.App.4th 511, 528. Where a tiered EIR has been prepared, "CEQA requires a lead agency to prepare an initial study to determine if the later project may cause significant environmental effects not examined in the first EIR." Friends of Mammoth, *supra*, 82 Cal.App.4th at 528. "If the subsequent project is not consistent with the program or plan, it is treated as a new project and must be fully analyzed in a project EIR, or another tiered EIR if it may have a significant effect on the environment." Friends of College of San Mateo Gardens v. San Mateo City Community College Dist., ("San Mateo Gardens") (2016) 1 Cal.5th 937, 960. The default procedure is to prepare a tiered EIR for later projects. Only where the project was examined at a sufficient level of detail in the previous EIR is a tiered EIR or other environmental review not necessary. Pub. Res. Code §21094.

Petitioner United Walnut alleges that the District has conducted environmental review through tiered supplemental and subsequent Program EIRs, and never performed an initial study prior to approving the Parking Garage Project and Solar Project as required by Public Resources Code section 21094(c). The 2012 Subsequent EIR, which states: "[T]his document is a Subsequent EIR since new potential adverse project impacts not previously evaluated in prior CEQA documents (Certified Final EIRs) ... The prior 2002, 2005 and 2008 Campus Master Plans were evaluated in Final Program EIR ..." AR 147. According to United Walnut, the record shows that Mt. SAC intended and understood its 2012 Subsequent EIR to be part of its tiered programmatic EIRs beginning in 2002. In response to a Board member's concern about a particular project during deliberations on the 2012 Subsequent EIR, Mt. SAC President Scroggins stated: "Each project in the [2012] Master Plan will be presented to the Board individually and, if another Environmental Impact Report is required, one will be done." AR 2495-10 to 2495-11.

Petitioner United Walnut contends that additional environmental review did not happen. The Parking Garage and Solar Projects were approved in the 2012 Subsequent EIR. Pursuant to Pub. Res. Code section 21094(c), Mt. SAC must conduct an initial study for its campus projects as they come up for approval. *See*San Mateo Gardens, *supra,* 1 Ca1.5th at 960. Alternatively, Mt. SAC must make a determination whether its subsequent activity is within the scope of its Program EIR. Committee for Green Foothills v. Santa Clara County Board of Supervisors, (2010) 48 Cal.4th 32, 44-45. Mt. SAC never performed an initial study for the Parking Garage Project. Mt. SAC never circulated an initial study for the Solar Project on the occasions when it

approved the Project on July 8, 2015, re-approved it on September 9, 2015, or made substantial changes on September 16, 2015. Instead, the District merely contends that both Projects were fully studied in the 2012 Subsequent EIR. Pet. Op. Br. at 10.

A project EIR must evaluate the significant environmental impacts and mitigate them to less than substantial. Pub. Res. Code §21100. A program EIR is prepared for a series of actions that are related geographically or are part of a continuing program. Guidelines §15168. Project EIRs are often tiered from program EIRs when general matters are initially covered in the Program EIR and more specific environmental documents will follow. Guidelines §§ 15152, 15385; In re Bay Delta, (2008) 43 Cal.4th 1143. Tiering allows the broad overall impacts to be analyzed at the first-tier programmatic level, which need not be reassessed when each of the project's narrower phases is approved. San Mateo Gardens, *supra*, 1 Cal.5th at 959. Moreover, if the agency addressing a specific project finds that no new effects could occur or no new mitigation measures would be required, the agency can approve the activity as within the scope of the program EIR's project and no new environmental document will be required. Guidelines §15162(c)(2). This decision must be made after preparing an initial study in consultation with responsible agencies and is governed by the substantial evidence standard. Pub. Res. Code §21094(a), (c); Guidelines §15063(g); San Mateo Gardens, *supra*, 1 Cal.5th at 959.[8]

The District denies that its Program and Subsequent/Supplemental EIRs (collectively, "Program EIRs") are tiered documents, and argues that they fully evaluate all potential environmental impacts of the projects on campus, implement full mitigation measures, and make the required CEQA findings. Opp. at 10. The District contends that it does not defer any analysis of details of linked projects until those projects are ready for approval. *See* Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova, (2007) 40 Cal.4th 412, 429. As such, no further environmental review is required under Pub. Res. Code §2166 for any project referenced in the Program EIRs unless there are substantial changes to the project affecting the severity of environmental effects, substantial changes with respect to the project's undertaking affecting the severity of significant effects, or new information appears that was not known when the Program EIR was certified. Opp. at 11.

United Walnut notes that it is not challenging the contents or sufficiency of the Program EIR, and contends that Mt. SAC's procedure is a failure to proceed in the manner required by law under CEQA, and subject to *de novo* review. Reply at 1. United Walnut criticizes Mt. SAC's approach of attempting to address specific projects in the Program EIR. Such an approach locks in projects and prevents future public review and comment. The approach also permits Mt. SAC to avoid future CEQA study when project decisions actually are being made for specific design, size, and location, and resulting site-specific impacts can be more accurately disclosed, understood, and studied. Mt. SAC's Program EIR lacks an adequate informational basis because a reasonable person reading the collective Program EIRs simply cannot tell which projects have been finally and thoroughly analyzed, mitigated, and overridden. Reply at 5.

The court agrees with all of United Walnut's criticisms, which are aggravated by Mt.

[8] If the project is not within the scope of the program EIR project, review is not governed by section 2166's substantial evidence standard. Instead, the agency must determine whether the later project might cause significant environmental effects not considered in the program EIR, and a tiered EIR must be prepared if the project arguably may have such effects. Sierra Club v. County of Sonoma, (1992) 6 Cal.App.4th 1307, 1321.

SAC's piecemealing of its impacts analysis for projects between Subsequent EIRs. For example, the Solar Project began in 2008 with a biological resources evaluations for the West Parcel as part of the 2008 Subsequent EIR even though the Solar Project had not yet even been identified. Lindmark Decl. ¶6. The noise impacts from construction of the Solar Project were first analyzed in the 2008 Subsequent EIR. Lindmark Decl. ¶9. Then the 2012 Subsequent EIR identified the Solar Project and analyzed the remaining air quality, aesthetic, greenhouse gas, and biological impacts, imposed mitigations measures and a grading plan. Lindmark Decl. ¶¶ 10-11. It is extremely difficult for any reader to read and follow the impacts analysis for a project by having to refer to a series of Subsequent EIRs.

Nonetheless, St. SAC is entitled to use a program EIR to perform project-specific analysis. There are benefits to a program EIR. As Mt. SAC contends, Guidelines section 15168 provides that a program EIRs can (a) provide a more exhaustive consideration of effects and alternatives than a project-specific EIR, (b) consider cumulative impacts that might be ignored in a series of project-specific EIRs, (c) avoid duplicative consideration of long-range development policies, (d) allow consideration of multiple projects at a time when the lead agency has greater flexibility to address cumulative impacts, and (e) provides environmental review at the earliest stage possible. *See* Lindmark Decl. ¶4.

The question is has Mt. SAC used a true program EIR with tiering, or has it used a program EIR that also has project-specific evaluations of impacts and mitigations? The answer is the former. As United Walnut notes Mt. SAC's Subsequent EIRs define their "project" as the Facilities Master Plan. *See, e.g.,* AR 147. The Subsequent EIR's environmental analysis "addresses the project at the level of detail characteristic of a conceptual master plan." AR 155. The Subsequent EIRs then provide a project description – the bedrock of an informative and legally adequate EIR – in "typically uninformative EIR doublespeak" that mentions how the Facilities Master Plan is a collection of future planned facilities, some of which have been built and some of which have been changed, along with updated statistics on expected campus wide growth and needs. *See, e.g.,* AR 180-85.The project descriptions are opaque and the Project evaluations are buried in the EIRs, if present at all. Instead, the Subsequent EIRs merely lump the common types of impacts arising from the collective FMP projects and set forth mitigation measures to address those types of impacts. AR 2649-11. The EIRs do not address the details of the specific projects, they merely lists the projects that are part of the Facilities Master Plan. *See* AR 181-183. These are all characteristic of a programmatic EIR, not a project-specific EIR.[9]

Mt. SAC's Facilities Master Plans are the equivalent of the LRDPs required of public school districts. Pub. Res. Code §21080.09; Lindmark Decl. ¶3. The Legislature has expressly authorized school districts to tier from an LRDP's environmental review. Pub. Res. Code §21080.09(c). That is exactly what Mt. SAC's Program EIRs are: environmental documents from which Mt. SAC may tier.

[9] United Walnut provides as an example that the BCT Project is identified in the 2002 Program EIR and Supplemental/Subsequent 2005, 2008, and 2012 EIRs only by reference and without a project-specific identification, disclosure and analysis of project-specific impacts, and analysis of a particular mitigation related to it. Then the BCT project merely appears in the 2008 Subsequent EIR in a Table 3 list of projects. *Compare* AR 178 (2012 Subsequent EIR states that the BCT was reviewed in the 2008 Subsequent EIR) *and* AR 5374-85 (Notice of Preparation for the 2008 Subsequent EIR says nothing about the BCT). Reply at 5, n. 2.

Mt. SAC's Program EIRs are an environmental evaluation that can be used for use in tiering and not project-specific review. Mt. SAC's Program EIR actually is a campus-wide evaluations of common impacts that can be anticipated from projected growth (principally students, parking, greenhouse gases, and traffic), and future implementation of the collective proposed Facilities Master Plans.

As Nellesen accurately explained to the Board on June 24, 2015:

> "[W]hen looking at environmental impacts, projects are not looked at individually, but how they affect other projects, and there are multiple projects in any given area." AR 2649-11 (emphasis added).

Nellesen's description is that of a program EIR, not a project-specific EIR. *See* In re Bay-Delta et al. (2008) 43 Cal.4th 1143, 1170.

As a result of the fact that the Program EIR is a true tiering document, Mt. SAC must prepare and circulate initial studies to responsible agencies (at an appropriate time) as projects come up for an actual decision on design and implementation. Pub. Res. Code §21068.5, §21094(a), (c). The District was required to, at minimum, prepare and circulate an initial study for each of the Solar Project and the Parking Garage Project to determine whether the individual projects would cause significant environmental effects not examined in the Program EIR. Contrary to this requirement, the District did not properly prepare and circulate initial studies for those Projects. The initial studies for the Solar Project and BCT described by the District as CEQA memoranda, were prepared by Lindmark and provided only to Nellesen. Lindmark Decl. ¶¶ 13, 14, 20; Nellesen Decl. ¶¶ 7, 10. There is no evidence that the initial studies were presented to the Board or any responsible agencies.

The District failed to proceed in the manner required by law by failing to properly circulate initial studies for the Parking Garage and Solar Projects. However, the Parking Garage Project is now moot. *See post*.

2. Statute of Limitations

Pub. Res. Code section 21167 establishes statutes of limitations for all actions alleging violations of CEQA. When an agency approves a project without determining whether it will have a significant effect on the environment, the limitations period is 180 days from project approval. Pub. Res. Code §21167(a). The limitations period starts running on the date the project is approved, and is not re-triggered on each subsequent date that the public agency takes action toward implementing the project. Van de Kamps Coalition v. Board of Trustees of Los Angeles Community College District, (2012) 206 Cal.App.4th 1036, 1045.

On February 11, 2015, the District awarded a contract to Tilden-Coilto prepare the site for the Parking Garage Project. AR 2639. The Board also adopted Resolution No. 14-05, which found the Parking Garage project exempt from compliance with the City's development and zoning ordinances. AR 12. No initial study was prepared for the February 11, 2015 Parking Garage approvals. AR 5-13. United Walnut filed suit a little over two months later, on April 15, 2015, and obtained a TRO prohibiting the District from proceeding with the Parking Garage construction. The Parking Garage claim is timely. The District does not dispute that the second cause of action is timely for the Parking Garage Project.

The District argues that the Solar Project claim is time-barred. According to the District,

the Board approved the 2012 Subsequent EIR containing the Solar Project on December 11, 2013. United Walnut's First Amended Complaint alleging CEQA non-compliance for the Solar Project was not filed until January 2016. Opp. at 9.

United Walnut responds that the Solar Project claim is not time-barred because its CEQA cause of action for the Solar Project does not challenge the 2012 Subsequent EIR. Reply at 2. United Walnut also disputes that the District approved the Solar Project as part of the 2012 Subsequent EIR because the District expressly withheld approval as part of the 2012 Facility Master Plan. AR 2495-11 (President Scroggins: "there haven't been any changes except for the solar item, on which the Board reserves the right to approve in the future). Rather, United Walnut contends that its claim arises from the District's July 8, 2015 approval of the Solar Project. Although United Walnut did not file the First Amended Complaint until January 21, 2016, it sought permission from the court to do so much earlier on July 16, 2015. Reply at 2.

The timeliness of United Walnut's CEQA claim concerning the Solar Project is muddied by the fact that the Program EIR required tiered environmental evaluation. As the court discussed *ante*, the District was obligated to prepare an initial study for the Solar Project despite the 2012 Subsequent EIR. The operative dates triggering United Walnut's claim are the dates Mt. SAC failed to prepare an initial study. The Board initially approved an award of the Solar Project contract to Borrego on July 8, 2015, re-noticed the award to Borrego on September 9, 2015, passed Resolution 15-06 approving the Solar Project the November 18, 2015, and approved the Addendum on January 13, 2016.

United Walnut's July 16, 2015 *ex parte* application to amend its complaint to add the Solar Project claims occurred before or shortly after all of these dates. The *ex parte* application was deferred to a noticed motion, which was initially scheduled to be heard on September 10, 2015, and was delayed to January 21, 2016due to the transfer of the case to this Department.

United Walnut's second cause of action is not time-barred.

3. Mootness

The District argues that the Parking Garage Profect claim is moot. Opp. at 11. After Department 86 issued the May 13, 2015 preliminary injunction enjoining construction of the Parking Garage and use of Measure RR funds, the Board took action on July 8, 2015 to cease the expenditure of Measure RR funds for the Parking Garage Project and remove it from the Measure RR project list. AR 2653-55. Measure RR funds for the Parking Garage Project were diverted to the new Student Center. Id.

After United Walnut filed its First Amended Complaint, the Board again took official action to render the Parking Garage dispute moot. On February 17, 2016, the Board acted to "confirm the Parking Structure Project that is the subject of the Act has been abandoned by the Board of Trustees as a Measure RR project, and the Board of Trustees will not be taking any action to construct the parking Project under the lease/leaseback contract award to Tilden-Coil Constructors, Inc." AR 14078.

United Walnut argues that Mt. SAC has not formally rescinded Resolution 14-05 approving the Parking Garage Project. Pet. Op. Br. at 11-12. This is true. Prior to February 17, the District had not rescinded the Parking Garage Structure site lease to Tilden-Coil, only the facilities lease. ER 2-13. And the District continued to plan to construct a parking structure at the same location. AR 1948, 2248, 2842; ER 2817, 2864.

But now the Board has formally abandoned the Parking Garage Project. This

abandonment negates Resolution 14-05 approving the Project and the lease/leaseback with Tilden-Coil. "Although a case may originally present an existing controversy, if before decision it has, through the acts of the parties or other cause, occurring after commencement of the action, lost that essential character, it becomes a moot case or question which will not be considered by the court." Wilson v. Los Angeles County Civil Service Com., (1952) 112 Cal.App.2d 450, 453.

Because the claim is moot, United Walnut is not entitled to mandamus under CEQA ordering the District to rescind and set aside its Parking Approvals and requiring the District to consider the environmental consequences of the Parking Garage Project in the manner required by law. United Walnut also is not entitled to a declaration under the City's zoning and development ordinances. *See post*.

3. City Zoning and Development Ordinances

United Walnut's third and fourth causes of action concern compliance with the WMC. United Walnut alleges that the Parking Garage Project violates City Zoning, WMC, and General Plan height restrictions and cannot be exempted. Pet. Op. Br. at 10. Judge Lavin in Department 82 granted a preliminary injunction on the grounds that the Parking Garage Project (a) violates WMC section 25-89.1 (35 foot maximum height), (b) is not a permitted use in the residential planned zone (WMC §25-89.1(b)(4)(g)) and requires a CUP, and (c) is not exempt by Government Code section 53094 from the City's zoning laws because the Project is a non-classroom facility. Despite Judge Lavin's ruling, the District has failed to rescind and set aside Resolution 14-05. Pet. Op. Br. at 11. The District has also refused to rescind its approval of all contracts, and characterizes the Parking Garage Project as merely "on hold" and has included the Parking Garage Project in its latest Facility Management Plan. Pet. Op. Br. at 11-12.[10]

All claims related to the Parking Garage Project are moot because the District has abandoned the Parking Garage Project. *See ante*.

United Walnut argues that the Solar Project violates WMC grading requirements because the District is required by Government Code section 53097 to comply with the grading requirements of WMC sections 1-5.5 and 6-5.6. WMC unambiguously applies to all properties and owners. WMC §6-5.4. The WMC's adoption of the LACBC does not change the express terms of WMC 6-5.4. Pet. Op. Br. at 12-13.

The District contends that it is absolutely exempt from local zoning controls under Government Code section 53091. Opp. at 12. Government Code section 53091(d) and (e) provides that building ordinances and zoning ordinances shall not apply to the location or construction of facilities for the generation of electrical energy and the Solar Project falls squarely within this exception. Opp. at 12. The District acknowledges that it is a school district, but asserts that it is acting in its capacity as a local agency in building the Solar Project. Opp. at 12.

The District additionally argues that LACBC Appendix J explicitly applies only to private property and therefore does not govern the Solar Project. Opp. at 13. The City grading ordinances, which incorporate Appendix J, make no scope change to J101.1, which limits application of Appendix J to private property. WMC section 6-5.4's reference to "all grading work" does not modify the "private property" scope language in section J101.1. Opp. at 13.

[10] United Walnut cannot rely on Judge Lavin's preliminary injunction; a preliminary injunction does not bind a trial court's merits decision.

Allowing WMC section 6-5.4 to prevail over section J101.1 would violate settled rules of statutory interpretation.

As discussed in detail for the City's Petition *post*, section 53091's exemption permits location and construction of the Solar Project, but does not exempt the Project from grading because Government Code section 53097 specifically requires school districts to comply with all city ordinances regulating drainage, road improvement, and grading plans. To the extent there is any ambiguity as to scope, the WMC controls over Appendix J. *See* WMC §6-4. The scope of the WMC building code is broader than Appendix J. At a minimum, all projects, whether on public or private property, must comply with the additional provisions of WMC section 6-5.5 and 6-5.6.

United Walnut is correct that the District is required to comply with the City's grading ordinances in constructing the Solar Project.

4. Pattern and Practice

United Walnut's fifth cause of action is for declaratory relief and injunction. United Walnut argues that District has a pattern and practice of failing to prepare and circulate an initial study or perform required environmental review for its 2002 Program EIR projects at any time prior to approving the projects. By adding supplemental and subsequent program EIRS only for Facilities Master Plan Updates, the District avoids project specific and timely initial studies, environmental review, and final CEQA certifications. The tiered Program EIR issued in 2002, and the Subsequent/Supplemental EIRs issued in 2005, 2008, 2012, and 2015 broadly study general, campus-wide impacts for the Facilities Master Plan, but do not perform sufficient project-specific review. Pet. Op. Br. at 13.

CEQA requires that an agency determine whether a project may have significant environmental impacts before the project is approved. Laurel Heights Improvement Assn. v. Regents of Univ. of Cal., (1998) 57 Cal.3d 376, 394. A project is "approved" when a public agency "commits the agency to a definite course of action in regards to a project" or proposes to approve a project. Pub. Res. Code §21080(a). United Walnut contends that Mt. SAC's procedure is a *post hoc* rationalization to support actions already taken, arguing that the District's final design contracts, DSA submittals, and approval of site preparations and grading are "approvals" under CEQA that occurred before any environmental review was conducted. Pet. Op. Br. at 15.

The District responds that United Walnut has failed to show a District policy to deliberately violate CEQA. Opp. at 14-15. The District does not perform tiered programmatic review; the evidence shows that District prepares program EIRs that contain project-level CEQA review. Each program EIRs evaluates all of the environmental impacts, adopts mitigation measures as necessary, and the District issues findings when necessary. When there is new environmental impacts that meet the test of Guidelines section 15162, the District prepares additional environmental documentation. Opp. at 15.

As United Walnut correctly points out, there are two problems with the District's practice. *See* Reply at 4.

First, as discussed *ante*, Mt. SAC's program EIRs are programmatic CEQA documents that can be used for tiering, but they are not project-specific documents. Mt. SAC's program EIRs actually are campus-wide evaluations of common type of impacts that can be anticipated from projected growth (principally students and parking and greenhouse gases and traffic), and

future implementation of the collective proposed master plan facilities. As Nellesen accurately explained to the Board on June 24, 2015, the Program EIRs do not look at projects individually, but rather how they affect other projects in a given area. AR 2649-11. *See*In re Bay-Delta et al. (2008) 43 Cal.4th 1143, 1170. Mt. SAC's Facilities Master Plans are the equivalent of the LRDPs required of public school districts. Pub. Res. Code §21080.09; Lindmark Decl. ¶3. The Legislature has expressly authorized school districts to tier from an LRDP's environmental review. Pub. Res. Code §21080.09(c). That is exactly what Mt. SAC's Program EIRs are: environmental documents from which Mt. SAC may tier.

Second, as a consequence of the failure of its Program EIRs to perform a project-specific assessment, Mt. SAC's timing on project-specific evaluations is too late. Mt. SAC presents evidence that its projects go through three phases of approval: (a) the project is identified and evaluated for CEQA compliance, (b) the project is designed and engineered by Board-approved architects and/or engineers, and (c) the constructioncontracts are awarded by the Board. Nellesen Decl. ¶3. Yet, the District's practice is to submit DSA plans for approval and prepare final designs for its projects before assessing the projects as required by CEQA. *See* Reply at 9. The only environmental review that occurs before the completion of plans is the Program EIRs which are not project specific.

For example, the BCT Project was submitted for DSA approval on October 2, 2014 and received final approval on May 1, 2015. AR 7194-49. Lindmark prepared and circulated to Nellesen only a project-specific CEQA memo on October 21, 2015. AR 1896-1917. Similarly, the District issued an RFP for the Solar Project and decided to award the contract before Lindmark's CEQA memo to Nellesen of July 8, 2015. AR 343, 1817-1836. Only when Mt. SAC sees a change in project scope – such as with the ACE Project -- does it prepare a project-specific EIR. *See* Nellesen Decl. ¶3. But this is too late in the process.

In sum, the District has a practice of preparing Program EIRs which can be used for tiering, but are not project specific. As a result, any project specific analysis that does occur comes too late. Because it uses programmatic EIRs, Mt. SAC must prepare and circulate initial studies to responsible agencies (at an appropriate time) as projects come up for actual decisions for design and implementation. Pub. Res. Code §§ 21068.5, 21094(a), (c).

F. The City's Petition[11]

The City argues that the Solar Project is subject to WMC regulations regarding grading, hauling, and zoning. It further asserts that the District failed to comply with CEQA in approving the Solar Project by using *post-hoc* addendums. The City seeks to assume the lead agency role for the Solar Project due to District's failure to comply with CEQA.

1. Is the Solar Project Subject to Local Ordinances?

The City argues that the Solar Project is subject to the City's grading and haul route

[11] The City asks the court to judicially notice provisions of the WMC (Exs. A-B) and LACC sections J101-J112 (Ex. C). The requests are granted. Evid. Code §452(b).

In opposition to the City's Petition, Mt. Sac asks the court to judicially notice an excerpt from the Prop 39 California Energy Commission Guidelines (Ex. A). The request is granted. Evid. Code §452(c).

requirements because the District is a school district under Government Code[12] section 53097, and the Solar Project is a transmission facility under section 53091. Pet. Op. Br. at 4.

As a general matter, neither the State nor its agencies are subject to local building or zoning regulations unless the Constitution requires it or the Legislature consents to such regulation. City of Orange v. Valenti, (1974) 37 Ca1.App.3d 240, 245. In Article 5 of the Government Code (§§ 53090-53097.5), the Legislature consented to a limited form of such local regulation. The statutory scheme was enacted in response to opinions which broadly immunized all state agencies from local regulatory control. City of Lafayette v. East Bay Municipal Utility District, ("Lafayette") (1993) 16 Cal.App.4th 1005, 1013-14 (citations omitted).

Section 53097 requires that a school district comply with local ordinances (a) regulating drainage, (b) regulating road improvements and conditions, and (c) requiring the review and approval of grading plans as the ordinances relate to the design and construction of onsite improvements which affect drainage, road conditions or grading.[13]

Section 53091(a) requires each local agency to comply with city or county building and zoning ordinances. Section 53091(d) and (e)[14] contains an exception to this requirement, respectively providing that local building and zoning ordinances shall not apply to the location or construction of facilities for the generation of electrical energy. Specifically, section 53091(e) states that "[z]oning ordinances of a county or city shall not apply to the location or construction of facilities for… the production or generation of electrical energy." (Emphasis added.) However, zoning ordinances do apply to the location or construction of facilities for the storage or transmission of electrical energy if the zoning ordinances make provision for those facilities. §53091(e).

A "local agency" is defined as an agency of the state, not including the state, a city, a

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[12] All statutory references in this subsection are to the Government Code unless otherwise stated.

[13] Section 53097 provides: "Notwithstanding any other provisions of this article, the governing board of a school district shall comply with any city or county ordinance (1) regulating drainage improvements and conditions, (2) regulating road improvements and conditions, or (3) requiring the review and approval of grading plans as these ordinance provisions relate to the design and construction of onsite improvements which affect drainage, road conditions, or grading, and shall give consideration to the specific requirements and conditions of city or county ordinances relating to the design and construction of offsite improvements. If a school district elects not to comply with the requirements of city or county ordinances relating to the design and construction of offsite improvements, the city or county shall not be liable for any injuries or for any damage to property caused by the failure of the school district to comply with those ordinances."

[14] Section 53091(e) provides: "Zoning ordinances of a county or city shall not apply to the location or construction of facilities for the production, generation, storage, treatment, or transmission of water, or for the production or generation of electrical energy, facilities that are subject to Section 12808.5 of the Public Utilities Code, or electrical substations in an electrical transmission system that receives electricity at less than 100,000 volts. Zoning ordinances of a county or city shall apply to the location or construction of facilities for the storage or transmission of electrical energy by a local agency, if the zoning ordinances make provision for those facilities."

county, a rapid transit district, certain rail transit districts, or a bridge and highway district. §53090.

Section 53091 evinces a legislative intent to vest cities and counties with control over zoning and building restrictions. Lafayette, *supra*, 16 Cal.App.4th at 1014. The exceptions were intended to strike a balance between the value of local zoning control and the state interest in the production of water and electricity, and the exemptions are absolute. *See*Id. (section 53091 exemption does not apply to a support facility that does not generate, transmit, or store water).

The City admits that section 53091(e)exempts the location or construction of facilities for the generation of electrical energyand relies on section 53091(e)'s carve-out to that exception for zoning ordinances that provide for the construction of facilities for the storage or transmission of electrical energy if the zoning ordinances make provision for those facilities. The City argues that the Solar Project will transmit energy because it will be interconnected with Southern California Edison ("SCE") California Independent System Operator's Controlled Grid, and will transmit power to that grid. AR 371. This interconnection is provided for in the District's RFP for the Solar Project. Id. SCE's Rule 21 defines an "interconnection" as a physical connection of a Generating Facility… so that "Parallel Operation with [SCE's] Distribution or Transmission System can occur…." The City concludes that, because the Solar Project will be interconnected with SCE's grid so that parallel operation can occur, the Solar Project will transmit power to the grid and is within section 53091(e)'s exception to the exception. Pet. Op. Br. at 8. The Solar Project will also be interconnected to the main campus gear switch, requiring transmission lines from the West Parcel to the main campus. AR 340, 344, 366. A common sense meaning for the word "transmission" means the use of power lines for the transmission or distribution of electrical energy. Pet. Op. Br. at 9.

The City also concludes that the WMC "provides for" facilities that store or transmit energy as required by section 53091(e). The West Parcel is zoned for Residential Planned Development ("RPD") which incorporates the permitted and conditionally permitted uses of the R-1 zone. WMC section 25-89.1 allows property in an RPD zone to be used for "any permitted use in an R-1 zone...." City RJN, p. 3-15. This incorporation of the R-1 zone subjects the Solar Project to the applicable regulations of WMC section 25-39(e), which requires a CUP for premises in zone R-1 that will be used for "Public buildings and uses". City RJN, p. B-14. The Solar Project is a "public building" as defined by section 4217.11(k).[15] In light of WMC section 25-39(e)'s inclusion of the Solar Project as a public building, the City's zoning ordinances unquestionably "make[s] provision" it. The City concludes that, because the Solar Project is a facility that transmits electrical energy and because the City's zoning ordinance makes provision for such a facility, the Solar Project is subject to the carve-out in section 53091(e). Therefore, Mt. SAC must apply for a CUP before moving forward with the Solar Project. Pet. Op. Br. at 9-10.

There are two problems with the City's argument. First, as the District contends (Opp. at 6-7), section 53091(e)'s carve-out applies to facilities intended for the purpose of storing or

[15] Section 4217.11(k) provides: "Public building" includes any structure, building, facility, or work which a public agency is authonzed to construct or use, and automobile parking lots, landscaping, and other facilities, including furnishings and equipment, incidental to the use of any structure, building, facility, or work, and also includes the site thereof, and anyeasements, rights -of -way appurtenant thereto, or necessary for its full use."

transmitting electrical energy. The Solar Project is not a facility for the transmission or storage of electrical energy simply because it has the ability to transmit energy. Instead, the Solar Project's purpose is to produce and generate solar energy for Mt. SAC. Any transmission as described by City is incidental to the Solar Project and does not define its purpose. *See* AR 343.

This conclusion is supported by the purpose and legislative history of section 53091(e)'s carve-out. According to the legislative history, the carve-out permits a city to remove the zoning exemption of facilities for the storage or transmission of electrical energy where the zoning ordinance makes provision for the location of those types of facilities. Delta Wetlands Properties v. County of San Joaquin, (2004) 121 Cal.App.4th 128, 139 (quoting legislative history). There is no suggestion in the legislative history that the carve-out should apply to any facility that is merely capable of transmitting energy unless storage or transmission is its purpose.

Nor would it meet the statutory purpose to do so. The statutory scheme was enacted as a legislative consent to a limited form of local zoning regulation over state agencies, and the carve-out was intended to encourage state agencies to generate solar power without local zoning regulation. Lafayette, *supra*, 16 Cal.App.4th at 1013-14 (reaching same conclusion for water storage and transmitting facilities). It would make little sense for local zoning to control every solar energy facility that was hooked up to the electrical transmission grid.

Second, the City has not met the other prong of the carve-out. The zoning ordinance must make "provision" for the construction of facilities for the storage or transmission of electrical energy. It is not enough that the Solar Project would be included within the general provisions of WMC section 25-39(e) requiring a CUP for public buildings and uses in the R-1 zone. All property uses are included, generally or specifically, in a typical zoning code. The plain intent of section 53091(e) is to exempt the construction of facilities for the storage or transmission of electrical energy except where the zoning ordinance makes special provision for the location of those types of facilities. The City's WMC does not do so.

All of the evidence indicates that the Solar Project is an energy generation project that is exempt from the City's zoning ordinances under section 53091(e). The District is correct that the minor transmission capability identified by City is not sufficient to turn the Solar Project into a transmission facility. Nor does the WMC make special provision for the Solar Project facility. Therefore, the City's zoning ordinances do not apply to the location and construction of the Solar Project unless some California statute provides to the contrary.

The City contends that section 53097 is such a statute and the District must at least comply with the WMC grading ordinances. Pet. Op. Br. at 4.

In pertinent part, section 53097 provides: "Notwithstanding any other provisions of this article, the governing board of a school district shall comply with any city or county ordinance…(3) requiring the review and approval of grading plans as these ordinance provisions relate to the design and construction of onsite improvements which affect drainage, road conditions, or grading…"

The District admits that it is a school district, but asserts that it is constructing the Solar Project in its capacity as a local agency under 53090. The legislative history of section 53097 (SB 1681) shows that it was intended to rectify the fact that local agencies, but not school boards, must follow local ordinances for public works because a school district can override local control through a 2/3 board vote (§53094). SB 1681 was adopted as a result of storm runoff damage from a school site that wiped out part of a neighborhood. ER 5221. According to the District, SB 1681 was intended to modify section 53094 and not section 53097. Opp. at 8.

This argument flies in the face of the plain language of section 53097, and consequently there is no need to resort to the legislative history of SB 1681. *See* Brown v. Kelly Broadcasting Co., (1989) 48 Cal 3d 711, 724 (courts first look to the language of statute). The phrase "Notwithstanding any other provisions of this article" includes any other provision in Article 5. Sections 53091 is in Article 5. Section 53097 applies notwithstanding the exception to local zoning regulation in section 53091. Section 53097 was added to Article 5 to require school districts to comply with city ordinances regulating drainage, road improvement, and approval of grading plans relating to the design and construction of facilities. The Attorney General has opined that section 53097 was intended to address a particular undesirable situation and requires school district compliance with local ordinances for drainage, road improvement, and grading plans. 71 Ops.Cal.Atty.Gen. (1988) 332, 336, 341.

The District cannot elect to act as a public agency in some circumstances and as a school district in another. It is a school district, and is subject to section 53097. The Legislature has consented to municipal grading controls over school districts. The District's Solar Project is subject to the City's grading ordinances.

2. The WMC's Grading Ordinances

The City seeks to require District to comply with its grading and haul route requirements. The City argues that the District's planned haul route for the Solar Project will create a safety hazard because it requires trucks to turn in or out of the driveway every 90 seconds. Op. Br. at 5. The City can impose critical safety measures on the haul route if it is permitted to go through the normal process of analyzing the haul route, and has the authority to require the District to implement those safety measures. Pet. Op. Br. at 6.

WMC section 6-4, as amended by a 2016 Urgency Ordinance ("Urgency Ordinance"), adopts by reference the Los Angeles County Building Code ("LACBC") effective January 1, 2017, including Appendix J. City RJN, Ex. A, p. 4.

Appendix J addresses storm water concerns related to grading activities. Section J101.7 ("Storm water control measures"), requires a property owner to adopt precautionary measures to protect public or private property from damage by flooding during grading and construction activities. City RJN, Ex. C, p. 2.[16] Section J111 ("National Pollutant Discharge Elimination System (NPDES) Compliance") requires the property owner, and all grading plans and permits, to perform best management practices to prevent erosion and to control constructed-related pollutants from discharging from the project site. [17]

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[16] J101.7 provides: "Both the permittee and the owner of the property on which the grading is performed shall put into effect and maintain all precautionary measures necessary to protect adjacent water courses and public or private property from damage by erosion, flooding, and deposition of mud, debris, and construction -related pollutants originating from the site during grading and related construction activities." Ibid.

[17] Section J111 ("National Pollutant Discharge Elimination System (NPDES) Compliance") provides: "All grading plans and permits and the owner of any property on which such grading is performed shall comply with the provisions of this section for NPDES compliance. [¶] All best management practices shall be installed before grading begins. As grading progresses, all best management practices shall be updated as necessary to prevent

WMC 6-5.4(b), as amended and clarified in 2016, requires "[a]ll grading work [t]o conform to the Walnut Building Code, Municipal Code sections 6-5.3 through 6-5.9, Section 6-8 regarding the hauling of earth materials, and all city rules and regulations." City RJN, Ex. A, p.5.

WMC section 6-5.6, as amended in 2016, provides detailed regulation of grading activities, including requirements to mark boundaries to allow proper clearances, construction fencing, drainage protection devices, erosion control planting, soil analysis, and geologic and soils investigation, engineering. City RJN, Ex. A, p. 5, Ex. B, p. 4.

WMC section 6-8, as added in 2016 to codify existing practices, ("Hauling of Earth Materials") has been added to the Chapter 6 of Article II and provides in pertinent part:

> "(a) Any person, firm, association or corporation (hereinafter "permittee") moving or causing to be moved more than 5,000 cubic yards of earth material per project from or to the site of a grading operation on any public roadway within the City of Walnut shall be subject to the following requirements: (1) Haul Route…; (2) Access Roads…; (3) Signs…; (4) Inspection…; (5) Time of Hauling Operations…; (6) Notification…; (7) Dust Control…; (8) Debris on City Roadways…; (9) Load Limits…; (10) Financial Responsibility for Damage to Streets…; (11) Bonds for Grading to Include Street Repairs…; (12) Other Conditions…." City RJN, Ex. A, pp. 9-11.

Based on the above provisions, the City argues that its regulation of grading is extensive and consists of three components: storm water management, grading, and hauling. Section J101.7 regulates storm water during grading and construction, J111 regulates grading, and WMC section 6-8 regulates hauling. Pet. Op. Br. at 4-5.

The City contends that Mt. SAC's compliance with its grading and hauling requirements is critical to public safety. The Solar Project's site, the West Parcel, is accessed by a driveway off of busy Grand Avenue and will be subject to a 40 -foot truck either slowing to turn in or turning out of the drive way every 90 seconds, 8 hours a day, Monday through Saturday for three months. The truck de-acceleration/acceleration will take place within a merging right lane (Number 3) of Grand Avenue so that the truck driver must pull out onto a street with a 50 mile per hour speed limit and merge into the second (Number 2) traffic lane within a matter of feet. This is a huge safety hazard. Pet. Op. Br. at 4-5.

The City argues that, by analyzing the haul route, it can allow for the implementation of critical safety measures on its public streets. The City could address potential sight distance concerns by reducing speed limits on southbound Grand Avenue, impose a "no right turn on red" restriction from Amar Road onto southbound Grand Avenue in order to create more traffic "gaps" for trucks entering and leaving the West Parcel driveway, temporarily eliminate the Number 3 lane from Grand Avenue just south of Amar so that trucks would have exclusive use of the driveway for deacceleration/acceleration, or set the traffic signals to extend the amount of

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erosion and to control constructed related pollutants from discharging from the site. All best management practices shall be maintained in good working order to the satisfaction of the Building Official until final grading approval has been granted by the Building Official and all permanent drainage and erosion control systems, if required, are in place.

time for those vehicles and trucks making left turns. Gilbertson Dec., ¶¶ 12-13. The City traffic engineer also could adjust the hours of the truck traffic or reduce the number of truck trips during that time. Pet. Op. Br. at 6.

The District responds that the City's grading ordinances do not apply to the Solar Project because they fail to regulate public property. The 2013 California Building Code defined Appendix J's scope in J101.1 as "apply[ing] to grading, excavation, and earthwork construction, including fills and embankments. Where conflicts occur between the technical requirements of this chapter and the geotechnical report, the geotechnical report shall govern." ER 5227.

The County adopted the 2013 California Building Code Appendix J with modifications. One of the modifications was to amend J101.1 in part by setting forth its purpose:

> "The provisions of this Chapter [Appendix J] apply to grading, excavation, and earthwork construction, including fills and embankments and the control of runoff from graded sites, including erosion sediments and construction-related pollutants. The purpose of this Chapter is to safeguard life, limb, property, and the public welfare by regulating grading on private property." ER 5227, 5230.

According to the District, the County's LACBC Appendix J's scope was expressly limited to private property.[18] The City adopted this same limited private property scope when it adopted the County's 2013 LACBC in WMC section 6-4. City RJN, Ex. B, p. 1. The District acknowledges that the County recently amended Appendix J101.1 to state that it regulates all property, public and private. ER 5234. The City's Urgency Ordinance amends WMC section 6-4 to adopt by reference the 2017 version of the LACBC. City RJN, Ex. A, p. 4. Thus, it is clear that the City now regulates grading on both public and private property. But the District contends that the City cannot retroactively apply Appendix J to the Solar Project, relying on Melton v. City of San Pablo, ("Melton") (1967) 252 Cal.App.2d 797, 804 (citing Tevis v. City & County of San Francisco, ("Tevis") (1954) 43 Cal.2d 190, 195). Opp. at 9.

The City's reply does not address the issue of retroactivity. *See* Reply at 1. The ordinary rule is that legislative enactments become operative upon their passage, unless there is some express provision of law to the contrary. Midway Orchards v. County of Butte, (1990) 220 Cal.App.3d 765, 780. This legislative intent for retroactivity must be clearly apparent. Tevis, *supra*, 43 Cal.2d at 195; Melton, *supra*, 252 Cal.App.2d at 804. While the Urgency Ordinance provides that certain amendments merely clarify the law (*e.g.,* WMC §6-5.4(b)), it does not purport to apply any amendment retroactively.

The simple fact is that the City is not applying the Urgency Ordinance's grading and hauling provisions retroactively to the Solar Project, which has yet to begin. Mt. SAC has

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[18] As it existed before 2016, WMC section 6-4 provided: "There is hereby adopted by reference, except as hereinafter provided, that certain Building Code known and designated as Title 26 of the Los Angeles County Code…adopted November 26, 2013…as amended by Los Angeles County Ordinance No.l13-5076, effective January 1, 2014, and such code shall be and become the Building Code of the city…."

"In the event of any conflict or ambiguity between any provisions contained in the Building Code and any provisions of the Walnut Municipal Code, the Walnut Municipal Code shall control." City RJN WMC §6-4.

received regulatory approvals from various agencies, and planned to start construction on October 24, 2016 when construction was halted by the City's Stop Work Order. Nellesen Decl. ¶¶ 10, 12. There is no reason not to apply the City's grading ordinances to this unstarted Solar Project. In this regard, Mt. SAC makes no argument that it has a vested right to proceed with grading despite the City's Urgency Ordinance amending the WMC. The failure to raise an issue constitutes waiver. *See* Badie v. Bank of America (1998) 67 Cal.App.4th 779, 784, 85 (when a party fails to support issue with reasoned argument and citation, it is waived). More important, Mt. SAC has no vested right, which arises only after a property owner has performed substantial work and incurred substantial liabilities in good faith reliance on a properly obtained, valid permit. Avco Community Developers Inc. v. South Coast Regional Com., (1976) 17 Cal.3d 785, 791. Mt. SAC has no grading permit from the City on which it can rely.

Assuming *arguendo* that the City's pre-2017 adopted Appendix J applies, the City may make the WMC broader than Appendix J. The District argues that the WMC does not actually do so, and distinguishes WMC section 6-5.4's reference to "all grading work" as not modifying the limited scope of Appendix J to private property. According to the District, it would violate settled rules of statutory interpretation to allow WMC section 6-5.4 to trump the express purpose of Appendix J. Opp. at 10.

The previous WMC incorporated by reference Appendix J, but also supplemented Appendix J with the City's own development standards and grading permit procedures. WMC §§ 6-5.3, 6-5.5, 6-5.6 (City RJN Ex. B, pp. 2-5). The WMC further provided that all grading shall conform to the Municipal Building Code, sections 6-5.3-6-5.8, and all city rules and regulations. WMC §6-5.4 (Id.). To the extent there is any ambiguity as to scope, the WMC controls over Appendix J. WMC §6-4 (City RJN Ex. B, p.1). As a consequence, it does not fly in the face of statutory interpretation principles to conclude that the scope of the WMC's Municipal Building Code is broader than Appendix J. At a minimum, all projects, whether on public or private property, must comply with the additional grading provisions of WMC section 6-5.5 and 6-5.6.

The District argues that, whatever the WMC's application to grading, the scope of this lawsuit does not include the hauling requirements of WMC section 6-8 which were added in 2016. The hauling ordinance is not included in the City's First Amended Petition and is not cited in the Stop Work Order. Opp. at 10.[19]

Again, the City does not reply. WMC section 6-8 does provide that it was passed to codify existing practices, and the City Engineer's practice is to require a haul plan for mass grading operations for which a number of safety measures may be imposed. Gilbertson Decl. ¶9. The City Engineer's customary practice does not explain his authority for imposing a haul plan prior to WMC section 6-8. More important, the haul plan issue apparently is not included in either the City's First Amended Complaint or the Stop Work Order. As such, it is beyond the scope of this lawsuit.

In sum, the District must comply with the City's grading requirements. Whether it must also comply with the City's haul route requirements is not within the scope of this Petition (but is within the scope of the District's SACC). *See post.*

[19] The parties failed to include the Stop Work Order, cited as (ER 5068-70), in the Joint Appendix.

3. CEQA

The City argues that the District violated CEQA by approving the Solar Project on September 16, 2015 through Resolution 15-01, and subsequently publishing and approving an Addendum to the Program EIR on January 13, 2016. The City points out that it filed this action challenging Mt. SAC's approval of the Solar Project on December 21, 2015 and the next day Mt. SAC published the Addendum, adopting it three weeks later. Pet. Op. Br. at 12. The City describes the Addendum as a *post hoc* rationalization which is a classic failure to conduct environmental review before a project is approved in violation of CEQA. *See* Laurel Heights, *supra*, 47 Cal.3d at 394.

The District responds that the City wrongly proposes an incorrect standard of review. The substantial evidence standard applies to judicial review of whether a lead agency should have conducted additional environmental review for a changed project under Guidelines section 21166. San Mateo Gardens, *supra*, 1 Cal.5th at 960. "The court decides only whether the administrative record as a whole demonstrates substantial evidence to support the determination that the changes in the project or its circumstances were not so substantial as to require major modifications to the EIR." Sierra Club v. County of Sonoma, (1992) 6 Cal.App.4th 1307, 1318. Opp. at 10-11. The court must uphold the lead agency's decision if there is some evidentiary support, even in the face of equal or greater conflicting evidence to the contrary. San Mateo Gardens, *supra*, 1 Cal.5th at 953. The City's contention that the Addendum is a *post hoc* approval is dressed as a procedural violation, but is based on substantial evidence. Opp. at 11.

The District is wrong. The Supreme Court in San Mateo Gardens explained that whether a proposed activity is a CEQA project is a legal question because it depends on whether "undisputed data in the record" satisfy the detailed statutory definition of a project. 1 Cal.5th at 952. Whether an initial environmental document remains relevant despite changed plans or circumstances is predominantly a factual question for the agency to answer, drawing on its particular expertise. Id. at 953 (citation omitted). This case involves an issue similar to the question whether a proposed activity is a project – whether the District's 2002 Program EIR as modified by its Supplemental/Subsequent EIRs is program EIR with tiering or whether it has used a program EIR with project-specific evaluation of impacts and mitigations. This is an issue of law for the court to decide on undisputed facts. Only if the court were to determine that the documents contained project specific evaluations would the substantial evidence test apply to whether there had been changes plans or circumstances requiring additional environmental review under Pub. Res. Code section 21166 and Guidelines section 15162.

The court decided *ante* as a matter of law that Mt. SAC has prepared a programmatic EIR, not a project-specific EIR. Mt. SAC's Subsequent EIRs define the "project" as the Facilities Master Plan. *See, e.g.,* AR 147. Mt. SAC's Facilities Master Plans are the equivalent of the LRDPs required of public school districts. Pub. Res. Code §21080.09. The Legislature has expressly authorized school districts to tier from an LRDP's environmental review. Pub. Res. Code §21080.09(c). That is exactly what Mt. SAC's Program EIRs are: environmental documents from which Mt. SAC may tier.

The Subsequent EIR's environmental analysis "addresses the project at the level of detail characteristic of a conceptual master plan." AR 155. The Subsequent EIRs then provide a project description – the bedrock of an informative and legally adequate EIR – that mentions how the Facilities Master Plan is a collection of future planned facilities, some of which have been built and some of which have been changed, along with updated statistics on expected

campus wide growth and needs. *See, e.g.,* AR 180-85. The project descriptions are opaque and the project evaluations are buried in the EIRs, if present at all. Instead, the Subsequent EIRs merely lump the common types of impacts arising from the collective FMP projects and set forth mitigation measures to address those types of impacts. AR 2649-11. The EIRs do not address the details of the specific programs, they merely lists the projects that are part of the Facilities Master Plan. *See* AR 181-183. These are all characteristic of a programmatic EIR, not a project-specific EIR.

Mt. SAC's Program EIRs actually are campus-wide evaluations of common type of impacts that can be anticipated from projected growth (principally students, parking, greenhouse gases, and traffic), and future implementation of the collective proposed master plan facilities a fact which Nellesen accurately explained to the Board on June 24, 2015. AR 2649-11. Mt. SAC's Program EIRs are an environmental evaluation that can be used for use in tiering, but not project-specific review. *See*In re Bay-Delta et al. (2008) 43 Cal.4th 1143, 1170.

As a result, Mt. SAC must prepare and circulate initial studies to responsible agencies (at an appropriate time) as projects come up for actual decisions for design and implementation. Pub. Res. Code §21068.5, §21094(a), (c). The District is required to, at minimum, prepare and circulate an initial study for the Solar Project to determine whether it would cause significant environmental effects not examined in the Program EIR. Contrary to this requirement, the District did not prepare and circulate an initial study for the Solar Project. The District failed to proceed in the manner required by law by failing to prepare and circulate an initial study for the Solar Project.

The District's failure means that the court need not address in detail the defects in the Addendum. Nonetheless, it is defective. The Addendum attempted to delete the requirement in the 2012 Subsequent EIR's MM-2c that the District consult with the City on a Truck Haul Route for the Solar Project. AR 1743, 1750. However, the Addendum falls short because it fails to address MM AQ-03, which includes the identical consultation language:

> "AQ-03: Prior to issuance of a grading permit, Facilities Planning & Management shall consult with the City of Walnut on a Truck Route Plan for truck hauling activities with more than fifty (50) trucks per day. Hauling of earth materials shall only occur between 9:00 am and 2:00 pm Monday through Friday and between 8:00 am to 5:00 pm on Saturdays to void peak hour traffic. Light duty trucks with a weight of no more than 8,500 pounds are exempted from this restriction. Facilities Planning & Management shall ensure compliance." AR 221.

Under CEQA, mitigation measures must be fully enforced by the agency. Federation of Hillside & Canyon Associations v. City of Los Angeles, (2000) 83 Cal.App.4th 1252, 1260-61.

Mt. SAC's only response is to argue that AQ-03, the truck hauling mitigation, was "indexed" as MM-2c in the 2102 Subsequent EIR. Opp. at 11. Nothing in the 2012 Subsequent EIR or the Addendum explains any indexing. The District's opposition provides no explanation of this indexing either, which the City ridicules as completely unsupported. Reply at 8-9.[20] As

[20] Mt. SAC purports to rely on the Lindmark declaration, which is not part of the Administrative Record, but Lindmark only says that the two mitigation measures were indexed without further explanation and cites to AR970 which provides no pertinent information. *See*

the City argues, Mt. SAC must comply with AQ-03, which mandates consultation with the City for a Truck Haul Plan and imposes strictly limited hauling hours.

The City further argues that Mt. SAC improperly used an Addendum. An addendum to a previously certified EIR is allowed only if no conditions calling for the preparation of a subsequent EIR have occurred. Guidelines §15164(a). The Solar Project was only vaguely described in the 2012 Subsequent EIR. The Addendum contains substantial revisions to mitigation measures, including an acknowledgement that MM-2c was inadequate because it "will intrude into the Saturday pm peak hour" and lacked specificity for assessing truck hauling activities for both the Solar Project and future projects moving a large amount of earth. AR 1743. The City's opening brief concludes that use of the Addendum was improper. Pet. Op. Br. at 14-15.

The City adds considerable detail to this argument in its reply. The City contends that Mt. SAC rewrote MM-2c to materially increase its hauling operations and save money. Reply at 1. The original MM-2c (identical to AQ-03 above) required consultation with the City for truck hauling activities of more than 50 trucks a day, which works out to 10 trucks per hour based on the Monday-Friday, 9:00a.m.-2:00p.m. schedule. In contrast, revised MM-2c imposes no mitigation unless there are more than 15 trucks per hour and the project involves hauling more than 100,000 cubic yards.[21] Reply at 3. The City is a responsible agency for the Solar Project and has police power over its streets. Yet, the revised MM-2c does not require any consultation with the City and permits the Director of Facilities Planning (Nellesen) to make the haul plan decision. Reply at 4. The City further criticizes the revised MM-2c as imposing no mitigation at all because it does not require anything to be done when thresholds are met. Instead, the haul plan need only consider various factors. Thus, the revised MM-2c permits 120 trucks a day to "rumble down" City streets any time of day and any day of the week, overseen by an administrator with no heavy truck traffic experience. Reply at 7. The City concludes that the Addendum fails because it (a) authorizes a "massive expansion" of truck traffic that was undisclosed in the 2012 Subsequent EIR, and (b) eliminates the mitigation set out in the original MM-2c. Reply at 8.

The District responds by noting that Guidelines section 15164(b) authorizes a lead

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Lindmark Decl. ¶17.

[21] Revised MM-2c provides:

> "For hauling operations of more than 15 trucks per hour and more than 100,000 cubic yards, a Truck Haul Plan (THP) approved by the Director of Facilities Planning & Management, shall be implemented. The THP shall consider traffic counts, haul routes, hours/days of hauling, avoidance of peak hours, intersection geometrics, access/egress constraints, truck load capacity, and pieces of construction equipment on-site and shall specify requirements to minimize traffic and pedestrian congestion on-campus and off-campus. The THP shall be required in all applicable construction logistics plans. If necessary, all haul trucks shall utilize radio communication to improve traffic flow and minimize congestion. Light duty trucks with a weight of no more than 8,500 pounds are exempted from a THP. Facilities Planning & Management shall ensure compliance."
>
> (AR 1740; hereinafter, the "Revised MM 2c.")

agency to prepare an addendum to an EIR "if only minor technical changes or additions are necessary or none of the conditions described in Section 15162 calling for preparation of a subsequent EIR or negative declaration have occurred." Section 15162 does not require a subsequent EIR or negative declaration where the proposed changes will not create a new significant environmental impact or substantially increase the severity of a significant environmental impact disclosed in a previous EIR.

The District points out that the 2012 Subsequent EIR includes 104 mitigations, and the Addendum changes only four of them. Two of the revisions deal with minor air quality issues (3a, .3i) and one revision addressed future parking supply (2k).[22] These minor edits to four existing mitigation measures (1) accommodate an extended construction truck traffic time (MM-2c); (2) require parking supply studies on regular intervals to more precisely determine when the parking supply mitigation is required to be implemented (MM-2k); (3) remove the requirement for grading permits, since the District does not require them (MM-3a); and (4) align the paint VOC requirements with current industry practices and California Emissions Estimator Model standards (MM-3i). Additionally, four components of the Truck Haul Plan specific to the Solar Project were proposed to reduce potential traffic congestion if other drivers make unsafe vehicular movements near trucks along the haul route for soil import to the West Parcel. Separation of haul trucks along the haul route minimizes traffic congestion and improves traffic flow. Opp. at 13. The District notes that Guidelines section 15074.1 allows substitution of mitigation measures when the lead agency determines they are equivalent or more effective, and argues that the four revised mitigation measures meet that standard. Opp. at 11.

The District concludes that the changes in the Solar Project addressed in the Addendum did not result in any additional or more severe environmental impacts requiring an EIR under Pub. Res. Code section 21166 and Guidelines section 15162. Opp. at 14. The revised Solar Project and revised and mitigation measures will result in similar or lesser effects than the original project and will not cause any new significant environmental impacts or substantially exacerbate the significant and unavoidable impacts disclosed in the 2012 Subsequent EIR. Opp. at 14.

The City has the better argument. While not all of its criticisms are valid, the Addendum is defective because (a) the revised MM-2c does not require any consultation with the City even though it has police power over its streets, (b) the revised MM-2c imposes no actual mitigation, and (c) authorizes an expansion of truck traffic that was undisclosed in the 2012 Subsequent EIR. These are not minor changes supporting an addendum under Guidelines section 15164(b).

The City argues that it should be authorized to assume the lead agency role and prepare a subsequent EIR for the Solar Project under Guidelines section 15052. Pet. Op. Br. at 15. The District contends that a shift in lead agency designation occurs only where the normal CEQA process breaks down, and there has not been a breakdown in the process. Opp. at 15.

Again, the City does not address this issue in reply. A responsible agency may assume lead agency status, *inter alia*, where the statute of limitations for challenging the lead agency's approval have expired and (a) new circumstances require a supplemental or subsequent EIR or (b) the lead agency has prepared an inadequate document and failed to consult with the responsible agency. Guidelines §15052.

[22] Again, the District attempts to rely on the extra-record declarations of Lindmark and Klein without explaining why it is admissible. Opp. at 11.

These provisions generally apply where a project has been approved by the lead agency and the responsible agency is required to act but cannot do so until it has considered the project's environmental effects as shown in the EIR. Guidelines §15096(f). If the agency is time-barred from bringing a lawsuit to challenge the EIR, yet must prepare a subsequent EIR before granting its discretionary approval, it may take lead status. Similarly, if an EIR was prepared without the responsible agency's consultation and the statute of limitations prevents a legal challenge, the responsible agency can assume the role of lead agency. Remy, Thomas, Moose, and Manley, Guide to CEQA: California Environmental Quality Act , (11th ed. 2006) p. 409. As the statute of limitations to challenge the District's actions has not expired, the City may not act as lead agency.[23]

In sum, the City's Petition must be granted in part. The District failed to proceed in the manner required by law by preparing and circulating an initial study for the Solar Project. The Addendum also was improperly issued and relied upon. The District must set aside Solar Project approvals and prepare and circulate an initial study for the Solar Project before approving it. The City may not act as lead agency for the Solar Project. The City's challenge to the Parking Garage Project is moot.

G. The District'sSACC[24]

The District argues that the City's Stop Work Order cannot be enforced because the Solar Project is an electrical generating facility absolutely exempt from local building and zoning controls. Even assuming that local grading ordinances apply, the grading plans must be reviewed and approved consistent with Government Code[25] section 53097. Subjecting the grading plans to the City's development standards rather than to the County's Appendix J would swallow section 53097's limited exception for local grading controls.

The District notes that the Stop Work Notice states that the Solar Project is a generating facility. ER 5068. The District contends that the Solar Project is exempt from all zoning ordinances under section 53091(e)'s provision that zoning ordinances do not apply to the location or construction of facilities for the production or generation of electrical energy. Pet. Op. Br. at 7-9.

As discussed in City's Petition *ante*, the "location [and] construction" of electrical facilities exemption under section 53091 permits the location construction of the Solar Project, but does not exempt the Project from grading – which would otherwise be part of the exemption -- because section 53097 expressly requires school districts to comply with all city ordinances regulating drainage, road improvement, and grading plans. The District's argument that it is a local agency under 53090, not a school district under section 53097, is inconsistent with the plain language of section 53097. *See also* Opp. at 11-12.

The District further asserts that the Stop Work Notice cannot be enforced against it because the Solar Project is not subject to the grading requirements of Appendix J, which only

[23] The City's challenge to the Parking Garage Project is moot for the reasons stated *ante* with respect to United Walnut's Petition.

[24] In support of its Cross-Petition, District asks the court to judicially notice legislative history of SB 1681 (Exs. A-B). The request is granted. Evid. Code §452(b).

[25] All statutory references in this subsection are to the Government Code unless otherwise stated.

applies to private property. Pet. Op. Br. at 9-10. The District adds that the City has not imposed its grading ordinance on the District for the past 30 years. Nellesen Decl. ¶4. The City lacks any criteria for review and approval of grading plans submitted pursuant to section 53097 (ER 5111, 5115, 5116, 5118), and no public agency has submitted a grading plan to the city between January 1, 2013 to at least year-end 2016. Id. Pet. Op. Br. at 10-11.

The court also addressed this issue in the City's Petition *ante*. The court agrees with the District (Reply at 8-9) that the fact that the City has not imposed its grading ordinance on the District or any other public entity for 30 years shows a custom and practice that supports the District's interpretation of the WMC and the City has wrongly characterized the District's position as an estoppel argument. *See* Opp. at 6-7. Nonetheless, the grading ordinance applies to the District. The City explains why it is now enforcing its grading requirements against Mt. SAC: Mt. SAC initially agreed in MM-2c to consult with the City on a haul route for its trucks, and then revised that mitigation measure (but not the identical AQ-03) in an attempt to withdraw that requirement. Mt. SAC has, in fact, never consulted with the City on the haul route for the Solar Project. The City remains concerned about the safety issues of the Solar Project grading and hauling of dirt. Gilbertson Decl. ¶¶ 7, 12-15. Because of Mt. SAC's failures, the City for the first time has asserted its grading ordinance to Mt. SAC's public project. Opp. at 7-9.

The City's explanation why it is deviating from its previous practice is a strong argument for public safety, but less so for purposes of interpreting the grading ordinance. However, its failure to previously assert grading authority over Mt. SAC projects also is not compelling for purposes of statutory interpretation. A mere failure to assert authority is not an admission that such authority does not exist. The more important point is that the City's grading ordinances, interpreted collectively, permit their application to public projects. The County's recent amendment to Appendix J and the City's Urgency Ordinance also provide a seo\parate basis to apply the City's grading requirements to the Solar Project. *See ante*.

The District argues that, if the City's grading ordinances do apply, the City cannot force the District through the Stop Work Order to apply for a CUP or other entitlements in order to approve the grading plan for the Solar Project. Pet. Op. Br. at 11.

The District has created revised grading plans for the Solar Project that comply with the City's geotechnical and engineering design and construction criteria of Appendix J and referred to in WMC section 6-5.3. Barker Decl. ¶10; Nellesen Decl. ¶¶ 18-19. Specifically, the revised grading plans address and satisfy all relevant ordinances in Appendix J that relate to grading and drainage, taking into account the topography of the west parcel area, including all erosion issues. Barker Decl. ¶13. The revised grading plans meet the requirements of Appendix J sections J101.7, J108, J109, J110, and J111. Barker Decl. ¶17.[26] The revised grading plans also comply with the permitting requirements of responsible federal and state agencies. Pet. Op. Br. at 13.

WMC section 6-5.3 provides:

> "Development standards relative to grading within the City of Walnut are hereby established to complement the provisions set forth in Appendix Chapter J of the Los Angeles Building Code as currently adopted and as may be amended from time to time. In cases of conflict between the provisions of said Building Code and these development standards, the development standards shall prevail as to

[26] Appendix J sections J101.3, J101.4, J101.6, and J103.1 are not design-related. Id

> design concepts and nature and scope of permitted earthwork development. The Building Code shall prevail as to geotechnical and engineering design and construction and to administration of the permit process." *See* City RJN, Ex. A, p. 5.

The District argues that the "development standards" in WMC section 6-5.3 only apply where a project is subject to the City's discretionary land use approval. For example, such development standards would apply to a project that requires issuance of a CUP. Barker Decl., ¶11. Pet. Op. Br. at 15.As the revised grading plan complies with the relevant provisions of Appendix J, the District contends that the City should ministerially approve it. Pet. Op. Br. at 12-13. Subjecting the grading plans to the full development standards of the WMC would swallow the limited exception in for grading controls in section 53097.

The City opposes on the ground that it is still in the process of reviewing the grading plans submitted by District. Mt. SAC filed its SACC on December 30, 2016 and only transmitted its revised grading plans to the City on January 23, 2017. Opp. at 3, 4. Any discussion as to the adequacy of those plans seeks an advisory opinion on the adequacy of the revised grading plans and is not ripe because the City has not completed its review. *See* California Water & Telephone Co. v. County of Los Angeles, (1967) 253 Cal.App.2d 16, 22 (matter is ripe when facts are sufficiently congealed to permit useful decision). Opp. at 5, 14. The City also contends that Mt. SAC seeks relief that cannot be granted. It is entirely proper for the Stop Work Order to remain in place while the City reviews Mt. SAC's revised grading plans. According to the City, Mt. SAC improperly seeks to control the City's exercise of discretion through declaratory relief compelling it to issue grading approvals for the Solar Project. Opp. at 5-6.

The test for ripeness is (1) whether the dispute is sufficiently concrete so that declaratory relief is appropriate and (2) whether the parties will suffer hardship if judicial consideration is withheld. Farm Sanctuary, Inc. v. Department of Food & Agriculture, (1998) 63 Cal.App.4th 495, 502 (citation omitted).

While the City is correct that the adequacy of the revised grading plans is not ripe for review, there is a portion of the Stop Work Order that is ripe for declaratory relief. The Stop Work Order apparently states that no work may begin until ALL required land use entitlements, building permits, and approved truck haul routes, etc. have been issued by the City of Walnut."[27] Reply at 1. The District provides evidence that the City is refusing to issue any grading permit until the Solar Project is fully entitled. Nellesen Decl. ¶15; ER 5110. This would include applying for a CUP, a building permit, and a development application. Nellesen Decl. ¶16. The City also recently deemed District's submitted grading plans "incomplete" and stated that they need to be submitted to the Planning Commission for discretionary approval. Reply Nellesen Decl. ¶¶ 3-5. The issue of the City's right to require discretionary entitlements for the Solar Project is sufficient concrete, and Mt. SAC would suffer hardship from a delay in resolving that issue. *See* Reply at 3-4.

The District is entitled to a declaration regarding the scope of the Stop Work Order and the City's review of the revised grading plan, but not its adequacy. The District describes this scope as (1) whether it may proceed with construction without applying for zoning and building

[27] Again, the Stop Work Order was not included at ER 5068.

permits because it is exempt under section 53091 (decided *ante*), (2) whether the City may not enforce the Stop Work Order by requiring land entitlements and a CUP, and (3) alternatively, whether the City must review and process the grading plans for approval under its grading ordinances as defined and limited by section 53097 without a CUP, building permits, or zoning controls. Reply at 4.

The District challenges the City's attempts to impose truck haul route restrictions and any discretionary approvals by the Planning Commission. Waivers of sovereign immunity "must be express" and may not be "inferred by implication." Bame v. City of Del Mar, (2001) 86 Cal.App.4th 1346, 1358. An express waiver of sovereign immunity must be strictly construed in favor of the state. Coso Energy Developers v. County of Inyo, (2004) 122 Cal.App.4th 1512, 1533. Mt. SAC contends that the City's interpretation of Code section 53097 is too expansive, and violates these sovereign immunity principles. Reply at 5.

The District is correct that the City's attempts to force the District to obtain a CUP and comply with the City's development standards is beyond the scope of section 53097's exception. The Solar Project is generally exempt from local building ordinances under section 53091. The exception under 53097 permits the City to regulate the Solar Project only through ordinances that regulate drainage or road improvements and conditions, or that require the review and approval of grading plans as they relate to the design and construction of onsite improvements which affect drainage, road conditions, or grading. The District is not required to obtain a CUP or comply with any other discretionary land use standards outside this limited exception. Thus, the District need not comply with City ordinances regulating a usage of property that might impact drainage or road conditions. As applied to the Solar Project, section 53097 means what it says -- the City may regulate grading plans.

The District argues that the City's review and approval of the grading plan should not include the truck haul route, but does not really say why. Instead, the District only points out that section 53097 does not mention roadway activities as a harm. Reply at 5-6.

The District's position crops the photograph too closely. As a matter of practice as well as practicality, a haul route is part and parcel of grading. While some projects can be graded without importing or exporting dirt, any grading project of significant size cannot. Section 53097 also permits a city ordinance to regulate grading plans as they relate to the design and construction of onsite improvements which affect "road conditions." Heavy truck hauling for project grading could impact both a road's surface and its traffic conditions. The City explains that the Solar Project's haul route presents several safety issues. The District makes no showing that a haul route is not subsumed within the grading plan exception of section 53097.

The City can, therefore, review Mt. SAC's grading plan for compliance with its grading ordinances, including its haul route ordinance. The issue becomes whether this review is a discretionary or ministerial. The District argues that it is ministerial in nature because the technical and ministerial criteria in Appendix J apply, not the development standards in WMC section 6-5.3, which only apply to CUPs and other discretionary entitlements which must be reviewed by the City's Planning Commission. Pet. Op. Br. at 12-13; Reply at 6-7.

The City does not respond to this argument. While grading permits are generally ministerial, that is not always true. WMC section 6-5.3 provides that the City's development standards with respect to design and the nature and scope of permitted earthwork development control over Appendix J. City RJN Ex. B, p. 2. WMC section 6-5.4 requires all grading to conform to sections 6-5.3 through 6-5.8. WMC section 6-5.5 imposes specific grading

requirements for, *inter alia*, minimizing mass grading and the cutting and shaping of slopes. WMC section 6-5.6 provides that if a grading plan imposes a change in elevation of five feet or more it shall be submitted to the Planning Commission for approval. New WMC section 6-8 provides specific provisions for a haul route.

Based on these provisions, the court cannot say that the approval of the Solar Project's grading plans, including the haul route, is a ministerial task that need not be submitted to the Planning Commission. At least the haul route ordinance appears to be discretionary in nature. The District has presented the only evidence or argument on this issue, and it is not ripe for review. The court, therefore, will not provide an advisory opinion.

The District's petition is granted in part. The District is entitled to declaratory relief that (1) because it is exempt under section 53091, Mt. SAC may proceed with construction of the Solar Project without applying for zoning and building permits from the City, with the exception of grading and haul route approvals, (2) the City may not enforce the Stop Work Order by requiring land entitlements and a CUP,[28] but may enforce the requirement of grading and haul route approvals, and (3) the City must review and process the grading plans for approval under its grading ordinances, but without a CUP, building permits, or zoning controls other than grading and haul route approvals. The court offers no current opinion whether the City's grading plan and haul route approvals are ministerial or discretionary in nature.

H. Conclusion

United Walnut's Petition against the District is granted in large part. The Parking Garage Project is moot and United Walnut's claims concerning it are denied. For the Solar Project, the District failed to proceed in the manner required by law by failing to properly circulate initial study. The District also is required to comply with the City's grading ordinances in constructing the Solar Project. Finally, the District has a practice of preparing Program EIRs which can be used for tiering, but are not project-specific. Because it uses programmatic EIRs, United Walnut is entitled to declaratory and injunctive relief that Mt. SAC must prepare and circulate initial studies to responsible agencies (at an appropriate time) as projects come up for actual decisions for design and implementation.

United Walnut's first and sixth causes of action have been bifurcated and stayed and no judgment or writ can issue on its Petition, or on the District's SACC, until those claims are resolved. United Walnut's Petition is ordered transferred to Department 1 for reassignment to an I/C court.

The City FAP against the District is granted in part. The District's Solar Project must comply with the City's grading requirements, but the City's haul route requirements is not within the scope of the City's Petition (it is within the scope of the District's SACC). The District need not comply with the City's other zoning requirements. Additionally, the District failed to proceed in the manner required by CEQA in failing to prepare and circulate an initial study for the Solar Project. The District also improperly relied upon the Addendum. The District must set aside Solar Project approvals and Addendum, and prepare and circulate an initial study for the Solar Project before approving it. The City may not act as lead agency for the Solar Project. The

[28] The City does not dispute the District's contention that the Stop Work Order improperly relies on WMC sections 18-8 (business permits), and section 16-7.1 (regulating street parking). Pet. Op. Br. at 11.

City's challenge to the Parking Garage Project is denied as moot.

The District's SACC against the City is granted in part. The District is entitled to declaratory relief that (1) it is exempt under section 53091 and SAC may proceed with construction of the Solar Project without applying for zoning and building permits from the City, with the exception of grading and haul route approvals (2) the City may not enforce the Stop Work Order by requiring land use entitlements and a CUP, but may enforce the requirement of grading and haul route approvals, and (3) the City must review and process the grading plans for approval under its grading ordinances, but without a CUP, building permits, or zoning controls other than grading and haul route approvals. The court offers no current opinion whether the City's grading plan and haul route approvals are ministerial or discretionary in nature.

The City is entitled to a judgment and writ on its FAP and the District is entitled to declaratory relief against the City. The City's counsel is ordered to prepare a proposed judgment and writ of mandate, serve them on counsel for the District for approval as to form, wait ten days after service for any objections, meet and confer if there are objections, and then submit the proposed judgment and writ along with a declaration stating the existence/non-existence of any unresolved objections. An OSC re: judgment on the City/District matter is set for April 20, 2017 at 9:30 a.m.

BOARD OF TRUSTEES
MT. SAN ANTONIO COLLEGE

DATE: June 28, 2017 **ACTION**

SUBJECT: Set Aside Approvals for West Parcel Solar Project and Addendum to the 2012 Master Plan Environmental Impact Report (EIR)

BACKGROUND

Mt. San Antonio Community College District is the lead agency for the West Parcel Solar Project, which is among the projects identified and evaluated in the Mt. San Antonio College Facility Master Plan 2012 dated February 18, 2013, and received California Environmental Quality Act (CEQA) lead agency approval by the Board of Trustees' certification of the 2012 Master Plan's Subsequent Environmental Impact Report (2012 Master Plan EIR) (SCH 2002041161).

On September 16, 2015, the Board of Trustees at a duly noticed special meeting adopted Resolution No. 15-01 approving the Solar Project. The Board found the Solar Project, as then designed, could have significant effects on the environment; however, the Board found that all potentially significant effects had been analyzed in the 2012 Master Plan EIR pursuant to applicable standards and have been avoided or mitigated pursuant to the 2012 Master Plan EIR including mitigation measures that were adopted in the 2012 Mitigation Monitoring Program applicable to the Solar Project. For these reasons, the Board determined that no additional environmental analysis was required under CEQA. On January 13, 2016, the Board approved an Addendum to the 2012 Master Plan EIR related to the Solar Project.

The 2012 Master Plan EIR and Addendum do not satisfy the requirements for project specific environmental review of the Solar Project under CEQA. The 2012 Master Plan EIR is a programmatic EIR that may be used for tiering but not for project specific CEQA approval.

ANALYSIS AND FISCAL IMPACT

Not applicable.

Funding Source

Not applicable.

RECOMMENDATION

It is recommended the Board of Trustees set aside approvals for the West Parcel Solar Project and the Addendum to the 2012 Master Plan Environmental Impact Report, as presented.

Prepared by: Gary L. Nellesen Reviewed by: Michael D. Gregoryk

Recommended by: Bill Scroggins Agenda Item: Action #1

From: Sharon Lu <sharonhlu@yahoo.com>
To: "bmitchell@mtsac.edu" <bmitchell@mtsac.edu>
Date: 07/12/2017 07:20 PM
Subject: Comment for West Parcel Solar Project

Becky,

It was a pleasure meeting you last night and thank you for taking time to share Mt SAC's current development plans with me.

I would like to submit the following written comment for West Parcel Solar Project Scoping Session.

Sharon

********** Name: Sharon Lu
Address: 20549 E Peach Blossom Road, Walnut, CA 91789

I moved to Walnut in 2010 and my families have lived in Walnut since 1986. We loved this residential community with scenic hills, vast wildlife, and nature walk trails. It is somewhat of a retreat within the traffic congested, densely populated San Gabriel Valley.

The thought of a solar farm along the main access way in the heart of the City raises many concerns: disturbances to wildlife, the ecosystem, traffic pattern and driving safety, aesthetics of the hillside, neighboring home and residents. I have heard many of my fellow Walnut residents voiced their dismay over the impacts and I would echo a thorough evaluation of these facets in the environmental study.

A significant population in Walnut are long time residents with no plans to relocate. To help long time residents understand the implications of co-existing with a solar farm, it is prudent for the environmental study to cover the full life span of the solar farm including its impacts 10 years, 20 years from now and the demolition and environment restoration to sunset the facilities at the end of its useful life. Additionally, it would be beneficial to cite environmental issues experienced by solar farms currently in operation and include in this study any issues pertinent to this project.

From: "Shinshan Wang, ND" <shinshan.wang@gmail.com>
To: bmitchell@mtsac.edu
Date: 07/17/2017 02:26 PM
Subject: Solar Panel Farm

Name: Wang, Shinshan
Residence: 1158 Regal Canyon Dr. Walnut, CA 91789

-I wish to make a written statement as well as address the next meeting available.

Hello Ms. Mitchell,

I am writing to you in regards to MSAC's Solar Farm project that will be affecting the lives and health of many citizens of Walnut, CA and surrounding areas. I have been a long time resident at my current address and enjoy the view, cleanliness, and serenity here. I love that I am part of a community that values education and I have even taken college prep courses at MSAC back in the early 2000s before entering college.

As an environmentally conscious citizen, I understand the reasons for using solar systems as an alternative form of energy. Of course, there is also a financial benefit. However, as a doctor, I would like to share with you the negative health impacts of solar systems - being exposed to massive (such as 11 acres) quantity of these modern solar panels that radiate radio frequency electromagnetic radiation overtime can result in neurological, immunological, and metabolic issues. There is a plethora of long-term studies (I've included some studies below) citing the detrimental impacts of EMF. Moreover, the manufacturing material and by-products produced in the making of solar panels include many toxic chemicals as well as dangerous heavy meals. Electromagnetic Sensitivity symptoms include ADHD, headaches, cognitive dysfunction, fatigue, skin ailments, heart problems, chest pain, infertility, and etc. Have you considered the health of the people who literally live within 100-200 feet of these solar panels? There are our fragile elders, developing brains and minds of our children, the fertility of our men and women, and the health of our pets that must first be considered. Why and how an institution, like MSAC, would agree to expose the very residents surrounding this beautiful city to dangerous "dirty electricity" has been a shock to many of us living here. Why and how an institution that provides 10-acres of land for wildlife sanctuary would neglect the health of its neighbors make no sense at all.

I strongly oppose the building of this Solar Farm in my backyard and I am absolutely appalled with the way that MSAC and its affiliates have handled this situation. An institution, like MSAC, values higher-learning and education as well as the exchange of ideas. But with the same passion it encourages its students to push for new knowledge, it must also itself be willing to do so.

Studies & Info:
https://www.ncbi.nlm.nih.gov/pubmed/22563544
https://www.ncbi.nlm.nih.gov/pubmed/?term=emf+dangers
http://www.who.int/peh-emf/publications/facts/fs296/en/
http://www.bioinitiative.org/

Sincerely,
Dr. Shinshan Wang, ND
Doctor of Naturopathic Medicine
www.wanghealthcenter.com

Written on behalf of:
Tung-Lin Wang
ChinTi Wendy Wang
Shinmann Wang, PharmD
Shinling Wang-Shen
Mike Shen
Songfong Tommy Wang, JD
Stephanie Wang
Chaodi Alexis White

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

SENT VIA USPS AND E-MAIL: June 1, 2017

facilitiesplanning@mtsac.edu
Rebecca Mitchell, Manager
Mt. San Antonio College – Facilities Planning & Management
1100 North Grand Avenue
Walnut, CA 91789

Notice of Preparation of a Draft Environmental Impact Report for the Mt. San Antonio College West Parcel Solar Parcel Project

The South Coast Air Quality Management District (SCAQMD) staff appreciates the opportunity to comment on the above-mentioned document. SCAQMD staff's comments are recommendations regarding the analysis of potential air quality impacts from the proposed project that should be included in the Draft Environmental Impact Report (EIR). Please send SCAQMD a copy of the Draft EIR upon its completion. Note that copies of the Draft EIR that are submitted to the State Clearinghouse are not forwarded to SCAQMD. Please forward a copy of the Draft EIR directly to SCAQMD at the address shown in the letterhead. **In addition, please send with the Draft EIR all appendices or technical documents related to the air quality, health risk, and greenhouse gas analyses and electronic versions of all air quality modeling and health risk assessment files[1]. These include emission calculation spreadsheets and modeling input and output files (not PDF files). Without all files and supporting documentation, SCAQMD staff will be unable to complete our review of the air quality analyses in a timely manner. Any delays in providing all supporting documentation will require additional time for review beyond the end of the comment period.**

Air Quality Analysis

The SCAQMD adopted its California Environmental Quality Act (CEQA) Air Quality Handbook in 1993 to assist other public agencies with the preparation of air quality analyses. The SCAQMD recommends that the Lead Agency use this Handbook as guidance when preparing its air quality analysis. Copies of the Handbook are available from the SCAQMD's Subscription Services Department by calling (909) 396-3720. More recent guidance developed since this Handbook was published is also available on SCAQMD's website at: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/ceqa-air-quality-handbook-(1993). SCAQMD staff also recommends that the Lead Agency use the CalEEMod land use emissions software. This software has recently been updated to incorporate up-to-date state and locally approved emission factors and methodologies for estimating pollutant emissions from typical land use development. CalEEMod is the only software model maintained by the California Air Pollution Control Officers Association (CAPCOA) and replaces the now outdated URBEMIS. This model is available free of charge at: www.caleemod.com.

The SCAQMD has also developed both regional and localized significance thresholds. SCAQMD staff requests that the Lead Agency quantify criteria pollutant emissions and compare the results to the SCAQMD's CEQA regional pollutant emissions significance thresholds to determine air quality impacts.

[1] Pursuant to the CEQA Guidelines Section 15174, the information contained in an EIR shall include summarized technical data, maps, plot plans, diagrams, and similar relevant information sufficient to permit full assessment of significant environmental impacts by reviewing agencies and members of the public. Placement of highly technical and specialized analysis and data in the body of an EIR should be avoided through inclusion of supporting information and analyses as appendices to the main body of the EIR. Appendices to the EIR may be prepared in volumes separate from the basic EIR document, but shall be readily available for public examination and shall be submitted to all clearinghouses which assist in public review.

The SCAQMD's CEQA regional pollutant emissions significance thresholds can be found here: http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf. In addition to analyzing regional air quality impacts, SCAQMD staff recommends calculating localized air quality impacts and comparing the results to localized significance thresholds (LSTs). LSTs can be used in addition to the recommended regional significance thresholds as a second indication of air quality impacts when preparing a CEQA document. Therefore, when preparing the air quality analysis for the proposed project, it is recommended that the Lead Agency perform a localized analysis by either using the LSTs developed by the SCAQMD or performing dispersion modeling as necessary. Guidance for performing a localized air quality analysis can be found at: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/localized-significance-thresholds.

The Lead Agency should identify any potential adverse air quality impacts that could occur from all phases of the proposed project and all air pollutant sources related to the proposed project. Air quality impacts from both construction (including demolition, if any) and operations should be calculated. Construction-related air quality impacts typically include, but are not limited to, emissions from the use of heavy-duty equipment from grading, earth-loading/unloading, paving, architectural coatings, off-road mobile sources (e.g., heavy-duty construction equipment) and on-road mobile sources (e.g., construction worker vehicle trips, material transport trips). Operation-related air quality impacts may include, but are not limited to, emissions from stationary sources (e.g., boilers), area sources (e.g., solvents and coatings), and vehicular trips (e.g., on- and off-road tailpipe emissions and entrained dust). Air quality impacts from indirect sources, such as sources that generate or attract vehicular trips, should be included in the analysis.

In the event that the proposed project generates or attracts vehicular trips, especially heavy-duty diesel-fueled vehicles, it is recommended that the Lead Agency perform a mobile source health risk assessment. Guidance for performing a mobile source health risk assessment ("*Health Risk Assessment Guidance for Analyzing Cancer Risk from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis*") can be found at: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/mobile-source-toxics-analysis. An analysis of all toxic air contaminant impacts due to the use of equipment potentially generating such air pollutants should also be included.

In addition, guidance on siting incompatible land uses (such as placing homes near freeways) can be found in the California Air Resources Board's *Air Quality and Land Use Handbook: A Community Health Perspective*, which can be found at: http://www.arb.ca.gov/ch/handbook.pdf. CARB's Land Use Handbook is a general reference guide for evaluating and reducing air pollution impacts associated with new projects that go through the land use decision-making process. Guidance[2] on strategies to reduce air pollution exposure near high-volume roadways can be found at: https://www.arb.ca.gov/ch/rd_technical_advisory_final.PDF.

Mitigation Measures

In the event that the proposed project generates significant adverse air quality impacts, CEQA requires that all feasible mitigation measures that go beyond what is required by law be utilized during project construction and operation to minimize these impacts. Pursuant to CEQA Guidelines Section 15126.4 (a)(1)(D), any impacts resulting from mitigation measures must also be discussed. Several resources are available to assist the Lead Agency with identifying potential mitigation measures for the proposed project, including:

[2] In April 2017, ARB published a technical advisory, *Strategies to Reduce Air Pollution Exposure Near High-Volume Roadways: Technical Advisory*, to supplement ARB's Air Quality and Land Use Handbook: A Community Health Perspective. This Technical Advisory is intended to provide information on strategies to reduce exposures to traffic emissions near high-volume roadways to assist land use planning and decision-making in order to protect public health and promote equity and environmental justice. Available at: https://www.arb.ca.gov/ch/landuse.htm.

- Chapter 11 of the SCAQMD *CEQA Air Quality Handbook*
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Alternatives

In the event that the proposed project generates significant adverse air quality and health risks impacts, CEQA requires the consideration and discussion of alternatives to the project or its location which are capable of avoiding or substantially lessening any of the significant effects of the project. The discussion of a reasonable range of potentially feasible alternatives, including a "no project" alternative, is intended to foster informed decision-making and public participation. Pursuant to CEQA Guidelines Section 15126.6(d), the Draft EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project.

Permits

In the event that the proposed project requires a permit from SCAQMD, SCAQMD should be identified as a responsible agency for the proposed project. For more information on permits, please visit the SCAQMD webpage at: http://www.aqmd.gov/home/permits. Questions on permits can be directed to the SCAQMD's Engineering and Permitting staff at (909) 396-3385.

Data Sources

SCAQMD rules and relevant air quality reports and data are available by calling the SCAQMD's Public Information Center at (909) 396-2039. Much of the information available through the Public Information Center is also available at the SCAQMD's webpage (http://www.aqmd.gov).

SCAQMD staff is available to work with the Lead Agency to ensure that project air quality and health risk impacts are accurately evaluated and mitigated where feasible. If you have any questions regarding this letter, please contact me at lsun@aqmd.gov or call me at (909) 396-3308.

Sincerely,

Lijin Sun

Lijin Sun, J.D.
Program Supervisor, CEQA IGR
Planning, Rule Development & Area Sources

LS
LAC170526-01
Control Number

STATE OF CALIFORNIA
NATIVE AMERICAN HERITAGE COMMISSION
Environmental and Cultural Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
Phone (916) 373-3710

Edmund G. Brown Jr., Governor

June 22, 2017

Rebecca Mitchell
Mt. San Antonio Community College
1100 N. Grand Avenue
Walnut, CA 91789

Sent via e-mail: facilitiesplanning@mtsac.edu

RE: SCH# 2017061055; West Parcel Solar Project, City of Walnut; Los Angeles County, California

Dear Ms. Mitchell:

The Native American Heritage Commission has received the Notice of Preparation (NOP) for Draft Environmental Impact Report for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code § 21000 et seq.), specifically Public Resources Code section 21084.1, states that a project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, § 15064.5 (b) (CEQA Guidelines Section 15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an environmental impact report (EIR) shall be prepared. (Pub. Resources Code § 21080 (d); Cal. Code Regs., tit. 14, § 15064 subd. (a)(1) (CEQA Guidelines § 15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources with the area of project effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a **separate category of cultural resources**, "tribal cultural resources" (Pub. Resources Code § 21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment (Pub. Resources Code § 21084.2). Please reference California Natural Resources Agency (2016) "Final Text for tribal cultural resources update to Appendix G: Environmental Checklist Form," http://resources.ca.gov/ceqa/docs/ab52/Clean-final-AB-52-App-G-text-Submitted.pdf. Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code § 21084.3 (a)). **AB 52 applies to any project for which a notice of preparation or a notice of negative declaration or mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements**. If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. § 800 et seq.) may also apply.

The NAHC recommends **lead agencies consult with all California Native American tribes** that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments. **Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws**.

AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a **lead agency** shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:
    a. A brief description of the project.
    b. The lead agency contact information.
    c. Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code § 21080.3.1 (d)).
    d. A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code § 21073).

2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A **lead agency** shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code § 21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or environmental impact report. (Pub. Resources Code § 21080.3.1(b)).
    a. For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code § 65352.4 (SB 18). (Pub. Resources Code § 21080.3.1 (b)).

3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:
    a. Alternatives to the project.
    b. Recommended mitigation measures.
    c. Significant effects. (Pub. Resources Code § 21080.3.2 (a)).

4. Discretionary Topics of Consultation: The following topics are discretionary topics of consultation:
    a. Type of environmental review necessary.
    b. Significance of the tribal cultural resources.
    c. Significance of the project's impacts on tribal cultural resources.
    d. If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code § 21080.3.2 (a)).

5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code sections 6254 (r) and 6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code § 21082.3 (c)(1)).

6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:
    a. Whether the proposed project has a significant impact on an identified tribal cultural resource.
    b. Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code section 21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code § 21082.3 (b)).

7. Conclusion of Consultation: Consultation with a tribe shall be considered concluded when either of the following occurs:
    a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or
    b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code § 21080.3.2 (b)).

8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code section 21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code section 21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code § 21082.3 (a)).

9. Required Consideration of Feasible Mitigation: If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code section 21084.3 (b). (Pub. Resources Code § 21082.3 (e)).

10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:
    a. Avoidance and preservation of the resources in place, including, but not limited to:
        i. Planning and construction to avoid the resources and protect the cultural and natural context.
        ii. Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.
    b. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:
        i. Protecting the cultural character and integrity of the resource.
        ii. Protecting the traditional use of the resource.
        iii. Protecting the confidentiality of the resource.
    c. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.
    d. Protecting the resource. (Pub. Resource Code § 21084.3 (b)).
    e. Please note that a federally recognized California Native American tribe or a nonfederally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code § 815.3 (c)).
    f. Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code § 5097.991).

11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource: An environmental impact report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:
    a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code sections 21080.3.1 and 21080.3.2 and concluded pursuant to Public Resources Code section 21080.3.2.
    b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.
    c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code section 21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code § 21082.3 (d)).

    This process should be documented in the Cultural Resources section of your environmental document.

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf

SB 18

SB 18 applies to local governments and requires **local governments** to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code § 65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf

Some of SB 18's provisions include:

1. Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code § 65352.3 (a)(2)).
2. No Statutory Time Limit on SB 18 Tribal Consultation. There is no statutory time limit on SB 18 tribal consultation.
3. Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code section 65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code sections 5097.9 and 5097.993 that are within the city's or county's jurisdiction. (Gov. Code § 65352.3 (b)).
4. Conclusion of SB 18 Tribal Consultation: Consultation should be concluded at the point in which:
    a. The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
    b. Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/

NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (http://ohp.parks.ca.gov/?page_id=1068) for an archaeological records search. The records search will determine:
    a. If part or all of the APE has been previously surveyed for cultural resources.
    b. If any known cultural resources have been already been recorded on or adjacent to the APE.
    c. If the probability is low, moderate, or high that cultural resources are located in the APE.
    d. If a survey is required to determine whether previously unrecorded cultural resources are present.

2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
    a. The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.

b. The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:
   a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.
   b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.
   a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, section 15064.5(f) (CEQA Guidelines section 15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.
   b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.
   c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code section 7050.5, Public Resources Code section 5097.98, and Cal. Code Regs., tit. 14, section 15064.5, subdivisions (d) and (e) (CEQA Guidelines section 15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

Please contact me if you need any additional information at gayle.totton@nahc.ca.gov.

Sincerely,

Gayle Totton, M.A., PhD.
Associate Governmental Program Analyst

cc: State Clearinghouse

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

SENT VIA USPS AND E-MAIL: July 12, 2017

facilitiesplanning@mtsac.edu
Rebecca Mitchell, Manager
Mt. San Antonio College – Facilities Planning & Management
1100 North Grand Avenue
Walnut, CA 91789

Notice of Preparation of a Draft Environmental Impact Report for the Mt. San Antonio College West Parcel Solar Parcel Project[1]

The South Coast Air Quality Management District (SCAQMD) staff appreciates the opportunity to comment on the above-mentioned document. SCAQMD staff's comments are recommendations regarding the analysis of potential air quality impacts from the proposed project that should be included in the Draft Environmental Impact Report (EIR). Please send SCAQMD a copy of the Draft EIR upon its completion. Note that copies of the Draft EIR that are submitted to the State Clearinghouse are not forwarded to SCAQMD. Please forward a copy of the Draft EIR directly to SCAQMD at the address shown in the letterhead. **In addition, please send with the Draft EIR all appendices or technical documents related to the air quality, health risk, and greenhouse gas analyses and electronic versions of all air quality modeling and health risk assessment files[2]. These include emission calculation spreadsheets and modeling input and output files (not PDF files). Without all files and supporting documentation, SCAQMD staff will be unable to complete our review of the air quality analyses in a timely manner. Any delays in providing all supporting documentation will require additional time for review beyond the end of the comment period.**

Air Quality Analysis

SCAQMD adopted its California Environmental Quality Act (CEQA) Air Quality Handbook in 1993 to assist other public agencies with the preparation of air quality analyses. SCAQMD recommends that the Lead Agency use this Handbook as guidance when preparing its air quality analysis. Copies of the Handbook are available from the SCAQMD's Subscription Services Department by calling (909) 396-3720. More recent guidance developed since this Handbook was published is also available on SCAQMD's website at: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/ceqa-air-quality-

[1] In May 2017, the Lead Agency circulated a notice of preparation (NOP) for the proposed Mt. San Antonio College West Parcel Solar Parcel for public review and comments (SCAQMD Control Number: LAC170526-01). SCAQMD staff provided comments on the NOP on June 1, 2017, available at: http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2017/nop-mtsacwestparcel-060117.pdf. On June 16, 2017, SCAQMD staff contacted the Lead Agency via an e-mail to inquire the differences, if any, between the NOP that was circulated in May 2017 and this NOP that was circulated for public review on June 16, 2017. At the time of this letter, the Lead Agency has not contacted SCAQMD staff with a response.

[2] Pursuant to the CEQA Guidelines Section 15174, the information contained in an EIR shall include summarized technical data, maps, plot plans, diagrams, and similar relevant information sufficient to permit full assessment of significant environmental impacts by reviewing agencies and members of the public. Placement of highly technical and specialized analysis and data in the body of an EIR should be avoided through inclusion of supporting information and analyses as appendices to the main body of the EIR. Appendices to the EIR may be prepared in volumes separate from the basic EIR document, but shall be readily available for public examination and shall be submitted to all clearinghouses which assist in public review.

handbook-(1993). SCAQMD staff also recommends that the Lead Agency use the CalEEMod land use emissions software. This software has recently been updated to incorporate up-to-date state and locally approved emission factors and methodologies for estimating pollutant emissions from typical land use development. CalEEMod is the only software model maintained by the California Air Pollution Control Officers Association (CAPCOA) and replaces the now outdated URBEMIS. This model is available free of charge at: www.caleemod.com.

SCAQMD has also developed both regional and localized significance thresholds. SCAQMD staff requests that the Lead Agency quantify criteria pollutant emissions and compare the results to SCAQMD's CEQA regional pollutant emissions significance thresholds to determine air quality impacts. SCAQMD's CEQA regional pollutant emissions significance thresholds can be found here: http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf. In addition to analyzing regional air quality impacts, SCAQMD staff recommends calculating localized air quality impacts and comparing the results to localized significance thresholds (LSTs). LSTs can be used in addition to the recommended regional significance thresholds as a second indication of air quality impacts when preparing a CEQA document. Therefore, when preparing the air quality analysis for the proposed project, it is recommended that the Lead Agency perform a localized analysis by either using the LSTs developed by SCAQMD or performing dispersion modeling as necessary. Guidance for performing a localized air quality analysis can be found at: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/localized-significance-thresholds.

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[3] SCAQMD has developed the CEQA significance threshold of 10 in one million for cancer risk. When SCAQMD acts as the Lead Agency, SCAQMD staff conducts a HRA, compares the maximum cancer risk to the threshold of 10 in one million to determine the level of significance for health risk impacts, and identifies mitigation measures if the risk is found to be significant.

In addition, guidance on siting incompatible land uses (such as placing homes near freeways) can be found in the California Air Resources Board's *Air Quality and Land Use Handbook: A Community Health Perspective*, which can be found at: http://www.arb.ca.gov/ch/handbook.pdf. CARB's Land Use Handbook is a general reference guide for evaluating and reducing air pollution impacts associated with new projects that go through the land use decision-making process. Guidance[4] on strategies to reduce air pollution exposure near high-volume roadways can be found at: https://www.arb.ca.gov/ch/rd_technical_advisory_final.PDF.

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- Chapter 11 of SCAQMD *CEQA Air Quality Handbook*
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- SCAQMD's Mitigation Monitoring and Reporting Plan (MMRP) for the 2016 AQMP available here (starting on page 86): http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2017/2017-mar3-035.pdf?sfvrsn=5
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In the event that the proposed project generates significant adverse air quality impacts, CEQA requires the consideration and discussion of alternatives to the project or its location which are capable of avoiding or substantially lessening any of the significant effects of the project. The discussion of a reasonable range of potentially feasible alternatives, including a "no project" alternative, is intended to foster informed decision-making and public participation. Pursuant to CEQA Guidelines Section 15126.6(d), the Draft EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project.

[4] In April 2017, ARB published a technical advisory, *Strategies to Reduce Air Pollution Exposure Near High-Volume Roadways: Technical Advisory*, to supplement ARB's Air Quality and Land Use Handbook: A Community Health Perspective. This Technical Advisory is intended to provide information on strategies to reduce exposures to traffic emissions near high-volume roadways to assist land use planning and decision-making in order to protect public health and promote equity and environmental justice. Available at: https://www.arb.ca.gov/ch/landuse.htm.

Permits

In the event that the proposed project requires a permit from SCAQMD, SCAQMD should be identified as a responsible agency for the proposed project. For more information on permits, please visit the SCAQMD webpage at: http://www.aqmd.gov/home/permits. Questions on permits can be directed to the SCAQMD's Engineering and Permitting staff at (909) 396-3385.

Data Sources

SCAQMD rules and relevant air quality reports and data are available by calling SCAQMD's Public Information Center at (909) 396-2039. Much of the information available through the Public Information Center is also available at the SCAQMD's webpage (http://www.aqmd.gov).

SCAQMD staff is available to work with the Lead Agency to ensure that project air quality impacts are accurately evaluated and mitigated where feasible. If you have any questions regarding this letter, please contact me at lsun@aqmd.gov or call me at (909) 396-3308.

Sincerely,

Lijin Sun

Lijin Sun, J.D.
Program Supervisor, CEQA IGR
Planning, Rule Development & Area Sources

LS
LAC170616-04
Control Number

DEPARTMENT OF TRANSPORTATION
DISTRICT 7-Office of Regional Planning
100 S. MAIN STREET, MS 16
LOS ANGELES, CA 90012
PHONE (213) 897-0673
FAX (213) 897-1337
www.dot.ca.gov

Serious Drought.
Making Conservation
a California Way of Life.

July 18, 2017

Ms. Rebecca Mitchell
Mt. San Antonio Community College
1100 N. Grand Avenue
Walnut, CA 91789

RE: West Parcel Solar Project
Notice of Preparation (NOP) for DEIR
SCH#2017061055
IGR#07-LA-2017-00981-FL
Vic. LA/ 10/ PM 38.381

Dear Ms. Mitchell:

Thank you for including the California Department of Transportation (Caltrans) in the environmental review process for the above referenced project.

The proposed project (Project) will remove native vegetation on 17.25 acres of the project site and develop a 2.2 MW solar panel system on a 9.9 acre pad with an interconnect to the campus electrical system. Replacement and restored habitat will be implemented onsite and east of Grand Avenue. Earth import for the project is estimated as 139,000 cubic yards.

Senate Bill 743 (2013) mandated that CEQA review of transportation impacts of proposed development be modified by using Vehicle Miles Traveled (VMT) as the primary metric in identifying transportation impacts for all future development projects. However, the District may use the Level of Service (LOS) methodology until The Governor's Office of Planning and Research (OPR) complete its CEQA Guideline to implement SB743 (https://www.opr.ca.gov/s_sb743.php).

If the Mt. San Antonio Community College District (District) decides to use Level of Service (LOS) when preparing the traffic analysis on the State facilities, please refer the project's traffic consultant to Caltrans' traffic study guide Website:

http://www.dot.ca.gov/hq/tpp/offices/ocp/igr_ceqa_files/tisguide.pdf

The Project is anticipated to have construction trips. This may include the use of oversized vehicles. These vehicles may travel at lower speeds than other traffic, and because of their size, intrude into adjacent travel lanes.

To assist in evaluating the impacts of this project on State Transportation facilities, a traffic study should be prepared to analyze the following information:

1. Construction/truck/operation traffic impacts on I-10 and SR-60, on/off-ramps to Grand Avenue, and SR-57, on/off-ramps to Temple Avenue and all significantly impacted streets, crossroads and controlling intersections, as well as an analysis of existing conditions and construction periods.

2. Off-ramp queuing analysis including but not limit to I-10 and SR-60 EB/WB to Grand Avenue, and SR-57 NB/SB to Temple Avenue.

3. If truck traffic is expected to cause delays on the State facility, please forward a truck/traffic construction management plan to Caltrans for review.

4. Traffic volume counts that include anticipated AM and PM peak-hour volumes.

5. Level of Service (LOS) before and during the construction.

6. A brief construction/operation traffic discussion showing ingress/egress, turning movement, and a directional flow for construction vehicle trips.

7. Discussion of mitigation measures appropriate to alleviate anticipated construction/truck/operation traffic impacts.

Caltrans continues to strive to improve its standards and processes to provide flexibility while maintaining the safety and integrity of the State's transportation system. It is our goal to implement strategies that are in keeping with our mission statement, which is to "*provide a safe, sustainable, integrated, and efficient transportation system to enhance California's economy and livability.*"

We look forward to reviewing the traffic study and expect to receive a copy from the State Clearinghouse when the DEIR is completed. If you would like to expedite the review process or receive early feedback from Caltrans, please feel free to send a copy of the DEIR directly to our office.

If you have any questions or concerns regarding these comments, please contact project coordinator, Frances Lee at (213) 897-0673 or electronically at frances.lee@dot.ca.gov.

Sincerely,

DIANNA WATSON
Branch Chief, Community Planning & LD IGR Review

cc: Scott Morgan, State Clearinghouse

From: Johntommy Rosas <tattnlaw@gmail.com>
To: facilitiesplanning@mtsac.edu, Becky Mitchell <BMitchell@mtsac.edu>, JOHNTOMMY ROSAS <jtr@tongvanation.org>
Date: 06/29/2017 03:19 PM
Subject: Re: Notice of Preparation of DRAFT EIR & Scoping Session 2 for Mt. SAC College West Parcel Solar Project

1. TATTN opposes and objects to this proposed project including the defective illegal omissions on NOP by so-called ''lead agency''

2. TATTN requests all of the permits claimed to be already acquired and the applications as well- see attached as redlined -

3. TATTN also requests the archaeological reports and CHRIS request/ response supposedly used to make the no impact determination and who was the actual person[s] who made those claims-

4. Other public agencies whose approval is required (e.g. permits, financing approval, or participation agreement).

California Department of Fish and Wildlife (CDFW)
Los Angeles Regional Water Quality Control Board (SWRCB)
United States Fish and Wildlife Service (USFWS)
United States Army Corps of Engineers (USACE)
City of Walnut (grading plan)

5. TATTN requests the complete grading and excavation plans including the claimed grading import from other areas-

6. TATN requests the mt sac project process be suspended until TATTN has received the omitted required information and TATTN has a legally allowed time to review and respond -

7. The project area is in a high sensitivity TATTN/TONGVA tribal cultural area-TATTN requests the required archaeologist and arch firm retained by mt sac for this project -including when the were retained- we also request their reports or memo etc as allowed under the CPRA -

thank you for your legally required timely response WITHIN 10 DAYS and that time is reflected in a continuous time to responded depending on mt sac responses with omitted /excluded info –

Attachment: Notice of Preparation for WPS Tiered EIR & Notice of Second Scoping Meeting July 11, 2017

/s/JOHNTOMMY ROSAS

JOHN TOMMY ROSAS
TRIBAL ADMINISTRATOR
TRIBAL LITIGATOR -TATTN JUDICIAL # 0001
TONGVA ANCESTRAL TERRITORIAL TRIBAL NATION
A TRIBAL SOVEREIGN NATION UNDER THE UNDRIP AND AS A TREATY [s] SIGNATORIES RECOGNIZED TRIBE, WITH HISTORICAL & DNA AUTHENCATION ON CHANNEL ISLANDS AND COASTAL VILLAGES - AND AS A CALIFORNIA NATIVE AMERICAN TRIBE / SB18-AB 52-AJR 42-ACHP/NHPA

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