Draft
Mitigated Negative Declaration and Supporting Initial Study

San Diego Gas & Electric Company

Ocean Ranch Substation Project

(A.16-07-016)

State Clearinghouse #2017031040

Lead Agency

California Public Utilities Commission

With Assistance From

Aspen Environmental Group

March 2017

DRAFT

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NOTICE OF INTENT TO ADOPT A MITIGATED NEGATIVE DECLARATION

TO: All Interested Parties

Pursuant to the California Public Utilities Commission's (CPUC) General Order 131-D, San Diego Gas & Electric Company (SDG&E) has filed an application with the CPUC for a Permit to Construct (PTC) for the Ocean Ranch Substation Project (project). (Application No. A.16-07-016).

Project Background: SDG&E is proposing to construct the Ocean Ranch Substation Project, which would include construction of the following components: (1) new Ocean Ranch 69/12 kilovolt (kV) Substation, located on Avenida del Oro north of Avenida de la Plata in the Rancho del Oro Planned Development district in Oceanside, San Diego County; (2) 1,500 feet of underground power line duct bank to loop an existing San Luis Rey to Melrose 69 kV transmission line (TL6966) into the new substation; (3) four underground 12 kV circuits extending from the substation to nearby existing distribution lines; and (4) a 40-foot tubular steel pole and microwave antenna within the substation property for communication with San Luis Rey Substation.

Construction is estimated to last approximately 20 months. SDG&E states that the Ocean Ranch Substation Project is needed to provide additional capacity to serve the existing load and the forecasted customer-driven load growth in the area and to prevent potential long outages or disruption of service to SDG&E customers in the Oceanside area.

Information Available: The CPUC Energy Division has prepared a Mitigated Negative Declaration and supporting Initial Study (IS/MND) describing the project and its potential environmental effects. Based on this document, it has been determined that the Ocean Ranch Substation Project will not have any significant effects on the environment with incorporation of the mitigation identified in the IS/MND. The CPUC's environmental document may be reviewed at the following locations:

CPUC Energy Division
505 Van Ness Avenue, 3rd Floor
San Francisco, CA 94102

Mission Branch Library
3861 Mission Avenue
Oceanside CA 92058

For electronic access to the MND and other project information/reports, check the CPUC's website at:

http://www.cpuc.ca.gov/environment/info/aspen/oceanranch/oceanranch.htm

Public Informational Meeting: In order to help affected communities understand the Proposed Project and the Proposed IS/MND and to explain how the public can participate in the CPUC's decision-making processes, the CPUC will hold an informational workshop. This informal workshop is an opportunity to ask questions about the content of the Draft IS/MND. While written comments may be submitted during the workshop, there will be no facilities to record oral comments. The date, time, and location of the workshop are:

Wednesday, April 5, 2017
6 p.m. to 8 p.m.
Residence Inn
3603 Ocean Ranch Blvd
Oceanside CA 92056

Time for Review: This IS/MND will undergo a public review period from March 15 through April 14, 2017. Comments must be received in writing or email by 5:00 p.m. on April 14, 2017, at the following address:

Andie Biggs
California Public Utilities Commission
c/o Aspen Environmental Group
235 Montgomery Street, Suite 935
San Francisco, CA 94104-3002
oceanranch@aspeneg.com

Contents

Tables

Figures

Appendices

List of Acronyms

ADT	Average daily traffic
ANSI	American National Standards Institute
APLIC	Avian Power Line Interaction Committee
APM	Applicant Proposed Measure
APN	Assessor Parcel Number
APSA	Aboveground Petroleum Storage Act
ARB	Air Resources Board
ASCE	American Society of Civil Engineers
BACT	Best available control technology
BMP	Best management practice
BP	Before Present
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CAISO	California Independent System Operator
CalARP	California Accidental Release Prevention
CalEPA	California Environmental Protection Agency
CalOSHA	California Occupational Safety and Health Administration
CAP	Climate Action Plan
CAPCOA	California Air Pollution Officers Association
CARB	California Air Resources Board
CBC	California Building Code
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERS	California Environmental Reporting System
CESA	California Endangered Species Act
CFGC	California Fish and Game Code
CGS	California Geological Survey
CHRIS	California Historical Resources Information System
CIWMB	California Integrated Waste Management Board
CMLUCA	California Military Land Use Compatibility Analysis
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CPUC	California Public Utilities Commission
CRHR	California Register of Historical Resources
CUPA	Certified Unified Program Agency
CVC	California Vehicle Code
CWA	Clean Water Act
DHS	Department of Health Services
DOC	Department of Conservation
DPM	Diesel particulate matter
DPR	Department of Pesticide Regulation
DTSC	Department of Toxic Substances Control
EHC	Environmental Health Criteria

EIR	Environmental Impact Report
EMF	Electric and magnetic fields
EPA	Environmental Protection Agency
ESA	Environmental Site Assessment
FAA	Federal Aviation Administration
FESA	Federal Endangered Species Act
FMMP	Farmland Mapping and Monitoring Program
GHG	Greenhouse gas
HFC	Hydrofluorocarbon
HMBP	Hazardous Materials Business Plan
HMD	Hazardous Materials Division
HMWMP	Hazardous Materials and Waste Management Plan
HSWA	Hazardous and Solid Waste Act
HWCL	Hazardous Waste Control Law
IARC	International Agency for Research on Cancer
IBC	International Building Code
ICC	International Code Council
IEEE	Institute of Electrical and Electronics Engineers
IPCC	Intergovernmental Panel on Climate Change
IWMB	Integrated Waste Management Board
KOP	Key observation point
LOS	Level of service
LSAA	Lake and Streambed Alteration Agreement
MBTA	Migratory Bird Treaty Act
MHCP	Multiple Habitat Conservation Program
MLD	Most likely descendant
MND	Mitigated Negative Declaration
MRZ	Mineral resource zone
MSL	Mean sea level
MVA	Megavolt ampere
MWD	Metropolitan Water District
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NCCP	Natural Community Conservation Plan
NCP	National Contingency Plan
NCTD	North Country Transit District
NESC	National Electrical Safety Code
NHPA	National Historic Preservation Act
NPDES	National Pollution Discharge Elimination System
NPL	National Priorities List
NPPA	Native Plant Protection Act
NRHP	National Register of Historic Places
NSH	National Seismic Hazard
OEHHA	Office of Environmental Health Hazard Assessment
OMR	Office of Mine Reclamation
OPK	Oceanside Municipal Airport
PCE	Passenger car equivalent
PEA	Proponent's Environmental Assessment
PERP	Portable Equipment Registration Program

PFC	Perfluorocarbon
PGA	Peak ground acceleration
PM10	Particulate matter (less than 10 microns in diameter)
PM2.5	Fine particulate matter (less than 2.5 microns in diameter)
PRC	Public Resources Code
PSA	Project Study Area
PTC	Permit to Construct
PVC	Polyvinyl chloride
RAQS	Regional Air Quality Control Strategy
RCRA	Resource Conservation and Recovery Act
ROG	Reactive organic gases
ROW	Right-of-way
RPS	Renewable Portfolio Standard
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
SANDAG	San Diego Association of Governments
SAP	Subarea Species Plan
SARA	Superfund Amendments and Reauthorization Act
SCADA	Supervisory control and data acquisition
SCIC	South Coastal Information Center
SDAPCD	San Diego Air Pollution Control District
SDCAPCB	San Diego County Air Pollution Control Board
SDCWA	San Diego County Water Authority
SHPO	State Historic Preservation Officer
SMARA	Surface Mining and Reclamation Act
SMGB	State Mining and Geology Board
SPCC	Spill Prevention, Control, and Countermeasure
SRRE	Source Reduction Recycling Element
SWGS	Solid Waste Generation Study
SWPP	Storm Water Pollution Prevention Plan
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	Toxic air contaminant
TCR	Tribal Cultural Resource
TIS	Traffic Impact Study
TL	Transmission line
TMDL	Total Maximum Daily Load
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	Underground Storage Tank
VOC	Volatile organic compounds
VS/VC	Visual Sensitivity/Visual Change
WCPZ	Wildlife Corridor Planning Zone
WHO	World Health Organization
WWTP	Waste Water Treatment Plant

Section 1

Mitigated Negative Declaration

STATE OF CALIFORNIA Edmund G. Brown Jr., Governor

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

DRAFT

Mitigated Negative Declaration

San Diego Gas & Electric Company's Ocean Ranch Substation Project

Application No. A.16-07-016

Lead Agency: California Public Utilities Commission
Energy Division
505 Van Ness Avenue, 3rd Floor
San Francisco, California 94102

Contact: Ms. Andie Biggs, Project Manager
(415) 703-3305 or Andie.Biggs@cpuc.ca.gov

1. Mitigated Negative Declaration

1.1 Project Information

Project: Ocean Ranch Substation Project
Oceanside, California

Project Sponsor: San Diego Gas & Electric Company
8330 Century Park Court, CP32
San Diego, CA 92123
(949) 361-8065

1.2 Introduction

Pursuant to California Public Utilities Commission's (CPUC) General Order 131-D, San Diego Gas & Electric Company (SDG&E) filed an application (A.16-07-016) with the CPUC on July 27, 2016, for a Permit to Construct (PTC) the Ocean Ranch Substation Project ("Proposed Project"). The CPUC Energy Division deemed the Proponent's Environmental Assessment (PEA) and Application complete on October 6, 2016.

Under the California Environmental Quality Act (CEQA), as Lead Agency, the CPUC must prepare an Initial Study for the Proposed Project to determine if any significant adverse effects on the environment would result from project implementation. The Initial Study uses the significance criteria outlined in

Appendix G of the CEQA Guidelines. If the IS for the project indicates that a significant adverse impact could occur, the CPUC would be required to prepare an Environmental Impact Report (EIR).

According to CEQA Guidelines, Section 15070 (Decision to Prepare a Negative Declaration or Mitigated Negative Declaration):

A public agency shall prepare or have prepared a proposed negative declaration or mitigated negative declaration for a project subject to CEQA when:

(a) The initial study shows that there is no substantial evidence, in light of the whole record before the agency, that the project may have a significant effect on the environment, or

(b) The initial study identifies potentially significant effects, but:

(1) Revisions in the project plans or proposals made by, or agreed to by the applicant before a proposed mitigated negative declaration and initial study are released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur, and

(2) There is no substantial evidence, in light of the whole record before the agency, that the project as revised may have a significant effect on the environment.

Based on the analysis in the Initial Study, it has been determined that all project-related environmental impacts are less than significant or could be reduced to a less than significant level with the incorporation of feasible mitigation measures. Therefore, adoption of a Mitigated Negative Declaration (MND) will satisfy the requirements of CEQA. The mitigation measures included in this MND are designed to reduce or eliminate the potentially significant environmental impacts described in the Initial Study. Where a measure described in this document has been previously incorporated into the project, either as a specific project design feature or as an Applicant-Proposed Measure, this is noted in the discussion. Mitigation measures are structured in accordance with the criteria in Section 15370 of the CEQA Guidelines.

1.3 Project Description Summary

SDG&E is proposing to construct the Ocean Ranch Substation Project, which would include construction of the following components:

- **New Ocean Ranch 66/12 kilovolt (kV) Substation,** initially with a 60 megavolt ampere (MVA) rating and an ultimate capacity of 120 MVA.
- **69 kV single-circuit power line,** looped into the proposed new substation from the existing San Luis Rey–Melrose 69 kV line at the intersection of Avenida de la Plata and Avenida del Oro,
- **Four new 12 kV distribution circuits,** and
- **Telecommunication facilities** to connect the proposed substation to SDG&E's existing telecommunications system.

1.4 Environmental Determination

The Initial Study was prepared to identify the potential environmental effects that could result from implementing the Proposed Project, and to evaluate the level of significance of these effects. The Initial Study relies on information in SDG&E's PEA, project site reconnaissance by the CPUC environmental team in October 2016, SDG&E's responses to data requests, and other environmental information and analyses.

SDG&E's PEA identified Applicant-Proposed Measures (APMs) to address potentially significant impacts. These APMs are considered to be part of the description of the Proposed Project. Based on the Initial

Study analysis, additional mitigation measures are identified for adoption to ensure that impacts of the Proposed Project would be less than significant. The additional mitigation measures either supplement or supersede the APMs. SDG&E has agreed to implement the APMs and all of the additional recommended mitigation measures as part of the Proposed Project.

Implementation of the mitigation measures would avoid potentially significant impacts identified in the Initial Study or reduce them to less than significant levels.

Applicant-Proposed Measures

APM BIO-1: General Biological Resources.

- The Proposed Project work areas shall be limited to the sites specified in the project description. Access to the project site shall utilize existing access roads, where possible. Parking, driving, and storing of vehicles will be limited to previously disturbed, compacted, and developed areas, where possible.
- A contractor education program will be conducted by a qualified biologist. It will be conducted during all project phases and cover: (1) the potential presence of listed species and their habitats; (2) the requirements and boundaries of the project (e.g., areas delineated on maps and by flags or fencing); (3) the importance of complying with avoidance and minimization measures; (4) environmentally responsible construction practices; (5) identification of sensitive resource areas in the field; and (6) problem reporting and resolution methods.
- A qualified biologist will be assigned to the Proposed Project. The designated biologist will have the authority to halt construction in that segment of the Proposed Project to prevent impact to any listed species.
- Heavy equipment, construction, equipment maintenance, and staging activities will occur in designated areas and be restricted to existing roads and disturbed areas to the maximum extent practicable.
- Where possible, laydown, stockpiling, parking, driving, and storing of vehicles and equipment will be limited to previously disturbed/compacted and developed areas within and immediately adjacent to existing roads.

APM BIO-2: Vegetation and Special Status Plant Species.

- Disturbance to adjacent native vegetation will be avoided to the greatest extent.

APM BIO-3: Migratory Birds.

- Pre-construction nest surveys will be conducted by a qualified biologist if construction or demolition activities on the project site occurs between January 1 and August 31 (nesting season). Surveys shall cover all potential nesting habitat within the PSA and be repeated on a weekly basis throughout the nesting season. If SDG&E determines that any staging yards included in the proposed project, is not needed, then those staging yards will be exempt from nest surveys
- If an active nest is found within the Proposed Project at any time, work will stop immediately in the immediate area of the nest and redirected away from the nest location. A no disturbance buffer zone will be established around each nest. The size of the buffer zone for non-special-status species will be determined by a qualified biologist. Any activities that might, in the opinion of the biological monitor, disturb nesting activities, will be prohibited in the buffer zone. If an active nest of a special-status species is identified, SDG&E shall consult with the USFWS and CDFW to determine the size of the buffer zone (except for burrowing owls, which will be determined in accordance with APM BIO-4). Nest locations will be mapped using GPS technology.

- The biological monitor will monitor all active nests and buffers at least once per week, to determine whether birds are being disturbed. If signs of disturbance or distress are observed, the biological monitor shall immediately implement adaptive measures to reduce disturbance. These measures could include, but are not limited to, increasing buffer size, halting disruptive construction activities in the vicinity of the nest until fledging is confirmed, or placement of visual screens or sound dampening structures between the nest and construction activity.
- The qualified biologist or biological monitor will monitor the nest until he or she determines that nestlings have fledged and dispersed or the nest is no longer active. The results of nest surveys and nest monitoring shall be included in biological monitoring reports, described in Mitigation Measure B-1 (Biological Monitoring and Reporting).

APM BIO-4: Special Status Wildlife Species.

- Protocol-level surveys for the burrowing owl shall occur prior to the commencement of construction. The survey shall be conducted by a qualified biologist in accordance with the Staff Report on Burrowing Owl Mitigation. The surveys shall commence at least 30 days and not less than 14 days prior to construction. The survey results shall be provided to SDG&E within 14 days following completion of surveys.
- If burrowing owls are detected within the Project Study Area, measures consistent with the methodology as established in the Staff Report on Burrowing Owl Mitigation and in concurrence with the local CDFW office will be implemented. This includes, but is not limited to the use of buffers around burrows, inspection of equipment, monitoring, and the potential for development of a Burrowing Owl Exclusion Plan approved by the local CDFW office.
- Prior to the commencement of the construction phase, a qualified biologist shall conduct a preconstruction survey/sweep of Melrose Staging Yard to determine the presence of the western yellow bat. If the western yellow bat is not found during the initial preconstruction survey/sweep, the staging yard will be resurveyed weekly while the yard is in use for the project. Surveys will be conducted year-round. If roosts are found during the survey sweeps, a no disturbance buffer zone will be established of 165 feet from any active roost and 300 feet from any active maternity roost. The qualified biologist shall consult with CDFW to determine the appropriate buffer limits to adequately protect the species and the buffer sizes listed above may be reduced with concurrence from CDFW. The buffers will remain in place until the staging yard is no longer used for this project or until the bat(s) have left the roost and a buffer is no longer necessary.

APM CUL-1: Paleontological Resource Monitoring Program.

- A paleontological resource monitoring program will be implemented during construction. The program will include construction monitoring, fossil salvage, laboratory preparation of salvaged specimens, curation of prepared specimens, and storage of curated specimens. A qualified paleontologist will be onsite to monitor all ground disturbing activities (e.g., grading and excavation) within native sediments, until the monitor determines monitoring activities are not necessary. The monitor will inspect all fresh cut slopes and trenches, spoils piles, and graded pad surfaces for unearthed fossil remains. If any paleontological find is identified during monitoring, then the monitor will communicate with the general environmental monitor and the construction manager. Salvage may include techniques such as “pluck-and-run,” hand quarrying, and bulk matrix sampling and screen-washing. The monitor will also collect stratigraphic data to define the nature of fossiliferous sedimentary rock units within the Proposed Project area, their geographic distributions, and their lithologic characteristics. Paleontological monitoring would not be required in locations where artificial imported fill materials occur for the full depth of the proposed ground disturbance.

Mitigation Measures

Mitigation Measure for Impact to Special-status Animal Species

B-1 **Biological monitoring and reporting.** SDG&E shall assign a qualified biologist or biological monitor to the Project to monitor work during the construction phase and inspect the Project site at least once per week, or until such time that construction activities at locations identified by the monitor no longer have the potential to impact special-status species, native vegetation, wildlife habitat, or sensitive biological resources. The qualified biologist or biological monitor is responsible for ensuring that impacts to special-status species, native vegetation, wildlife habitat, and sensitive or unique biological resources are avoided or minimized to the fullest extent safely possible. Monitors are also responsible for communicating with construction supervisors and crews to ensure that work activities are conducted in compliance with APMs, mitigation measures, permit conditions, and other project requirements.

The qualified biologist or biological monitor shall clearly mark sensitive biological resource areas with staking, flagging, or other appropriate materials that are readily visible and durable, and ensure that work activities are contained within approved disturbance area boundaries at all times. The monitors will inform work crews of these areas and the requirements for avoidance, and will inspect these areas at appropriate intervals for compliance with regulatory terms and conditions.

The qualified biologist or biological monitor shall have the authority and responsibility to halt any project activities that are not in compliance with applicable mitigation measures, APMs, permit conditions, or other project requirements, or will have an unauthorized adverse effect on biological resources.

The qualified biologist or biological monitor shall, to the extent safe, practicable, and consistent with mitigation measures and permit conditions, actively or passively relocate wildlife out of harm's way. Handling, relocation, release from entrapment, or other interaction with wildlife shall be performed consistent with mitigation measures, safety protocols, permits (including CDFW and USFWS permits), and other project requirements. If safety or other considerations prevent the qualified biologist or biological monitor from aiding trapped wildlife or wildlife in harm's way, SDG&E shall consult with the construction contractor, CDFW, wildlife rehabilitator, or other appropriate party to obtain aid for the animal.

The qualified biologist or biological monitor shall communicate with work crews to ensure that all excavations, open tanks, trenches, pits, or similar wildlife entrapment hazards have been covered or have ramps installed to prevent wildlife entrapment, and communicate with work crews to ensure these structures are installed and functioning properly.

Monitoring activities shall be thoroughly and accurately documented during each monitoring visit or inspection and shall include:

- Any special-status species observations, including location of observation, location and description of project activities in the vicinity, and any measures taken to avoid the species. In addition, all special-status species observations shall be reported to the California Natural Diversity Database (CNDDB).
- Bird nesting activities and buffers established.
- Wildlife entrapments and relocations.

- All non-compliance incidents, including nest buffer incursions, with resolution or remedial actions taken.
- Any other information relevant to compliance with biological resource APMs, mitigation measures, permit conditions, or other project requirements.

The qualified biologist or biological monitor shall compile this information into a brief monthly summary report to be submitted to the CPUC within 30 calendar days of the end of each month. At the conclusion of construction activities, a final project summary report shall be submitted to the CPUC within 90 calendar days of the end of construction.

B-2 **Worker Training.** The contractor education program defined by APM BIO-1 shall stipulate the following general behavior requirements:

1. No wildlife may be harmed, except to protect life and limb.
2. Firearms shall be prohibited except for those used by security personnel.
3. Feeding of wildlife shall be prohibited.
4. SDG&E personnel shall not bring pets to work areas.
5. Plant or wildlife species shall not be collected under any circumstance, unless by an authorized/ permitted biologist.
6. Littering shall not be allowed. SDG&E shall not deposit or leave any food or waste in any work area.
7. Wildfires shall be prevented or minimized by exercising care when driving and by not parking vehicles where catalytic converters can ignite dry vegetation. The use of shields, protective mats, or other fire prevention methods shall be used during grinding and welding to prevent or minimize the potential for fire. Care shall be exhibited when smoking in permitted areas.
8. Field crews shall refer environmental issues, including wildlife relocation, dead or sick wildlife, hazardous waste, or questions about avoiding environmental impacts, to a biologist(s) approved by the CPUC, USFWS, and CDFW. Other CPUC, USFWS, or CDFW biologists or experts in wildlife handling may need to be brought in for assistance with wildlife relocations.
9. Night lighting shall be of the lowest illumination allowed for human safety, selectively placed, shielded, and to the maximum extent practicable, directed so as to not disturb adjacent land uses or streets.
10. Vehicle speeds on the project site shall be maintained at 15 mph or less.

Mitigation Measures for Impact to Historical and Archaeological Resources

C-1 **Management of Unanticipated Discoveries of Historical Resources or Unique Archaeological Resources.** Unanticipated discovery protocols shall be communicated to project workers as part of the contractor education program. If previously unidentified cultural resources are identified during construction activities, construction work within 100 feet of the find shall be halted and directed away from the discovery until a Secretary of the Interior qualified archaeologist and tribal representative assesses the significance of the resource. The archaeologist, in consultation with the County, SHPO, any interested Tribes, and any other responsible public agency, shall make the necessary plans for recording and curating the find(s) and for the evaluation and mitigation of impacts if the finds are found to be eligible to the National Register of Historic Places or California Register of Historical Resources, or qualifies as a unique archaeological resource under CEQA Section 21083.2.

Mitigation Measures for Impacts to Human Remains

C-2 **Appropriate Treatment of Human Remains.** Upon discovery of human remains, all work within 100 feet of the discovery area must cease immediately, the area must be secured, and the following actions taken:

- The land manager/owner of the site is to be called and informed of the discovery.
- The San Diego County Coroner's Office is to be called. The Coroner has two working days to examine the remains after notification (Health and Safety Code Section 7050.5(b). The Coroner will determine if the remains are archaeological/historic or of modern origin, and if there are any criminal or jurisdictional questions. The Coroner will make recommendations concerning the treatment and disposition of the remains to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in Section 5097.98 of the Public Resources Code.
- If the Coroner believes the remains to be those of a Native American, he/she shall contact the NAHC by telephone within 24 hours. The NAHC will immediately notify the person it believes to be the most likely descendant (MLD) of the remains.
- The MLD has 48 hours to make recommendations to the land owner for treatment or disposition of the human remains. If the descendant does not make recommendations within 48 hours, the land owner shall re-inter the remains in an area of the property secure from further disturbance. If the land owner does not accept the descendant's recommendations, the owner or the descendant may request mediation by NAHC.

Per California Health and Safety Code, six or more human burials at one location constitutes a cemetery (Section 8100) and willful disturbance of human remains is a felony (Section 7052).

Mitigation Measure for Construction Noise

N-1 **Minimize Construction Vehicle, Equipment, and Traffic Noise.** SDG&E shall maintain construction equipment and vehicle mufflers in accordance with equipment vendor specifications on all engines used in construction. Where feasible, construction traffic shall be routed to avoid noise-sensitive areas, such as residences, educational facilities, hospitals, convalescent homes, and parks.

N-2 **Limit Construction Noise to Daytime Hours.** SDG&E shall not operate any pneumatic hammer, pile driver, excavator, crane, hoist, or other equipment which generates loud or unusual noise from the hours of 10:00 p.m. to 7:00 a.m. Exceptions for work outside of these hours shall be allowed for project safety, to take advantage of the limited times when power lines can be taken out of service, to complete project work that must occur continuously without interruption, or as determined to be warranted by the CPUC. If nighttime work is needed because of clearance restrictions on power lines, SDG&E shall take appropriate measures to minimize disturbance to local residents, if any are within 500 feet of the work site, by informing them in advance of the work schedule and probable inconveniences.

N-3 **Secure City of Oceanside Explosive Permit for Blasting Activity.** In the event that blasting is required, SDG&E shall prepare and submit a plan for blasting that quantifies the resulting noise and vibration levels from the use of explosives. The plan shall in compliance with City of Oceanside procedures and requirements for all blasting activities and shall be submitted to the CPUC before blasting at each site.

N-4 **Avoid Blasting Where Damage to Structures Could Occur.** Blasting shall be managed with a plan for each site. The plan shall include the blasting methods, surveys of existing structures and other built facilities, and distance calculations to estimate the area of effect of the blasting. The blasting plan shall identify and implement construction techniques available as an alternative to rock blasting for locations where damage to vulnerable structures could occur, where the distance depends on the force of the explosives under consideration. Rock anchoring or a mini-pile system shall be used if adjacent structures could be damaged as a result of blasting or any construction method used as an alternative to blasting. If any structure is inadvertently adversely affected by construction vibration from rock blasting, the structure shall be restored to conditions equivalent to those prior to blasting. SDG&E shall then fairly compensate the owner of any damaged structure for lost use of the property.

Mitigation Measures for Construction Traffic Impacts

T-1 **Construction Traffic Control Plan.** Prior to the start of construction, San Diego Gas & Electric (SDG&E) shall prepare and submit a Construction Traffic Control Plan for review and approval to the City of Oceanside for public roads and transportation facilities that would be directly affected by the construction activities and/or would require permits and approvals. SDG&E shall submit the Construction Traffic Control Plan to the California Public Utilities Commission (CPUC) prior to conducting activities covered in the traffic control permits. The Construction Traffic Control Plan shall include, but not be limited to:

- The locations and use of flaggers, warning signs, lights, barricades, delineators, cones, arrow boards, etc., according to standard guidelines outlined in the Manual on Uniform Traffic Control Devices, the Standard Specifications for Public Works Construction, and/or the California Joint Utility Traffic Control Manual.
- Additional methods to reduce temporary traffic delays and trips during peak travel hours (8:00-10:00 a.m. and 4:00-6:00 p.m.) to the maximum extent feasible.
- Typical access routes between all staging areas and the proposed Ocean Ranch Substation work areas. To the extent feasible, access routes should minimize travel on College Boulevard.
- Defining methods to coordinate with all agencies responsible for encroachment permits throughout construction to minimize cumulative lane disruption impacts should simultaneous construction projects affect shared segments/portions of the circulation system.
- Prior to the start of construction, provide (or identify the timing to provide) copies of all approved permits and agreements to the CPUC and methods to comply with all specified requirements.
- Plans to coordinate in advance with emergency service providers to avoid restricting the movements of emergency vehicles. Police departments and fire departments shall be notified in advance by SDG&E of the proposed locations, nature, timing, and duration of any roadway disruptions, and shall be advised of any access restrictions that could impact their effectiveness. At locations where roads will be blocked, provisions shall be ready at all times to accommodate emergency vehicles, such as immediately stopping work for emergency vehicle passage, providing short detours, and developing alternate routes in conjunction with the public agencies. Documentation of the coordination with police and fire departments shall be provided to the CPUC prior to the start of construction.

- Plans to coordinate in advance with property owners, if any, that may have limited access to properties due to temporary lane closures. Provisions for ensuring secondary access should be provided.
- Plans to coordinate with North Country Transit District at least one month prior to construction to minimize the impacts associated with the interruption or delays of bus transit service to Routes 315 and 316. Documentation of this coordination shall be provided to the CPUC prior to the start of construction.

Mitigation Measure for Impact to Tribal Cultural Resources

C-1 **Management of Unanticipated Discoveries of Historical Resources or Unique Archaeological Resources.** Unanticipated discovery protocols shall be communicated to project workers as part of the contractor education program. If previously unidentified cultural resources are identified during construction activities, construction work within 100 feet of the find shall be halted and directed away from the discovery until a Secretary of the Interior qualified archaeologist and tribal representative assesses the significance of the resource. The archaeologist, in consultation with the County, SHPO, any interested Tribes, and any other responsible public agency, shall make the necessary plans for recording and curating the find(s) and for the evaluation and mitigation of impacts if the finds are found to be eligible to the National Register of Historic Places or California Register of Historical Resources, or qualifies as a unique archaeological resource under CEQA Section 21083.2.

C-2 **Appropriate Treatment of Human Remains.** Upon discovery of human remains, all work within 100 feet of the discovery area must cease immediately, the area must be secured, and the following actions taken:

- The land manager/owner of the site is to be called and informed of the discovery.
- The San Diego County Coroner's Office is to be called. The Coroner has two working days to examine the remains after notification (Health and Safety Code Section 7050.5(b). The Coroner will determine if the remains are archaeological/historic or of modern origin, and if there are any criminal or jurisdictional questions. The Coroner will make recommendations concerning the treatment and disposition of the remains to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in Section 5097.98 of the Public Resources Code.
- If the Coroner believes the remains to be those of a Native American, he/she shall contact the NAHC by telephone within 24 hours. The NAHC will immediately notify the person it believes to be the most likely descendant (MLD) of the remains.
- The MLD has 48 hours to make recommendations to the land owner for treatment or disposition of the human remains. If the descendant does not make recommendations within 48 hours, the land owner shall re-inter the remains in an area of the property secure from further disturbance. If the land owner does not accept the descendant's recommendations, the owner or the descendant may request mediation by NAHC.

Per California Health and Safety Code, six or more human burials at one location constitutes a cemetery (Section 8100) and willful disturbance of human remains is a felony (Section 7052).

Based on the analysis and conclusions of the Initial Study, the impacts of the project as proposed by SDG&E would be mitigated to less than significant levels with the implementation of the mitigation measures presented herein, which have been incorporated into the Proposed Project.

Section 2

Environmental Determination and Environmental Checklist

2. Environmental Determination

2.1 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" and requiring implementation of mitigation as indicated by the checklist on the following pages.

☐ Aesthetics	☐ Agriculture & Forestry Resources	☐ Air Quality
☒ Biological Resources	☒ Cultural Resources	☐ Geology/Soils
☐ Greenhouse Gas Emissions	☒ Hazards & Hazardous Materials	☐ Hydrology/Water Quality
☐ Land Use/Planning	☐ Mineral Resources	☒ Noise
☐ Population/Housing	☐ Public Services	☐ Recreation
☒ Transportation/Traffic	☒ Tribal Cultural Resources	☐ Utilities/Service Systems
☒ Mandatory Findings of Significance		

2.2 Environmental Determination

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.

☒ 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.

☐ I find that the Proposed Project MAY have a significant effect on the environment, and an **ENVIRONMENTAL IMPACT REPORT** is required.

☐ I find that the Proposed Project may have a "potentially 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 measures based on the earlier analysis as described on attached sheets. An **ENVIRONMENTAL IMPACT REPORT** is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the Proposed Project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR, including revisions or mitigation measures that are imposed upon the Proposed Project, nothing further is required.

March 13, 2017

Andie Biggs, Project Manager
Energy Division CEQA Unit
California Public Utilities Commission

Date

Section 3

Introduction to the Initial Study

3. Introduction to the Initial Study

3.1 Proposed Project Overview

San Diego Gas & Electric (SDG&E), a regulated California utility, filed an application (A.16-07-016) with the California Public Utilities Commission (CPUC) on July 27 2016, for a Permit to Construct (PTC) the Ocean Ranch Substation Project (Proposed Project). The application was deemed complete by the CPUC on October 6, 2016.

SDG&E is proposing to construct a 69/12 kilovolt (kV) distribution substation and associated transmission and distribution lines and communications facilities. As proposed by SDG&E the project would include:

- Ocean Ranch Distribution Substation
- A 69 kV power line underground loop-in to the substation
- Four 12 kV distribution lines underground from the substation to existing local distribution lines
- A monopole with microwave antenna and associated telecommunications equipment

The Proposed Project would be located on Avenida del Oro north of Avenida de la Plata, in the Pacific Coast Business Park within the City of Oceanside, San Diego County, California. The project would provide enhanced reliability to the electric system locally and off-load some distribution currently provided from other substations in the region.

3.2 Environmental Analysis

3.2.1 CEQA Process

This Initial Study has been prepared pursuant to the California Environmental Quality Act (CEQA), the amended State CEQA Guidelines (14 CCR 15000 et seq.), and the CPUC CEQA rules (Rule 2.4). The purpose of the Initial Study is to inform decision-makers, responsible agencies, and the public of the Proposed Project, the existing environment that would be affected by the project, the environmental effects that would occur if the project is approved, and proposed mitigation measures that would avoid or reduce environmental effects.

A Mitigated Negative Declaration (MND) has been prepared based on the assessment of potential environmental impacts identified in the Initial Study. All potentially significant impacts associated with the project can be mitigated to a level below significant; therefore, an MND can be adopted by the CPUC in accordance with California Public Resources Code (PRC) Section 21080.

3.2.2 CEQA Lead Agency

The CPUC is the lead agency for review of the project under CEQA because it must make a decision whether to adopt the MND and to approve or deny the PTC.

3.2.3 Initial Study

The Initial Study presents an analysis of potential effects of the Proposed Project on the environment. The Initial Study is based on information from SDG&E's Proponent's Environmental Assessment (PEA) and associated submittals, site visits, CPUC data requests, and additional research.

Construction activities and project operation could have direct and indirect impacts on the environment. The following environmental parameters are addressed in the Initial Study based on the potential effects of the Proposed Project and potential growth-inducing or cumulative effects of the Proposed Project in combination with other projects:

- Aesthetics
- Agricultural Resources
- Air Quality
- Greenhouse Gases
- Biological Resources
- Cultural Resources
- Geology and Soils
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Mineral Resources
- Noise
- Population and Housing
- Public Services
- Recreation
- Traffic and Transportation
- Tribal Cultural Resources
- Utilities and Service Systems
- Mandatory Findings of Significance
- Corona and Induced Current Effects

The Initial Study has been organized into the following sections:

- Section 3: Introduction. Provides an introduction and overview describing the Proposed Project and the CEQA process, and identifies key areas of environmental concern.
- Section 4: Project Description. Provides an in-depth description of the Proposed Project, including construction details and methods, and presents the project objectives.
- Section 5: Environmental Analysis and Mitigation. Includes a description of the existing conditions and an analysis of the Proposed Project's potential environmental impacts, and identifies mitigation measures to reduce potentially significant impacts to less than significant levels.
- Section 6: Mitigation Monitoring Plan. Includes applicant proposed measures (APMs) and mitigation measures that SDG&&E must implement as part of the project, actions required to implement these measures, monitoring requirements, and timing of implementation for each measure.
- Appendices
  - Appendix A: References (Sources of information used to prepare the Initial Study)
  - Appendix B: Report Preparation (Lists the preparers of the Initial Study)
  - Appendix C: Landscape Concept Plan (Preliminary)
  - Appendix D: Water Quality BMP Manual
  - Appendix E-1: Geotechnical Study 2012
  - Appendix E-2: Geotechnical Study 2015
  - Appendix F: O&M Wildland Fire Prevention Plan
  - Appendix G: Biological Technical Report
  - Appendix H: Additional Special-status Species
  - Appendix I: Preliminary Jurisdictional Delineation

Section 4

Project Description

4. Project Description

San Diego Gas & Electric Company (SDG&E) proposes to construct the Ocean Ranch Substation Project (Proposed Project) in Oceanside, San Diego County, California. The Proposed Project would consist of the following: a new 69/12 kilovolt (kV) low-profile electric substation located on a 9.66-acre site on Avenida del Oro north of Avenida de la Plata; approximately 1,500 feet of underground power line duct bank to loop an existing 69 kV circuit into the new substation; four new 12 kV distribution circuits that would intercept four existing circuits in the vicinity; and a telecommunication system that would include a 40-foot monopole and microwave antenna.

4.1 Project Title

San Diego Gas & Electric Ocean Ranch Substation Project

4.2 Lead Agency Name and Address

California Public Utilities Commission
Energy Division
505 Van Ness Avenue
San Francisco, California 94102

4.3 Lead Agency Contact Person and Phone Number

Ms. Andie Biggs, Project Manager
(415) 703-3305

4.4 Project Location

The proposed Ocean Ranch Substation would be situated in the City of Oceanside, in northern San Diego County. The proposed site is approximately 4 miles south of Marine Corps Base Camp Pendleton and 6 miles east of the Pacific Ocean. The site is within the Pacific Coast Business Park, which is part of the Rancho del Oro Specific Plan area. The substation would be located entirely on land owned by SDG&E. Portions of the project's transmission and distribution lines would be installed in nearby streets as well as within the substation property. The 69 kV transmission power line that would loop into the substation would be located underground within existing SDG&E rights-of-way (ROWs) and franchise position in City of Oceanside public streets. The 12 kV distribution lines exiting the substation also would be underground. Figure 4-1 depicts the location of the Proposed Project within the North San Diego County area and Figure 4-2 illustrates the proposed substation site with project components and potential construction yard sites in the region. (Note: All figures referenced in the text are located at the end of this section.)

4.5 Project Sponsor's Name and Address

San Diego Gas & Electric Company
8830 Century Park Court, CP32A
San Diego, CA 92123

4.6 General Plan Designation

The City of Oceanside General Plan designation for the proposed substation property is Industrial. The property is within the approved Rancho del Oro Master Plan Area.

4.7 Zoning

The property is zoned IL (Limited Industrial) and PD-1 (under the Rancho Del Oro Master Plan).

4.8 Surrounding Land Uses and Setting

The 9.66-acre substation property consists of two parcels: Assessor Parcel Number (APN) 161-512-26 is 5.60 acres and APN 161-512-27 is 4.06 acres. The two triangular parcels together form the larger triangle-shaped substation site. Both parcels are flat, previously filled land. The land consists of disturbed soils with non-native vegetation. A row of young trees marks the boundary between the two parcels. The easternmost of the two parcels is somewhat higher in elevation than the western parcel. The parcels are approximately 364 feet and 375 feet above mean sea level (MSL), respectively. Following site grading and preparation, the final finished pad elevation would range from 370 feet above MSL at the southwest corner to 375 feet above MSL at the northeast side.

The proposed substation site is within the 120-acre Pacific Coast Business Park, which supports commercial, office, and light industrial uses. The business park currently is a mix of recently built structures as well as vacant, graded building lots.

The property around the Project site is largely developed. To the west, the substation site abuts Avenida del Oro. A U.S Post Office facility and a vacant lot are located across this street from the substation site, and a large Federal Express handling facility surrounded by extensive paved car and truck parking is located north of the Postal facility, near the northwest corner of the substation site. Along the north side of the site are two developed commercial properties, each with a 2-story building and off-street parking. These adjacent properties and the substation site are accessed by Rocky Point Drive, which terminates in a cul-de-sac at the north side of the substation site. TL 693 is an existing 69 kV line between San Luis Rey Substation and Melrose Substation that separates these adjacent properties from the substation project; this line bypasses the substation and would not be affected by the project. To the southeast, the substation site abuts the rear of five developed commercial properties that separate the substation site from Avenida de la Plata. These properties along Avenida de la Plata are developed with 1- and 2-story structures, off-street parking, and landscape vegetation.

The topographic relationship of the project site to its surroundings varies. Overall, the two parcels comprising the substation site have an elevation similar to the adjoining developed properties to the north on Rocky Point Drive. The site is approximately 20 feet higher than Avenida del Oro at the north end of the parcel and approximately 10 feet higher than the street at its south end. This edge of the site is separated from the street and adjacent sidewalk by a vegetated slope. To the southeast, the northern end the substation site is slightly lower than the northern most properties facing Avenida del la Plata, but slightly higher than the properties at the southern end of the site.

The nearest residential properties are in subdivisions located approximately 0.3 miles east and 0.5 miles north of the site at their nearest points. Three schools are within 1 mile of the site: Ivey Ranch Elementary School on Mesa Drive 0.6 miles to the northwest; Empresa Elementary School on Avenida Empresa 0.85 miles to the northeast; and Coastal Academy charter school on Calle Platino near Avenida

del Oro 0.22 miles to the south. Le Petite Academy, providing day care and after school programs, is approximately 0.25 miles northeast of the site on Avenida del la Plata.

Primary access to the substation site would be from the cul-de-sac on Rocky Point Drive, where two gated access points would be established. Secondary access would be provided from another gated entry point on Avenida del Oro near its intersection with Avenida de la Plata. SDG&E is requesting permission from the City of Oceanside to establish this secondary access driveway, which would be limited to SDG&E personnel.

4.9 Project Overview

SDG&E proposes to construct a new substation, with associated electrical tie lines, distribution lines, and telecommunications, as shown in Figure 4-2. The proposed substation site is owned by SDG&E and the transmission line looping into the substation would be located within existing SDG&E rights-of-way (ROWs) and franchise position within the City of Oceanside public streets. The Proposed Project would include the following primary components:

- **Ocean Ranch Distribution Substation.** A new 69/12 kilovolt (kV) low-profile substation in the City of `Oceanside. The substation would be named Ocean Ranch, and would have an initial capacity of 60 megavolt ampere (MVA) rating and an ultimate capacity of 120 MVA.
- **Power Line TL 6966 Loop-In.** An existing transmission line (TL 6966) provides an underground 69 kV circuit that extends between San Luis Rey Substation (to the west) and Melrose Substation (to the east). This existing underground line would be intercepted at the intersection of Avenida de la Plata and Avenida del Oro and extended to the proposed Ocean Ranch Substation in a new underground power line duct bank with a total length of approximately 1,500 feet. This would reconfigure the existing TL 6966 tie line into two lines, one line into the substation and one out of the substation. These lines would be designated TL6966 (San Luis Rey to Ocean Ranch) and TL 6979 (Ocean Ranch to Melrose). Figure 4-3 and Figure 4-4 are schematic drawings illustrating the existing and ultimate configuration of substations and power lines in the area, with the difference being the looping in of TL 6966 to the proposed new substation.
- **12 kV Distribution System.** Four new distribution circuits would exit the new substation and intercept four existing 12 kV circuits in the vicinity. Service to these existing 12 kV circuits would be switched to the new Ocean Ranch Substation. Approximately 4,650 feet of new 12 kV distribution line would be constructed to connect to the existing circuits. The Proposed Project also includes construction of five new manholes and one new handhole to access the new underground 12 kV distribution lines.
- **Telecommunication Systems:** A 40-foot monopole would be installed in the southwest corner of the proposed Ocean Ranch Substation property as part of a microwave radio communication system. A 3-foot-diameter antenna would be mounted on the monopole and pointed west to provide a communication link to the San Luis Rey Substation. AT&T services would enter the property from the street. A conduit duct would be installed from the substation control shelter to the property line to intercept the AT&T duct structure. Two pad-mounted pedestals, approximately 3 feet high, would be installed to enclose the communications equipment at or near the property line.

The proposed Ocean Ranch Substation would initially be constructed at a rated capacity of 60 MVA, but designed to expand to an ultimate capacity of 120 MVA. The planned initial substation load and anticipated load growth rate within the current 10-year distribution system planning horizon do not require the installation of the ultimate 120 MVA substation capacity at this time.

4.9.1 Project Objectives

SDG&E has identified four project objectives:

- Objective 1: Meet the area's existing and forecasted electric load growth.
- Objective 2: Maintain substation and circuit reliability with additional tie line and transformer capacity.
- Objective 3: Reduce area substation loading to optimum operating conditions.
- Objective 4: Locate the Proposed Project's facilities within SDG&E fee-owned property, franchise, or existing easements.

4.9.2 Purpose and Need

Within the general vicinity of the Proposed Project are three existing substations (Morro Hill, San Luis Rey, and Melrose) that feed the majority of northern San Diego County's electricity demand.

SDG&E's stated project purpose for the Proposed Project is to construct a new substation to (1) provide additional capacity to serve the existing load and the forecasted customer-driven load growth in the area; and (2) prevent potential long outages or disruption of service to SDG&E customers in the Oceanside area. The Proposed Project is needed to meet existing and forecast demand, enhance reliability, and reallocate some 12 kV service from existing substations to a new substation.

San Luis Rey Substation is a 230/69/12 kV substation located on the northwest corner of the El Camino Real and Mesa Drive intersection in Oceanside, approximately 2.3 miles west of the Proposed Project site. The substation currently has four 69/12 kV, 30 MVA distribution transformers installed and feeds the following 15 individual 12 kV distribution circuits: C190, C191, C192, C194, C198, C199, C213, C497, C498, C900, C901, C902, C903, C904, and C905. The substation is built out to its ultimate configuration with no room for expansion.

Melrose Substation is a 69/12 kV substation located on the northeast corner of the Olive Avenue and Melrose Drive intersection in Vista, approximately 2.3 miles east of the Proposed Project site. The substation currently has four 69/12 kV, 30 MVA distribution transformers installed and feeds 12 separate 12 kV distribution circuits: C205, C206, C207, C208, C209, C504, C505, C506, C507, C508, C509, and C821. The substation is built out to its ultimate configuration with no room for expansion.

Morro Hill Substation is a 69/12 kV substation located on the west side of Vandegrift Boulevard, just north of College Boulevard in Oceanside, approximately 2.8 miles north of the Proposed Project site. The substation currently has one 69/12 kV, 12.5 MVA distribution transformer installed and feeds the following 12 kV distribution circuits: C486 and C487. The substation is built out to its ultimate configuration. Due to its proximity to the Marine Corps Base Camp Pendleton to the north and west, and to the San Luis Rey River south and east, the locational constraints of Morro Hill Substation prohibit the routing of circuits north and west of the substation. As such, this substation is a land-locked radial-fed temporary substation with a one-transformer bank (12.5 MVA capacity). Although this SDG&E-owned substation property would have room for potential expansion by moving the existing fence line to install more transformers, its location inhibits the construction of more distribution circuits out of the substation and south across the San Luis Rey riverbed to the identified load center. Due to this limiting factor, Morro Hill would not be able to meet SDG&E's needs or serve the electric distribution load growth that would be served by the Proposed Project.

Existing transmission line (TL) 6966 is a 69 kV power line that would be looped into the new substation from its underground position at the intersection of Avenida de la Plata and Avenida del Oro. The existing line originates at San Luis Rey Substation and terminates at Melrose Substation. From San Luis Rey Substation, TL 6966 is an overhead double-circuit line that shares common overhead pole structures with TL 693. The lines run overhead in an easterly direction to where TL 6966 transitions from overhead to underground on a cable pole located along Avenida de la Plata west of Avenida del Oro. At a second cable pole, TL 693 turns north on overhead structures, bypassing the Ocean Ranch Substation site and eventually reaching Melrose Substation. TL 6966 continues underground east along Avenida de la Plata for approximately 0.3 miles to Avenida del Oro, where it turns south on Avenida del Oro and continues underground to Melrose Substation. The intersection of Avenida del La Plata and Avenida del Oro, where TL 6966 turns south, is approximately 270 feet from the proposed substation site's southern corner.

4.10 Project Components

Each of the Proposed Project components are discussed below.

4.10.1 Ocean Ranch Distribution Substation

The proposed Ocean Ranch Substation facility is planned to occupy the entire site (9.66 acres). The proposed substation would be a low profile design facility. Electrical equipment, a control shelter, and paved and rock-covered surfaces would be enclosed by an approximately 10-foot-tall "La Paz" or similar sandstone colored masonry perimeter wall set back from Avenida del Oro. Gates in the substation wall would have vinyl slats similar in color to the masonry wall. Driveways, stormwater management basins, a telecommunications pole and antenna, and landscaping would be located outside of the substation wall, but within the substation property. A preliminary conceptual site plan for the substation property is provided in Appendix C.

The steel structures within the substation would be comprised of galvanized steel, while the transformers, breakers, switchgear, and capacitors would be painted American National Standards Institute (ANSI) 70 Grey. The control shelter within the substation would be constructed from "La Paz" or similar sandstone color masonry blocks as the wall and would include a welded metal roof.

The initial configuration of the substation is proposed to have a capacity of 60 MVA and include the following equipment:

- Two 69 kV low profile underground power line terminations
- Two 69 kV low profile main bus sections
- Twelve 69 kV low profile disconnect switches
- Five 69 kV circuit breakers
- Two low profile 69/12 kV, 30 MVA transformer banks
- Two quarter sections of 12 kV metal clad switchgear
- Two 12 kV, 4-step, 7,200 kilovolt-ampere reactive (kVAR) capacitor banks
- One 20-foot-wide by 40-foot-long by 11-foot-tall masonry block control shelter to enclose all protection relays, controls, supervisory control and data acquisition (SCADA), and telecommunication equipment
- Two points of entry via two 30-foot-wide slide gates (main entry) from Rocky Point Drive and one 20-foot-wide slide gate (secondary access) from Avenida del Oro.

At its ultimate configuration, anticipated to be required beyond the current 10-year demand forecast, the substation is planned to be a 120 MVA, 69/12 kV low profile distribution substation. The ultimate configuration is proposed to include the following components, some of which are in the initial configuration as well:

- Four 69 kV low profile underground power line terminations
- Two 69 kV low profile main bus sections
- Fourteen 69 kV low profile disconnect switches
- Nine 69 kV circuit breakers
- Four low profile 69/12 kV, 30 MVA transformer banks
- Four quarter sections of 12 kV metal clad switchgear
- Four 12 kV, 4-step, 7,200 kVAR capacitor banks
- Two 12 kV, 4-step, 7,200 kVAR reactor banks
- One 20-foot-wide by 40-foot-long by 11-foot-tall masonry block control shelter to enclose all protection relays, controls, SCADA, and telecommunication equipment
- Two points of entry via two 30-foot-wide slide gates (main entry) and one 20-foot-wide slide gate (secondary access).

Under both the initial and ultimate configurations, each low profile transformer would contain approximately 10,400 gallons of oil (the exact amount varies by manufacturer). The proposed substation would be designed and constructed with a containment system to prevent any accidental oil leaks from leaving the substation. The global oil containment system would be designed to contain 110 percent of the oil capacity of the installed equipment containing the largest amount of oil. The containment system would be installed inside the substation.

Substation lighting would be provided by a mixture of high-pressure sodium, metal halide, and LED lights that would be installed to adhere to the following SDG&E standards:

- Provide enough light for a safe entry into and exit from the substation
- Allow for safe driving around busses/racks, corners, and roadways
- Allow for a preliminary visual inspection of the substation.

One free-standing entry light would be installed on a 7-foot high light pole at the gate in the northwest portion of the substation near Rocky Point Drive. With the exception of the gate entry light, which would remain on at night for safety, substation lighting would be on only when required for nighttime work or in an emergency. These lights would be installed at the other gates, on each side of the control shelter, and a on the interior side of the substation walls. All on-site lighting would be oriented downward to minimize glare on surrounding properties.

As described previously, an approximately 10-foot-tall masonry wall would enclose the substation. The wall would be set back from the site boundaries, except for along the rear of existing commercial properties on the southeast side of the site, where the wall would be near the property line. Exterior to the substation wall, areas not otherwise required for access driveways, a communications pole, and stormwater management facilities, would be landscaped. The landscaping would be similar in character to the existing streetscape and landscaped areas in the business park, and would include trees and shrubs. Three gates would be installed within the perimeter wall to provide primary and secondary access to the

substation. The gates would be constructed from chain-link material and would include vinyl slats similar in color to the wall. Barbed wire would be installed horizontally along the interior of the wall and gates so as not to be visible from the exterior of the substation. The primary access to the substation would be from Rocky Point Drive via the existing cul-de-sac. The secondary access to the substation would be from Avenida del Oro on the southwest side of the substation property. See Figures 4-2 and 4.3. Appropriate signage would be posted on the substation wall and gates, in accordance with federal, state, and local safety regulations.

The approximately 20-foot-wide access road within the proposed substation would be asphalt-paved. The road would connect the primary and secondary access to the control shelter, which would be located in the center of the substation. This interior road would be approximately 940 feet long, occupying approximately 0.4 acres and circling various installed equipment within the interior perimeter wall.

The proposed Ocean Ranch Substation layout, planned access routes, driveways, and interior access road are illustrated in Figure 4-2 and in Appendix C. Details on the initial configuration of the proposed Ocean Ranch Substation are shown on Figure 4-5, with the ultimate configuration shown on Figure 4-6. The substation will be a low-profile design, as illustrated in Figure 4-7. The substation's electrical equipment would be housed within a walled area. However, for illustration purposes one view in Figure 4-7 shows how the substation would appear viewed from the west without the wall in place. The other view illustrates the substation as viewed from Rocky Point Drive with the wall in place and the upper part of the equipment visible beyond.

Site development includes:

- Site improvements for the 69/12 kV substation pad and future use area directly adjacent to the substation within the perimeter wall;
- Minimal retaining walls as needed;
- Replacement of the existing temporary desilting basins with permanent construction of two flow-through planter basins exterior to the substation wall;
- Storm drain system and connection to proposed flow-through planter basins;
- Approximately 1,200 linear feet of masonry block screening wall; and
- 18,800 square feet of access roads and/or driveways.

4.10.2 Power Line TL 6966 Loop-In

In order to connect in to the proposed Ocean Ranch Substation, the underground segment of existing power line TL 6966 would be intercepted at the intersection of Avenida del Oro and Avenida de la Plata and extended underground in a northerly direction along Avenida del Oro and into the proposed substation site. The new underground power line would be approximately 1,500 feet long, of which approximately 1,000 feet would be within the public road ROW. The remainder would be within SDG&E ROW or franchise position. The proposed underground segment would establish two circuits into the Ocean Ranch Substation. The underground 69 kV power line connecting the proposed Ocean Ranch Substation and San Luis Rey Substation would continue to be identified as TL 6966. Two vaults, one per underground power line, would be installed within the proposed substation property (Figure 4-2). An offset vault design configuration (one circuit per vault) would be implemented to maintain reliability and for maintenance. The underground 69 kV power line between the proposed Ocean Ranch Substation and Melrose Substation would be relabeled as TL 6979.

The two final loop-in transmission line re-configurations would be as follows:

- Re-configured TL 6966 – San Luis Rey Substation to Ocean Ranch Substation rather than Melrose Substation (overhead and underground).
- Re-configured TL 6979 – Melrose Substation to Ocean Ranch Substation rather than to San Luis Rey Substation (underground)

Open trench construction would be used to install the new loop-in underground between the Avenida del Oro/Avenida de la Plata intersection and the Ocean Ranch Substation. During construction, the trench for the loop-in line would be 3 feet wide, and the construction corridor would be approximately 20 to 30 feet wide. This is expected to require the temporary closure of one to two traffic lanes; entire road closures are not anticipated. Figure 4-8 illustrates a typical 69 kV underground vault and Figure 4-9 a typical 69 kV underground duct bank.

A minor segment of existing underground 69 kV power line would be abandoned at the intersection of Avenida del Oro and Avenida de la Plata to accommodate the new interception points for the proposed underground transmission lines. TL 694, a 69 kV line between Morro Hill and Melrose Substations, shares the existing duct bank with existing TL 6966; it would not be affected.

One pulling site would be required to pull underground cable. The pulling site would be approximately 50 feet long by 30 feet wide and would be on the substation site. No additional grading is anticipated at the pulling site.

4.10.3 12 kV Distribution System

The Proposed Project would include installing approximately 4,650 feet of new underground duct banks to facilitate transferring four existing 12 kV distribution circuits from existing substations to the proposed Ocean Ranch Substation. Each underground duct bank would be comprised of four 8-5-inch diameter polyvinyl chloride (PVC) conduits encased in concrete, as shown in Figure 4-10. The conduit duct packages for the 12 kV circuits and telecommunications would be arranged in two columns of four conduits each, spaced vertically and horizontally from the conduit centerline by 7.5 inches.

The proposed underground segment of the 12 kV distribution line would require installation of five new manholes and one new handhole. Two new manholes would be located within the proposed Ocean Ranch Substation site, two would be located within franchise positions along Avenida del Oro adjacent to the substation site, and one would be just south of the intersection of Avenida del Oro and Windansea Streets, north of the substation site. One new handhole would be located at the southern end of the proposed substation site. The exact locations will be determined during final engineering design.

The horizontal separation between adjacent duct packages would be 5 feet from centerline to centerline and the duct package would have an average depth of approximately 5 feet. The conduit duct packages for the 12 kV lines would continue and intercept existing conduit in Avenida del Oro. All distribution circuits would be installed underground outside of the proposed Ocean Ranch Substation within franchise position. Figure 4-11 illustrates a typical 12 kV underground manhole.

The new 12 kV distribution line going north on Avenida del Oro would intercept existing handholes at Windansea Street. Four 12 kV underground distribution circuits would be constructed. All four underground distribution circuits would be routed to five proposed manholes and one handhole, extending along Avenida del Oro tying into the existing underground system serving the area.

A portion of existing 12 kV circuits would be offloaded to the proposed new circuits from the Ocean Ranch Substation. The offloaded circuits would comprise existing line C509 from Melrose and existing lines C903, C904, and C905 from San Luis Rey. Four initial duct packages would be installed: two would head south and two would go directly west onto Avenida del Oro. Table 4-1 summarizes the relocated 12 kV circuits and Table 4-2 identifies the 12 kV distribution system structures proposed as part of the substation project.

Table 4-1. Distribution Relocation Summary

Existing Distribution Circuit Number	Approximate Interception Point	Proposed Distribution Circuit Number
C509	800 feet	C1801
C903	800 feet	C1802
C904	1,400 feet	C1803
C905	2,500 feet	C1804

Source: SDG&E 2015.
Notes: Table contents based on preliminary engineering and subject to change.

Table 4-2. Distribution System Structures

Structure Type	Amount Installed
12 kV underground distribution circuits	4
Underground duct banks	4,650 feet
Manholes	5
Handholes	1

Source: SDG&E 2015.
Notes: Table contents based on preliminary engineering.

- The first 12 kV circuit from Ocean Ranch Substation, C1801, would be routed from the northern manhole on Avenida del Oro south to a new pad-mounted switch located on Avenida del Oro. C1801 would ultimately connect to existing C509.
- The second circuit, C1802, would be routed from the northern manhole on Avenida del Oro north to a new pad-mounted switch where it would ultimately connect to existing C903.
- The third circuit, C1803, also would be routed from the northern manhole on Avenida del Oro north to a new padmount switch and would ultimately connect to existing C904.
- The fourth circuit, C1804, also would be routed from the northern manhole on Avenida del Oro north to a new padmount switch located on Old Grove Road north of Windansea Street and would ultimately connect to existing C905.

The Proposed Project would provide additional circuits to facilitate load transfers and distribute circuit load. The electric distribution circuits exiting the substation would be installed in public ROW or within the franchise position of City of Oceanside public streets. The proposed 12 kV system would be designed to accommodate a 120 MVA substation. The configuration of the proposed four circuits would cut over to existing circuits originating from the proposed Ocean Ranch Substation and have the following equipment installed:

- 7,000 feet of trench conduit 8-5 (improved street) including manholes.
- 2,000 feet of cable and connections no. 1000 kcmil copper (CU) 3 ph 15 kV.
- 3,500 feet of cable and connections no. 1000 kcmil aluminum (AL) 3 ph 15 kV.
- Four switch trayer 4-way with SCADA padmount.
- Four capacitor pad-mount SCADA 1,200 kVAR.

4.10.4 Telecommunication Systems

The telecommunication services that would be installed would facilitate remote monitoring, control, and operation of substation equipment and provide telecommunication protection relaying, telemetry, telephone, modem, access control, and video monitoring. In order to connect the proposed Ocean Ranch Substation to these substation systems, fiber optic cable, microwave radio, and AT&T services would be installed.

The fiber optic cable would be installed within the underground duct structures connecting the proposed Ocean Ranch Substation and the existing San Luis Rey Substation. A 40-foot monopole would be installed in the southwest corner of the proposed Ocean Ranch Substation site for the microwave radio communication system. A 3-foot-diameter antenna would be mounted on the monopole and pointed west to provide a communications link to the San Luis Rey Substation. A conduit duct would be installed on site between the monopole and the substation control building. A typical drawing of a typical telecommunication monopole is provided in Figure 4-12.

AT&T services would enter the site from a public street near the substation site. A conduit duct would be installed from the substation to the property line to intercept the AT&T duct. Two pad-mounted pedestals, approximately 3 feet high, would be installed to enclose the communications equipment, which would be located at or near the property line. Figure 4-13 illustrates the typical underground duct package used by SDG&E.

4.11 Project Construction

This section describes typical construction methods for substations and underground facilities. Staging and work areas also would be required for construction of new facilities, removal existing facilities, and storage and staging of construction equipment and materials.

4.11.1 Work Areas

In addition to space at the substation site, temporary workspace would be required for each Proposed Project component in order to facilitate construction. These anticipated workspace requirements include staging yards, storage yards, access roads, pull sites, and underground work areas, as described in detail in the following sections and summarized in Table 4-3. Temporary work areas would all be accessed by construction equipment using existing access roads. All work areas would be restored as near to preconstruction conditions as possible following the completion of construction.

Table 4-3. Summary of Temporary Work Areas

Work Area Type	Estimated Number	Estimated Total Area (acres)
Staging Yards	4 areas	17.50
Underground Construction (69 kV loop-in)	1,500 feet (length)	1.10
Underground Construction (12 kV distribution line)	4,650 feet (length)	3.20
Total		21.80

Source: SDG&E 2015.

Staging Yards

In addition to the substation site, SDG&E has identified potential staging yards for the Proposed Project. These include existing, previously used staging yards as well as large undeveloped areas near the Proposed Project that have been previously disturbed and/or graded. While SDG&E has identified potential construction staging yards, there is no guarantee that all the identified staging yards would be available when the Proposed Project is set to begin construction because the Proposed Project is in an area with

several vacant lots that are currently available for development. If the identified staging yards are not available at the time of construction, several alternate locations within the general vicinity are potentially available. These sites possess similar characteristics (graded, disturbed habitat, industrial land uses), that would satisfy project needs. Prior to use, SDG&E would be required to ensure that these alternative parcels would be reviewed for environmental sensitivity such as sensitive species or habitats to ensure that their use would not result in any significant environmental impacts.

Four staging yards have been identified, in addition to the substation property. They are shown in Figure 4-2. These would accommodate the majority of construction equipment, vehicles, personnel, and material staging, as discussed below. Combined, these temporary staging areas cover approximately 17.5 acres:

- The Corporate Center staging yard is approximately 11.5 acres of disturbed habitat located on the north side of Ocean Ranch Boulevard, south of Mesa Drive/Pacifica Way.
- The USPS staging yard is approximately 5 acres of undeveloped land, located just south of the U.S. Postal Service building on Avenida del Oro, to the west of Ocean Ranch Substation site. This area is comprised of non-native grassland and disturbed non-native grassland.
- The San Luis Rey staging yard is approximately 0.5 acres of paved, fenced area with an existing access road located next to the existing San Luis Rey Substation.
- The Melrose staging yard is approximately 0.5 acres of paved, fenced area with an existing access road located next to the existing Melrose Substation and is approximately 3 miles from the proposed Ocean Ranch Substation.

In addition to the substation property, staging yards may be used for refueling vehicles and construction equipment by a mobile fueling truck. In addition, other activities performed at the staging areas may include assembly of project components, open storage of material and equipment, construction trailers, portable restrooms, parking, and lighting and may include generator use for temporary power supply. Construction workers typically would meet at the staging yard each morning and park their vehicles at the yard. In-ground fencing would be installed at the staging yards where it is not already installed. Gravel, class II base, or other best management practices (BMPs) may be used to line the ground at staging yards to avoid creation of unsafe mud conditions and sediment transport off-site.

Existing SDG&E Material Storage Yards

Materials would be initially delivered to existing SDG&E facilities, from where they would be transported to the Proposed Project site or a staging area. No improvements would occur at these existing SDG&E facilities as a result of the Proposed Project. The existing material storage yards that would be used include:

- Kearny Construction and Operation Center, located on approximately 18.6 acres in San Diego County. It is between Interstate 15 and State Route 163, on Clairemont Mesa Boulevard (Figure 4-14). It is accessed from Overland Avenue, and is approximately 28 miles from the proposed Ocean Ranch Substation.
- North Coast Construction and Operations Center is approximately 15.2 acres, located in Carlsbad, near the intersection of Carlsbad Boulevard and Cannon Road. (Figure 4-15). It is approximately 6 miles from the proposed Ocean Ranch Substation.

- Northeast Construction and Operations Center is approximately 25.1 acres, located in Escondido, north of Auto Park Way and south of West Mission Road (Figure 4-16). It is located approximately 12 miles from the proposed Ocean Ranch Substation.

These existing SDG&E facilities are paved and fenced land, with security. Upon the completion of final engineering, additional existing SDG&E facilities may be identified for use.

Access Roads

Construction would take place primarily within the existing SDG&E fee-owned property, franchise, or existing easements. Most work areas are accessible by vehicle in paved/developed areas or other existing disturbed areas. Vehicles would remain within existing access roads, previously disturbed areas, and designated temporary work areas, where feasible.

The temporary impact areas may vary because the positioning of construction vehicles, equipment, and materials cannot be fully anticipated prior to construction, as locations are dependent upon the contractor safely performing the work.

Pulling sites

Pulling sites are temporary construction areas used for pulling underground cable. The underground cable installation process would require a pull site located beside the proposed and existing underground vaults. This pull site would be approximately 50 feet long by 30 feet wide and would be located within the underground trench/vault work areas within the substation property. A typical drawing of the proposed underground construction activities in roadways has been included as Figure 4-17.

69 kV and 12 kV Underground Line Work Areas

Installation of new duct banks and vaults would require temporary workspace within Avenida del Oro and Avenida de la Plata. The underground trench work area would be approximately 20 to 30 feet wide and would be generally centered on the power line alignments. The underground trench work area would be adjusted to comply with traffic control permits to maintain traffic flow through construction areas as necessary.

All trenching and vault work areas would be located within City of Oceanside streets and SDG&E fee-owned property, franchise positions, or existing easements. These work areas would also support all cable installation activities, as well as the associated construction equipment to perform the work. A total of approximately 4,650 linear feet of workspace would be required for the proposed 12 kV underground distribution lines, which requires approximately 3.2 acres of temporary use (assuming a work area width of 30 feet for installation of a duct bank). A total of approximately 1,500 linear feet of work space (or approximately 1.10 acres, assuming a work area width of 30 feet for duct banks, 30 feet wide by 30 feet long for vault installation, and 30 feet wide by 50 feet long for the pulling site) would be required to install the proposed 69 kV underground power line loop-in. Site preparation in an underground trench work area and vault installation work areas would include marking out the proposed trench alignment and offsets to define the work area, as well as setting up traffic controls prior to construction.

4.11.2 Construction Methods

Construction of Ocean Ranch Substation

Site Development

Because the proposed substation site currently is disturbed land, minimal vegetation clearing would be required for construction. Site development activities would commence with clearing and grading of the site based on the recommendations of the geotechnical investigation, which would determine the appropriate onsite pad elevation and foundation support in order to maintain adequate site drainage. Approximately 18,100 cubic yards would be excavated during site grading, of which 8,000 cubic yards would be used as fill/embankment within the site and 10,100 cubic yards would be exported from the site. Onsite material would be reused to the extent possible, as recommended by a Geotechnical Engineer.

Approximately 16,600 cubic yards of select fill would be imported to help achieve the site design elevation. For construction of the flow-through planters, approximately 2,200 cubic yards of bioretention soil mix and 1,500 cubic yards of gravel would be imported and placed. Site grading would be accomplished primarily with bulldozers and backhoes, which would condition, cut and fill, and blend the native soil and imported material to the desired pad elevations.

Next, it is expected that approximately 7,200 cubic yards of Class II aggregate base and 1,200 cubic yards of asphalt would also be installed at the proposed Ocean Ranch Substation. The substation pad would be surfaced primarily with Class II aggregate base, and primary access roads would be paved with asphalt. Construction of the boundary walls would begin once grading is complete.

Construction of the proposed Ocean Ranch Substation would require importing approximately 28,700 cubic yards of material (select fill, bioretention soil mix, gravel, aggregate, and asphalt) and exporting 10,100 cubic yards of excavated material. Haul trucks would operate periodically, as needed, during the grading phase of construction. In general, an average of approximately 20 truck trips per day for an estimated 6 months would be required to complete the proposed substation grading and boundary wall installation. In addition, approximately 5 additional trips per day are anticipated for the delivery of materials and equipment for the duration of construction, based on current design criteria.

Primary access to the substation site during construction would be by way of Rocky Point Drive with secondary access from Avenida del Oro.

Below-Grade Construction

Following site development, below-grade work would begin, which would include the construction of structure and equipment foundations, underground ducts, and the ground grid, and erection of the control shelter. Concrete trucks, backhoes, loaders, ditch-witches, and skid steer loaders would be used for the below-grade work.

Above-Grade Construction

Once the grading activities, below-grade construction, and erection of the wall and control structure are complete, major equipment and structures would be installed and anchored to their respective foundations. The following steps would be taken to install the above-grade equipment:

- The 69 kV low profile bus section steel would be erected.
- The 69 kV circuit breakers would be installed on their foundations.

- Relay panels, controls, and station lighting and power would be installed in the control structure.
- The ground grid, control, communication, and power ducts would be installed and wiring of the equipment controls and protection devices would follow.
- The 69/12 kV transformers would be installed on their foundations, assembled, and filled with oil.
- The 12 kV switchgear and capacitors would be installed on their foundations.

Power line loop-in and distribution circuits would be completed and connected inside the substation following final installation of the substation structures and equipment. Communication equipment would be connected inside the control shelter. Testing would be performed on all equipment after the equipment is installed and wired, and before placing it in service. Equipment would be placed in service once the circuits and power line are ready to be energized and are tested outside the substation.

Portable cranes and heavy hauling trucks would be employed to bring in the 69/12 kV transformers. Substation crews, assist vehicles, forklifts, man lifts, and boom trucks would be used to construct the substation. Oil-processing equipment and vacuum pumps would be used to fill transformers with oil. Pick-up trucks and vans would be used during the wiring and control testing of the substation equipment. Line trucks, assist vehicles, and cable dolly trailers would be used for construction of the power line and distribution circuits.

A temporary tap to an existing distribution line may be installed to provide electrical service to the substation work area during construction. This temporary tap may be used to power construction trailers, lighting, or small hand-held machinery or tools until the substation is energized.

Installation of Underground 12 kV Distribution Line and 69 kV Loop-In

Trenching

Coordination with the City would occur to secure encroachment permits for trenching in the City's ROW, as required. It is anticipated that between one and two lanes of Avenida del Oro and Avenida de la Plata would be closed occasionally during trenching activities. During the closures, traffic controls would be implemented as required by the encroachment permit(s).

Trenching operations would be staged in intervals as allowed by any permit requirements. The spoils generated by excavation activities would be transported to an SDG&E-approved disposal site. At any one time, open trenches would not exceed that required to facilitate installation of the duct bank. Steel plating would be placed over the trenches to maintain vehicular and pedestrian traffic across areas that are not under active construction.

The duct bank would be installed using open-cut trenching techniques. The typical trench dimensions for installation of each duct bank would be 3 to 6 feet deep and 2 to 7 feet wide, depending on the duct bank configuration. Depths may vary depending on soil stability and the presence of existing substructures. The trench would be widened and shored where necessary to meet California Occupational Safety and Health Administration (Cal/OSHA) requirements. If trench water is encountered, trenches would be dewatered using a portable pump, and the water would be disposed of in accordance with acquired permits.

Throughout trench excavation and installation of the duct bank and vaults in roadways, removed asphalt and concrete would be transported to an approved off-site facility. Excavated soils not suspected to be impacted by contamination would be reused to the extent feasible or disposed of at an appropriate facility. Should soil that is stained, odorous, or otherwise suspect be encountered during trenching activ-

ities, SDG&E would sample in place, test, profile, and transport this material to an appropriately permitted disposal facility in accordance with applicable federal, state and local laws and regulations.

The number of truck trips to transport excavated materials to storage yards and/or disposal facilities would vary based on the rate of the trenching, the area excavated to install the vaults, and the proximity of the storage yards/disposal facilities to the ROW. For purposes of this Proposed Project, approximately 5 to 10 truck trips per day would be required during trenching activities at one site. Jackhammers may be used to break up sections of concrete that saw-cutting and pavement-breaking machines cannot reach. Other miscellaneous equipment may include a concrete saw, backhoe, excavator, roller compactor, water trucks, various paving equipment, and standard 1-ton pick-up trucks.

As described previously, traffic controls would be implemented to direct local traffic safely around work areas. SDG&E would coordinate provisions for emergency vehicle and local access with the City of Oceanside as necessary.

Duct Bank Installation

Duct banks are comprised of a number of separate conduits. Duct banks are used to consolidate cabling and secure circuit conduits below ground. As the trenches for the underground duct banks are completed, SDG&E would install empty conduits separated by spacers and then pour concrete around the conduits to form the duct banks. The duct banks would typically consist of 8-inch-diameter conduits (which would house the electrical cables that would be pulled into the conduits), and 2-inch-diameter conduits for the telecommunications cable that would be used for system protection and communication. See Figure 4-9 and Figure 4-10 for illustrations of typical 69 kV and 12 kV duct banks.

Once the conduits are installed and encased, a fluidized thermal backfill would be used to fill most of the remainder of the trench. Finally, an aggregate road base or backfill of slurry concrete with an asphalt concrete cap would be installed to restore the road in compliance with local requirements. As the completed trench sections are being restored, additional trench would be opened farther down the street. This process would continue until the distribution circuits are completed. Each duct bank would have a minimum of 36 inches of cover. Larger trenches would be excavated where vaults are installed, as described in the subsection that follows.

Where a distribution duct bank would cross other substructures that operate at normal soil temperature (e.g., gas lines, telephone lines, water mains, storm drains, and sewer lines), a minimal radial clearance of 12 inches would be required. In instances where a duct bank would be installed parallel to other substructures, a minimum radial clearance of 24 inches would be required. Ideal clearances of 2 to 5 feet are preferred. Where duct banks cross or run parallel to substructures that operate at temperatures significantly exceeding normal soil temperature (e.g., other underground power line circuits, primary distribution cables, steam lines, and heated oil lines), additional radial clearance may be required. All work would be in conformance with SDG&E's current construction and operating practices.

Manhole Installation

Manholes would be constructed to provide access to the circuit for operations, maintenance, and repair activities. SDG&E would excavate and install preformed concrete manholes during trenching for duct banks for the underground power line. The manholes would be used to pull cable through the conduits and splice the cables together during installation. During operation, the manholes would provide access to the underground cables for maintenance, inspections, and repairs.

Manholes would be constructed of prefabricated steel-reinforced concrete and designed to withstand the maximum credible earthquake in the area and heavy truck traffic loading. Installation would occur over a 1-week period beginning with excavation and shoring of the manhole pit followed by delivery and installation of the manhole, filling and compacting the backfill, and repaving the excavated area where necessary.

Vault Installation

SDG&E would excavate and install preformed concrete splice vaults during trenching for the duct banks inside the substation property. The proposed trench alignment and vault locations are shown on Figure 4-2. The installation of each vault would require an excavation measuring approximately 11 feet by 7.5 feet by 29 feet. Initially, the vaults would be used to pull cable through the conduits and splice the cables together during construction. During operation, the vaults would provide access to the underground cables for maintenance, inspections, and repairs.

Vaults would be constructed of prefabricated, steel-reinforced concrete and designed to withstand the maximum credible earthquake in the area and traffic loading. The installation process for each vault would occur over a 1-week period, beginning with excavation and shoring of the vault pit, followed by delivery and installation of the vault, filling and compacting the backfill, and repaving the excavated area where necessary.

Cable Pulling, Splicing, and Termination

After installation of the conduit, SDG&E would install the cables in the duct banks. Each cable segment would be pulled into the duct bank, spliced at each of the vaults along the route, and terminated at the proposed Ocean Ranch Substation. To pull the cable through the ducts, a cable reel would be placed at one end of the section and a pulling rig would be placed at the other end. A larger rope would then be pulled into the duct using a pull line and would be attached to the cable-pulling eyes to pull the cable into the duct. A lubricant would be applied to the cable as it enters the duct to decrease friction during pulling.

Splicing typically takes 12 to 16 hours to complete. The cables would rise out of the ground and terminate within the substation.

Dewatering

No dewatering is anticipated during construction of the underground 69 kV loop-in or the distribution circuits; however, SDG&E would acquire coverage under the General Permit for Stormwater Discharges Associated with Construction Activity (Construction General Permit) from the State Water Resources Control Board (SWRCB) and prepare a Stormwater Pollution Prevention Plan (SWPPP) prior to construction. The SWPPP would address any potential discharges in the event that dewatering is required. The SWPPP would detail project information, dewatering procedures, stormwater runoff prevention control procedures, monitoring and reporting procedures, and BMPs. Bentonite or similar stabilizing materials may be used to support foundation installation when water is present within the excavation.

Should dewatering be necessary, the following dewatering procedures would be implemented during construction:

- A submersible pump would be installed.
- Groundwater would be pumped to a desiltation tank (e.g., Baker tank). Baffles would be installed in the tank to increase sedimentation.

- Water quality testing of encountered groundwater would be performed to ensure compliance with the RWQCB National Pollutant Discharge Elimination System requirements. If water quality levels do not meet permit requirements, additional Baker tanks, or treatment, or filtering may be required.
- Treated water would be reused in compliance with permit requirements or disposed of at an approved SDG&E disposal site.

Rock-Splitting and Blasting

The substation site is on fill and the off-site trenching would be in existing previously disturbed ROW. Therefore, it is anticipated that blasting would not be required to complete construction of the Proposed Project. However, if significant or dense rock is encountered, blasting could be required. In most instances, if rock is encountered during excavation, a hydraulic rock drilling and splitting procedure (rock-splitting) may potentially be used to minimize trenching or drilling time, depending on site-specific conditions. The procedure involves drilling a hole in the rock and inserting a nonblasting cartridge of propellant. The cartridge is mechanically initiated by an impact generation device. This hydro-fracturing effect causes controlled tensile crack propagation in the rock and does not result in flyrock, noxious fumes, or ground vibrations.

In the event that rock blasting is used during construction where solid rock is present and where the hydraulic rock drilling and splitting procedure would be ineffective, the following procedure would be used to minimize both drilling time and noise impacts. The procedure involves drilling approximately 3-inch-diameter blast holes to the full depth of the shaft and inserting explosives. Blasting caps are connected, and a nonelectric detonator is employed. Flyrock protection is installed prior to blasting, and seismographs are placed to measure and record peak particle velocity and air blast levels at various distances from the blast site. Dust control would include a combination of steel plate covering, geotextile fabric with chain-link fence covering, and wetting the blasting surface. If blasting is used with the Proposed Project, the blasting contractor would be required to obtain a blasting permit and explosive permit per applicable local regulations.

Site Cleanup

Following the completion of construction, SDG&E would restore all areas that are temporarily disturbed by Proposed Project activities (including pulling sites and staging areas) to near preconstruction conditions. Restoration would include grading and restoring sites to original contours and reseeding, as appropriate. Where land is rented from private land owners (such as staging yards), post-construction restoration may be completed in consultation with the landowner. All post-construction restoration would be in compliance with the Project's SWPPP, which would be prepared pursuant to applicable stormwater regulations. In addition, all construction materials and debris would be removed from the Proposed Project area and recycled or properly disposed of off-site. SDG&E would conduct a final survey to ensure that cleanup activities are successfully completed as required.

All areas that are temporarily disturbed by the underground power line loop-in installation activities would be restored as near to preconstruction conditions as possible, following completion of construction. Restoration would involve the removal of all construction debris for recycling or disposal off-site and repaving, as appropriate. SDG&E would complete the following as part of the final construction activities:

- Restore all removed curbs, gutters, and sidewalks.
- Repave all removed or damaged paved surfaces.

- Restore landscaping or vegetation as necessary.
- Replace any damaged or removed fencing.
- Remove all construction materials from the construction site.

Outage Coordination

SDG&E would coordinate line outages in order to maintain system reliability and construction personnel safety. Based upon preliminary engineering, SDG&E anticipates only minor interruptions of service to customers during construction tie-ins.

4.11.3 Construction Equipment and Personnel

Construction equipment would include bulldozers, excavators, loaders, graders, and trucks for excavating, compacting, and hauling. All exported soil and new fill would be transported using street-legal dump/loader trucks. Concrete trucks, backhoes, ditch-witches, and skid steers would be used for the foundation and below-grade work. Portable cranes and heavy hauling trucks would be employed to deliver the 69/12 kV transformers. Substation crews, assist vehicles, forklifts, man lifts, and boom trucks would be used to construct the substation. Underground line trucks, assist vehicles, and cable dolly trailers would be used for construction of the 69 kV loop-in and distribution circuits. Pick-up trucks and vans would be required during the wiring and control testing of the substation equipment. Table 4-4, lists standard construction equipment that could be used, including the phase of the project, duration, type of equipment, quantities, and hours per day.

SDG&E primarily would use its own workforce for construction, but would supplement the workforce from an approved contractors' pool of qualified workers, as needed. It is anticipated that a peak of up to 40 workers would be employed during the site development phase of the Proposed Project. Approximately 33 workers would be required for the grading and site preparation. An average of approximately 12 workers are expected to be needed during the foundation and below-grade work. Construction of the substation is expected to require an average of 24 workers. Installation of the power line loop-in would require between 14 to 20 workers. Final testing and checkout would require 9 electricians and/or engineers. Crews are anticipated to work Monday through Saturday from 7:00 a.m. to 5:00 p.m.

Table 4-4. Standard Construction Equipment and Usage

Project Phase	Phase Duration	Vehicle/Equipment Type	Quantity Required	Hours Per Day Operating at Site
Temporary Staging Yard – Site Preparation	1 Week	Dump Truck	3	6
		Rubber Tired Loader	1	6
		Backhoe	1	6
Proposed 69/12 kV Substation – Site Development and Mass Grading[1]	3 Months	D5K Dozer	1	6
		D8T Dozer	1	6
		140H Blade	1	6
		966 H Loader	1	6
		834 Rubber Tired Dozer	1	6
		Dump Truck (12 CY)	25	7
		Asphalt Truck	8	1
		Maintenance Truck	1	1

Table 4-4. Standard Construction Equipment and Usage

Project Phase	Phase Duration	Vehicle/Equipment Type	Quantity Required	Hours Per Day Operating at Site
		657E Scraper or 637E Scraper	1	7
		289C Track Skid Steer	1	4
		Excavator	1	6
		430E Rubber Tire Backhoe	1	6
		Ride On Roller Compactor	1	7
		Ditch-witch	1	6
		John Deer 210E Skip Loader	1	3
		2,000 Gallon Water Truck (2)	1	7
Proposed 69/12 kV Substation – Site Development and Finish Grading[1]	2 Months	D5K Dozer	1	6
		D8T Dozer	1	6
		140H Blade	1	6
		966 H Loader	1	6
		834 Rubber Tired Dozer	1	6
		Maintenance Truck	1	1
		657E Scraper (2) or 637E Scraper (2)	1	7
		289C Track Skid Steer	1	6
		430E Rubber Tire Backhoe	1	6
		Ride On Roller Compactor	1	7
		John Deer 210E Skip Loader	1	4
		2,000 Gallon Water Truck (2)	1	4
Proposed 69/12 kV Substation – Retaining/Boundary Wall Construction	2 Months	Skytrack Forklift	1	2
		Bobcat Skid Steer Loader	1	6
		Excavator	1	9
		Water Truck	1	9
		Car/Pick-up Truck	5	1
		Maintenance Truck	1	3
		Delivery Truck	3	1
		Walk-behind Compactor	3	8
		Motor Grader	1	8
		Compactor	2	8
		Front-end loader (IT28)	3	8
		Skip Loader	1	7
		Rubber Tire Backhoe	1	7

Table 4-4. Standard Construction Equipment and Usage

Project Phase	Phase Duration	Vehicle/Equipment Type	Quantity Required	Hours Per Day Operating at Site
Proposed 69/12 kV Substation – Driveways/Sidewalks (AC Paving)	2 Months	AC Paver	1	6
		Bobcat Skid Steer	1	5
		Skip Loader	1	5
		Steel Drum Roller	2	6
		Backhoe	1	6
		Loader	2	6
		Dump Truck (20 CY)	2	3
Proposed 69/12 kV Substation – Below-Grade Construction	6 Months	Bobcat Skid Steer Loader	1	4
		Water Truck	1	3
		Concrete Truck	15	0.5
		Ditch-witch	1	6
		938H Loader	1	6
		Rubber Tire Backhoe	1	7
		305 Mini Excavator	1	7
Proposed 69/12 kV Substation – Equipment Installation	6 Months	Boom Trucks	2	6
		Manlift	1	6
		Bucket Truck	4	5
		Oil Rig (Trailer with Generator)	1	24
		Cable Dolly (Trailer)	1	No Engine
		Pulling Rig (Trailer)	2	No Engine
		Water Truck	1	2
69 kV Underground Power Line – Duct Bank Construction, Vault and Cable Installation	3 Months	Backhoe	1	7
		Flatbed Truck	1	1
		Dump Truck	2	3
		Water Truck	1	1
		Air Compressor	1	7
		Pulling Rig	1	1
		Air Truck	1	0.2
		Boom Truck	1	0.2
		Bucket Truck	1	0.2
12 kV Distribution – Trenching and Conductor Installation	3 Months	Line Truck	1	0.1
		Puller	1	2
		Reel Trailer	1	1
		Splice Truck	1	1
		Pick-up Truck	1	1
		Water Truck	1	2

Table 4-4. Standard Construction Equipment and Usage

Project Phase	Phase Duration	Vehicle/Equipment Type	Quantity Required	Hours Per Day Operating at Site
		Pulling Rig	1	0.3
		Forklift	1	0.2
		Wire Truck	1	0.2
		Boom Truck	1	0.2
		Concrete Saw	1	0.5
		Pick-up Truck, 1-2 Man	3	1
		Pick-up Truck, Crew Cab	4	1
		Flatbed Truck	4	1
		Crane	1	0.5
		Bobcat Skid Steer Loader	1	6
		Backhoe	2	7
		Trackhoe	1	1
		Dump Haul Truck	5	6
		Pick-up with Saw Cutter Trailer	1	0.1
		Concrete Truck	9	0.7
		Asphalt Dump Truck	2	0.2
		Asphalt Paver	1	0.5
		Steel Drum Roller	1	0.1
		Dump Trucks with Compressor and Emulsion Sprayer	1	0.2
Telecommunication System Extension – Duct Bank Construction, Vault and Cable Installation	1 Month	Backhoe or Rockwheel	1	7
		Dump Trucks (20 CY)	2	0.2
		Skid Steer Loader	1	7
		Concrete Truck	4	0.7
Energization – Testing and Commissioning	1 Month	Relay Telecommunication Vans	3	3
Temporary Staging Yard – Clean-Up	1 Week	Dump Truck	1	2
		Flatbed Truck	1	2
		Backhoe	1	7

1 - Mass grade and finish grade involve the same type, quantity, and hours of operation for a majority of the off-road equipment. The same equipment used for mass grade will also be used for finish grade.

Proposed Construction Schedule

SDG&E estimates that construction of the Proposed Project would take approximately 20 months to complete, depending upon unforeseen or unpredictable factors such as weather and required transmission outages. Proposed construction is scheduled to occur on or about October 1, 2017, and run through June 2019. The proposed construction schedule, outlined by component, is summarized in Table 4-5. The dates shown are based on permitting estimates and approvals, and are subject to change.

Transformer oil filling is a continuous activity once started and may require round the clock work (3 to 5 days per transformer).

Table 4-5. Proposed Construction Schedule

Proposed Project Component	Activity	Approximate Duration	Anticipated Start Date
Temporary Staging Yard	Site Preparation	1 week	October 2017
	Clean-up	1 week	June 2019
Proposed 69/12 kV Substation	Site Development and Grading	5 months	October 2017
	Retaining/Boundary Wall Construction	2 months	January 2018
	Driveways/Sidewalks (AC Paving)	2 months	March 2019
	Below-Grade Construction	6 months	March 2018
	Substation Equipment Installation	6 months	September 2018
69 kV Underground Power Line	Duct Bank Construction, Vault and Cable Installation	3 months	January 2019
12 kV Distribution	Trenching and Conductor Installation	3 months	February 2019
Telecommunication System Extension	Duct Bank Construction, Vault and Cable Installation	1 month	February 2019
Energization	Testing and Commissioning	1 month	May 2019
	Energization	1 month	June 2019

4.11.4 Cut and Fill

It is anticipated that construction of the Proposed Project would result in up to approximately 69,860 cubic yards of cut and fill (See Table 4-6).

Final civil engineering for the Proposed Project has yet to be completed, therefore final cut and fill may differ from the estimates provided. Actual cut and fill grading amounts may vary depending upon actual field conditions and final detailed engineering. Soil may be reused onsite within SDG&E fee-owned property, franchise or existing easements. Excess soil from excavation may also be transported to a local recycling or appropriately permitted waste disposal facility if the soil is not reused onsite or otherwise recycled. Excess soil would be reused onsite where possible and transported offsite only as the final option.

Table 4-6. Proposed Project Cut-And-Fill Requirements Summary (cubic yards)

Project Component	Cut	Fill	Net Import/Export
Temporary Staging Yards Site Preparation and Cleanup[1]	1,965	1,965	1,965/1,965
Ocean Ranch Substation	18,100	36,700	28,700/10,100
Underground power line (69 kV) trench and duct bank installation	1,995	1,995	1,995/1,995
Underground distribution (12 kV) line trench and duct bank installation	3,650	3,650	3,650/3,650

Source: SDG&E 2015.
Table contents based on preliminary engineering.
1 - 30 percent of 17.5 acres of temporary staging yards will have 3 inches of rock temporarily installed (for a total of 5 acres). Cut for this purpose refers to rock clean-up and fill refers to rock installation

4.11.5 Permanent Land/Right-of-Way Requirements

The Proposed Project will be within existing utility corridors, franchise areas, and SDG&E fee-owned property that currently feature permanent access roads and will include permanent pads and roads within the substation site. Operation and maintenance of the Proposed Project would use these existing and planned work areas and roads. It is anticipated that no additional ROW is a required for this project.

4.12 Operation and Maintenance

4.12.1 Substation Operation and Maintenance

Implementation of the Proposed Project would not significantly increase the intensity, frequency, or duration of SDG&E's overall operation and maintenance activities. These would be substantially similar to existing operation and maintenance activities at other substations. Typical activities involve both routine inspections and preventive maintenance to ensure service reliability, as well as emergency work to maintain or restore service continuity. General Order 165 requires that transmission and power lines be inspected at least every three years for corrosion, equipment misalignment, loose fittings, and other common mechanical problems.

SDG&E conducts power and transmission line operation and maintenance activities that typically include security and other inspections, ROW and access repairs, herbicide application, emergency and non-emergency repairs and replacements, and tree trimming.

Ocean Ranch Substation would be unmanned except for periodic routine maintenance activities to ensure reliable operation of all equipment within the facility. The substation would be monitored and controlled remotely by SDG&E's Control Center.

Ongoing maintenance would involve testing, monitoring, and repairing equipment, as well as emergency and routine procedures. All access gates to the proposed substation would be locked to prevent entry of unauthorized individuals. In addition, signage would be posted on the substation's exterior and at the entryways to restrict entry of those who are not qualified SDG&E personnel.

Routine operations would require one or two workers in a light utility truck to visit the substation on a daily or weekly basis. Routine maintenance is expected to require approximately six trips to the substation per year by a two- to four-person crew. It is anticipated that one annual major maintenance inspection would occur, requiring an estimated 10 SDG&E personnel to be present at the substation. It is anticipated that this inspection would take approximately one week to complete. Nighttime maintenance activities are not expected to occur more than once a year.

Landscape maintenance would occur on an as-needed basis for purposes of enhancing the streetscape along the perimeter of the substation and for safety and/or access. Such activities would generally require the presence of one or two maintenance vehicles and one or more employees to clear and/or trim vegetation to ensure that an adequate working space is maintained around the substation.

4.12.2 Power Line Maintenance

SDG&E maintains a clear working space area around certain facilities pursuant to requirements found within General Order 95 and Public Resources Code (PRC) section 4292. SDG&E keeps these areas clear of shrubs and other obstructions for fire prevention.

The new 69 kV loop-in would be inspected consistent with SDG&E's existing underground inspection and maintenance program. The line would be accessed from the two new vaults during the annual underground transmission inspection program. Where needed, to access the vaults safely, inspection typically requires traffic control. However, the new 69 kV vaults are within the proposed substation. The inspection crew would open the vault covers and perform a visual survey from above (entry into vault with energized cables is not permitted), and use infrared, partial discharge monitoring, or other diagnostic instrumentation that may be available. The total time to inspect each vault is expected to be less than 1 day under normal operating conditions. The inspection of the underground power line would be the same for all existing underground inspections currently completed by SDG&E within the City of Oceanside and throughout SDG&E's service territory.

4.12.3 Standard Operating Procedures

The Proposed Project includes design features and ordinary construction and operating procedures that avoid and minimize environmental impacts. The standard operating procedures incorporated into the Proposed Project include measures that are routinely implemented by SDG&E. SDG&E would implement these operating procedures as appropriate during construction, operation, and maintenance to avoid and minimize potential environmental impacts.

Design features and construction and operating procedures incorporated into all phases of the Proposed Project are described below.

- **Blasting.** In the event that rock blasting is used during construction, a noise and vibration calculation would be prepared and submitted to SDG&E for review before blasting at each site. The construction contractor would ensure compliance with all relevant local, state, and federal regulations relating to blasting activities, as well as SDG&E's blasting guidelines.
- **Carpooling.** SDG&E would encourage construction workers to carpool to the greatest extent possible.
- **Communication with Adjacent Property Owners (Parking).** SDG&E would communicate with adjacent land owners for use of areas where off-street parking may be temporarily lost due to construction activities.
- **Conceptual Landscape Plan.** The conceptual landscape plan for the proposed Ocean Ranch Substation would be implemented as part of the Proposed Project following construction of the substation. (The Conceptual Site Plan provided as Appendix C shows landscaping). The landscaping plan, planting scheme, lighting guidelines, and sign regulations, include street trees and shrubs along Rocky Point Drive and Avenida del Oro and landscape plants that are low-water use, regionally appropriate, and visually compatible with the surrounding area and that do not conflict with the Pacific Coast Business Park Industrial Master Development Plan.

  Implementation of the landscape plan would ensure that the project perimeter wall, street-front areas, and slopes are visually similar to the existing business park surrounding the project, and would provide partial screening of the perimeter wall.

  The plan incorporates low-water-use, mostly native plants that are visually similar to existing plants on neighboring properties. The landscaping includes strawberry tree (*Arbutus unedo*) at the entrance to the site from Rocky Point Drive, and on the top of the slope along Avenida del Oro. The landscape plan leaves in place the existing street trees and slope planting along the west side of the parcel facing Avenida del Oro, and adds more shrubs and trees to the slope as well. The Proposed Project's landscape elements would comply with existing streetscape guidelines and visually blend with existing neighboring landscapes. Low-water-use, mostly native plants are proposed throughout the landscape

areas of the site, including trees and shrubs that are visually similar to existing plants on neighboring lots, such as Australian willow (*Geijera parviflora*) and holly leaf cherry (*Prunus ilicifolia*). These trees would provide a visual connection to the surrounding streetscapes, and would provide some screening of the Proposed Project's perimeter wall. Medium-sized shrubs and low-growing shrubs and ground covers are proposed as well. The site includes two retention basins located on the property but outside the substation wall, which would be planted with locally appropriate grasses and rushes.

- **Construction Noise.** For the few locations where the Proposed Project may exceed the noise ordinances, SDG&E would meet and confer with the City of Oceanside to discuss temporarily deviating from the requirements of the Municipal Code.
- **Construction Practices.** During clearing, grading, earth moving, or excavation operations, SDG&E would follow applicable regulations and control excessive fugitive dust emissions by regular watering or other dust preventive measures, which may include the following procedures:
  - Spray unpaved construction areas with water, approved dust-control agents, or soil stabilizers to reduce particulates; sufficiently water material excavated or graded.
  - Sweep, vacuum, and/or remove dirt or debris spilled onto or tracked onto paved surfaces to reduce resuspension of particulate matter caused by vehicle movement.
  - Haul trucks moving soil to or from the site would either be covered or maintain 2 feet minimum freeboard.
  - Onsite stockpiles would be covered, watered, or bermed if left inactive for more than 24 hours.
  - Tracking-control measures, in accordance with SDG&E Water Quality Construction BMP Manual, Measure 1-07 (Tracking Controls), would be implemented. (At page 25 of Appendix H provided in SDG&E's PEA the Manual is included here as Appendix D.)
  - Implementation of measures during construction to control fugitive dust and reduce exhaust emissions to meet SDAPCD Rule 55 requirements.
  - Prevent visible dust from the project from emanating beyond the property line, to the maximum extent feasible.
  - To the extent feasible, unnecessary construction vehicle idling time would be minimized. The ability to limit construction vehicle idling time is dependent upon the sequence of construction activities and when and where vehicles are needed or staged. Certain vehicles, such as large diesel powered vehicles, have extended warm-up times following start-up that limit their availability for use following startup. Where such diesel-powered vehicles are required for repetitive construction tasks, these vehicles may require more idling time. If a vehicle is not required for use immediately or continuously for construction activities, its engine would be shut off. Construction foremen would include briefings to crews on vehicle use as part of preconstruction tailboard or training. Those briefings would include discussion of a "common sense" approach to vehicle use.
- **Coordination with City.** SDG&E is coordinating with the City regarding the establishment of access rights on Avenida del Oro for a secondary private driveway at the proposed Ocean Ranch Substation site.
- **Coordination with Emergency Service Providers.** SDG&E will coordinate with the affected emergency service providers in the event that lane closures occur.
- **Cultural Resources.** SDG&E will follow applicable federal, state, and local laws to protect and avoid cultural resources, including the Archaeological Resources Protection Act of 1979, as amended; the National Historic Preservation Act of 1966, as amended (NHPA); California Penal Code section 622½,

PRC sections 5097.1 through 5097.6, PRC section 5097.98, and CEQA. An independent expert conducted preconstruction surveys, prepared an inventory of cultural resources within the Proposed Project's Area of Potential Effect, and provided recommendations for avoidance and minimization of cultural resources. Known cultural resources would be spanned or otherwise avoided through Project design and through routing during construction activities to the extent feasible.

- **Encroachment Permits.** SDG&E would obtain the required encroachment permits from the City of Oceanside for crossings at city streets and would ensure that proper safety measures are in place while construction work is occurring in or near public roadways. These safety measures include flagging, proper signage, and orange cones to alert the public to construction activities near the roadway.
- **Generators.** Generator use would be limited to less than 50 horsepower (HP) at all staging yards, if required. Any generators used at the staging yards would be located away from noise-sensitive areas, and positioned on the property to ensure compliance with local noise ordinances.
- **Geotechnical Report.** A geotechnical study has been conducted for the Proposed Project under direction of a California-licensed Geotechnical Engineer or Certified Engineering Geologist, and recommendations identified in the geotechnical report would be carried out. (See Appendix E: Geotechnical Siting Study.)
- **Hazardous Materials.** SDG&E would address potential impacts relating to the handling and use of hazardous materials through compliance with applicable state and federal regulations, including but not limited to the following:
  - Federal OSHA regulations for worker safety in hazardous material remediation and hazardous waste operations (29 CFR Section 1910.120)
  - Federal OSHA regulations hazard communication for workers (29 CFR Section 1910.1200)
  - Federal OSHA regulations for toxic air contaminants for workers (29 CFR Section 1910.1000)
  - California OSHA (CalOSHA) regulations for worker safety in hazardous material remediation and hazardous waste operations (8 California Code of Regulations [CCR] 5192)
  - CalOSHA regulations for hazard communication for workers (8 CCR 5194)
  - Department of Toxic Substances Control (DTSC) regulations implementing Resource Conservation and Recovery Act of 1976 (RCRA) and the California Hazardous Waste Control Law (HWCL) (22 CCR Division 4.5).
- **Hazardous Materials and Waste Management Plan.** SDG&E would prepare a project-specific Hazardous Materials and Waste Management Plan (HMWMP) for the construction phase of the Proposed Project to ensure compliance with all applicable federal, state, and local regulations. The HMWMP would reduce or avoid the use of potentially hazardous materials for the purposes of worker safety, protection from groundwater contamination, and proper disposal of hazardous materials. The plan would include the following information related to hazardous materials and waste, as applicable:
  - A list of the hazardous materials that would be present on site during construction, including information regarding their storage, use, and transportation.
  - Procedures for the identification of and avoidance of contaminated materials.
  - Any secondary containment and countermeasures that would be required for onsite hazardous materials, as well as the required responses for different quantities of potential spills.

  - A list of spill response materials and the locations of such materials at the Proposed Project site during construction.
  - A list of the adequate safety and fire suppression devices for construction activities involving toxic, flammable, or exposure materials.
  - A description of the waste-specific management and disposal procedures that would be conducted for any hazardous materials that would be used or are discovered during construction of the Proposed Project.
  - A description of the waste minimization procedures to be implemented during construction of the Proposed Project.

- **Landowner Notification.** Landowners of parcels within 300 feet of Proposed Project would receive notification of the start of construction at least one week prior to the start of construction activities within that area.
- **Mufflers.** Functioning mufflers would be maintained on all equipment.
- **Natural Community Conservation Plan (NCCP) Operation Protocols.** Based on the design of the Proposed Project, no mitigation is required, but SDG&E would implement the following construction and operation protocols (See Initial Study Section 5.4 Biological Resources for additional information):
  - Section 7.1.1 General Behavior for All Field Personnel
  - Section 7.1.2 Training
  - Section 7.1.4 Maintenance, Repair, and Construction of Facilities
  - Section 7.1.5 Maintenance of Access Roads
  - Section 7.1.8 Survey Work
  - Section 7.1.9 Emergency Repairs
- **New Chain-Link Fence.** Any fencing installed as part of the Proposed Project would be a dull, non-reflective finish to reduce potential glare.
- **Overall Grading and Drainage Design.** The overall grading design would include replacement of the existing temporary desilting basins with permanent construction of two flow-through planter basins to provide management of smaller, more frequent storm events, treatment of stormwater runoff, and peak flow attenuation from larger, less frequent events (such as the 100-year storm).
- **Perimeter Wall.** The perimeter wall would be designed to blend with the neighboring buildings and provide continuity with the existing landscape, and would not conflict with standard design criteria and requirements for electrical substations or the Pacific Coast Business Park Industrial Master Development Plan.
- **Project Fire Prevention Plan.** SDG&E Electric Standard Practice 113.1 would serve as the Project Fire Prevention Plan. This standard identifies risk-related activities as well as measures (including tools and procedures) to address said risks. This standard addresses all work activities which have the potential to start a wildland fire and sets forth equipment and practices relevant to fire prevention. (See Appendix F: O&M Wildland Fire Prevention Plan)
- **Restoring Appearance of Temporarily Disturbed Areas.** When Proposed Project construction has been completed, all temporarily disturbed terrain would be restored as near to preconstruction conditions as possible. Revegetation would be used, where appropriate (revegetation in certain areas is not possible due to vegetation management requirements related to fire safety) to reestablish a natural

appearing landscape and reduce potential visual contrast between disturbed areas and the surrounding landscape.

- **Safety and Worker Environmental Awareness Program.** SDG&E would prepare a project-specific environmental and safety awareness program for project personnel. Training would include the following topics, as applicable:
  - General safety procedures
  - General environmental procedures
  - Fire safety
  - Biological resources
  - Cultural resources
  - Paleontological resources
  - Hazardous materials protocols and BMPs
  - SWPPP
- **SDG&E Water Quality Construction BMP Manual.** SDG&E's Water Quality Construction BMP Manual would be used during construction (by way of preparation and implementation of the SWPPP), operation, and maintenance of the Proposed Project to ensure compliance with all relevant SDG&E and government-mandated regulatory water quality standards. This manual organizes and presents SDG&E's standard water quality protection procedures for various specific actions that routinely occur as part of SDG&E's ongoing construction, operations, and maintenance activities. The primary focus of most BMPs is the reduction and/or elimination of potential water quality impacts during construction of linear and substation projects, such as the Proposed Project. The BMPs described within the BMP Manual were derived from several sources including State of California guidelines as well as the Caltrans Water Quality BMPs.
- **SF6 mitigation strategies.** SDG&E would implement its existing SF6 mitigation strategies during the operation and maintenance of SF6-containing equipment installed as part of the Proposed Project. These strategies include**:**
  - Continue CARB's Mandatory Reporting Regulation for GHG emissions.
  - Implement SDG&E's SF6 leak detection and repair program. This program includes monthly visual inspections of each GIS, which includes checking pressure levels within the breaker and recording these readings in SDG&E's Substation Management System. During the installation or major overhaul of any GIS, the unit is tested over a 24-hour period to ensure no leaks are present. Minor overhauls of each GIS are conducted every 36 to 40 months to check overall equipment health. This process includes checking gas pressure, moisture ingress, and SF6 decomposition. If the GIS fails any of these checks, the unit is checked for leaks and repaired. In addition, all GISs are equipped with a gas monitoring device and alarm that automatically alert SDG&E's Grid Operations Center. If gas pressure approaches minimum operating levels, an alarm is immediately reported to SDG&E's Substation Construction and Maintenance Department. The GIS is usually inspected for leaks within 24 hours of such an alarm. SDG&E's leak detection practice includes the following three methodologies:
    - Spraying a leak-detection agent onto common leak points — including O-rings, gaskets, and fittings;
    - Using a field-monitoring device (sniffer) to detect the presence of SF_6 gas; and
    - Using a laser-detection camera to detect the presence of SF_6 gas when the above two methods are unsuccessful in finding a leak.
  - Implement a SF6 recycling program.

  - Train employees on the safety and proper handling of SF6.

- **Soil Disturbance.** Ground and soil disturbance would be minimized through the use of existing access routes, to the extent feasible.
- **Soil Stabilization.** Once temporary surface disturbances are complete, areas that would not be subject to additional disturbance would be stabilized to control soil erosion. Disturbed areas would be stabilized per the project SWPPP.
- **Spill Prevention, Control, and Countermeasure (SPCC) Plan.** If required, an SPCC Plan would be prepared in accordance with CFR 40, Part 112 before petroleum products in threshold quantities would be stored on-site. Elements of an SPCC Plan include, but are not limited to, the following:
  - Facility diagram and description;
  - Oil discharge predictions;
  - Appropriate secondary containment or diversionary structures;
  - Facility drainage;
  - Personnel training and oil discharge prevention briefings; and
  - Recordkeeping and five-year plan review.
- **Standard Traffic Control Procedures.** SDG&E would implement traffic control plans to address potential disruption of traffic circulation during construction activities and address any safety issues. These traffic control plans would be prepared prior to construction by the project engineer or contractor and subject to approval by the appropriate jurisdictional agencies.
- **Temporary Lighting.** Temporary lighting at staging and storage areas would be directed on site and away from any sensitive receptors.
- **Visual Screening of Staging Yards.** Where staging yards are visible to the public, opaque mesh or slats (or equivalent material) would be installed along the fence that would soften the view of the staging yard from public vantage points such as roads, residences, and public vantage points.
- **Water Sources.**
  - To the extent that recycled water is used, the Proposed Project would adhere to use restrictions and water quality monitoring and reporting regulations associated with use of tertiary-treated recycled water for construction uses (e.g., dust control, soil compaction, and concrete mixing) permitted under the SWRCB General Order or the San Diego RWQCB Waiver 2 and consistent with the state's anti-degradation policy.
  - Potable water to support project construction and operations activities would be sourced from the City of Oceanside. Project construction water use calculations are the basis for obtaining a would-serve letter from the City of Oceanside. To the extent feasible and if available, tertiary-treated recycled water would be used for allowed construction practices (e.g., dust control, soil compaction, cement mixing). The San Luis Rey Wastewater Treatment Plant (WWTP), which is located approximately one mile west of the project, is being upgraded to double its current daily volume of recycled water. The associated El Corazon commercial recycled water fill station near the NE corner of Oceanside Boulevard and El Camino Real has been permitted and is operational. To the extent that tertiary-treated recycled water is available at this fill station it would be used for approved uses.
  - The Proposed Project would adhere to the City of Oceanside Emergency Drought Response Ordinance.

4.13 Other Permits and Approvals

The CPUC is the lead agency for CEQA review of this project. In accordance with CPUC General Order No. 131-D SDG&E prepared and submitted a Proponent's Environmental Assessment (PEA) as part of its application for a Permit to Construct (PTC).

The CPUC has exclusive authority to approve or deny SDG&E's application; however, various permits from other agencies may also need to be obtained by SDG&E for the Proposed Project. If the CPUC issues a PTC, it would provide overall project approval and certify compliance of the project with CEQA. In addition to the PTC, Table 4-7 summarizes the permits from federal, State, and local agencies that may be needed for the project.

Table 4-7. Anticipated Permit, Approval, and Consultation Requirements

Permit Type/Name	Issuing Agency	Jurisdiction/Purpose
Federal Agencies		
Not Applicable		
State Agencies		
Permit to Construct	CPUC	Overall Project approval and CEQA review.
National Pollutant Discharge Elimination System–Construction Stormwater Permit	California SWRCB	Stormwater discharges associated with construction activities disturbing more than one acre of land.
Consultation	CDFW	Consultation on burrowing owls and/or western yellow bats if these species are identified within the Proposed Project area.
Local Agencies		
Approval of Remandment of Access Application	City of Oceanside	Accommodate secondary driveway at substation site along Avenida Del Oro.
Encroachment Permit	City of Oceanside	For crossings at city streets and trenching in the City's ROW.
Grading Permit	City of Oceanside	Site grading.
Explosive Permit	City of Oceanside	Secure approval for rock blasting through Fire Department review.
Recycled Water General Order	SWRCB	Used to discharge tertiary-treated recycled water to land for approved construction activities.

4.14 Applicant Proposed Measures

During the design, construction, and operation of the Proposed Project, SDG&E proposes to implement certain measures, in a manner consistent with applicable rules and regulations, to avoid or minimize potential environmental impacts. These would be in addition to the procedures included as part of the overall project description, including the Standard Operating Procedures listed as part of the project description.

The Applicant Proposed Measures (APMs) listed in Table 4-8 are considered part of the Proposed Project and are considered in the evaluation of environmental impacts in Section 5, Environmental Analysis and Mitigation. SDG&E would be responsible for overseeing the assembly of construction and environmental teams that would implement the Proposed Project APMs. CPUC approval would be based upon SDG&E

adhering to the Proposed Project as described in this document, including this project description, the APMs, and any adopted mitigation measures identified by this Initial Study.

Table 4-8 details SDG&E's APMs by environmental topic. For many environmental topics, SDG&E did not identify any APMs. In some cases, mitigation measures presented in Section 5 either expand upon or add detail to the APMs presented in Table 4-8 if necessary, to ensure that potential impacts would be reduced to less than significant levels.

Table 4-8. Applicant Proposed Measures by Resource Area

Resource Area	Relevant Applicant Proposed Measures
Biological Resources	**APM BIO-1: General Biological Resources** ▪ The Proposed Project work areas shall be limited to the sites specified in the project description. Access to the project site shall utilize existing access roads, where possible. Parking, driving, and storing of vehicles will be limited to previously disturbed, compacted, and developed areas, where possible. ▪ A contractor education program will be conducted by a qualified biologist. It will be conducted during all project phases and cover: (1) the potential presence of listed species and their habitats; (2) the requirements and boundaries of the project (e.g., areas delineated on maps and by flags or fencing); (3) the importance of complying with avoidance and minimization measures; (4) environmentally responsible construction practices; (5) identification of sensitive resource areas in the field; and (6) problem reporting and resolution methods. ▪ A qualified biologist will be assigned to the Proposed Project. The designated biologist will have the authority to halt construction in that segment of the Proposed Project to prevent impact to any listed species. ▪ Heavy equipment, construction, equipment maintenance, and staging activities will occur in designated areas and be restricted to existing roads and disturbed areas to the maximum extent practicable. ▪ Where possible, laydown, stockpiling, parking, driving, and storing of vehicles and equipment will be limited to previously disturbed/compacted and developed areas within and immediately adjacent to existing roads. **APM BIO-2: Vegetation and Special-status Plant Species** ▪ Disturbance to adjacent native vegetation will be avoided to the greatest extent. **APM BIO-3: Migratory Birds** ▪ Pre-construction nest surveys will be conducted by a qualified biologist if construction or demolition activities on the project site occurs between January 1 and August 31 (nesting season). Surveys shall cover all potential nesting habitat within the PSA and be repeated on a weekly basis throughout the nesting season. If SDG&E determines that any staging yards included in the proposed project, is not needed, then those staging yards will be exempt from nest surveys ▪ If an active nest is found within the Proposed Project at any time, work will stop immediately in the immediate area of the nest and redirected away from the nest location. A no disturbance buffer zone will be established around each nest. The size of the buffer zone for non-special-status species will be determined by a qualified biologist. Any activities that might, in the opinion of the biological monitor, disturb nesting activities, will be prohibited in the buffer zone. If an active nest of a special-status species is identified, SDG&E shall consult with the USFWS and CDFW to determine the size of the buffer zone (except for burrowing owls, which will be determined in accordance with APM BIO-4). Nest locations will be mapped using GPS technology. ▪ The biological monitor will monitor all active nests and buffers at least once per week, to determine whether birds are being disturbed. If signs of disturbance or distress are observed, the biological monitor shall immediately implement adaptive measures to reduce disturbance. These measures could include, but are not limited to, increasing buffer size, halting disruptive construction activities in the vicinity of the nest until fledging is confirmed, or placement of visual screens or sound dampening structures between the nest and construction activity. ▪ The qualified biologist or biological monitor will monitor the nest until he or she determines that nestlings have fledged and dispersed or the nest is no longer active. The results of nest surveys and nest monitoring shall be included in biological monitoring reports, described in Mitigation Measure B-1 (Biological Monitoring and Reporting).

Table 4-8. Applicant Proposed Measures by Resource Area

Resource Area	Relevant Applicant Proposed Measures
Biological Resources *(cont.)*	**APM BIO-4: Special-status Wildlife Species.** ▪ Protocol-level surveys for the burrowing owl shall occur prior to the commencement of construction. The survey shall be conducted by a qualified biologist in accordance with the Staff Report on Burrowing Owl Mitigation. The surveys shall commence at least 30 days and not less than 14 days prior to construction. The survey results shall be provided to SDG&E within 14 days following completion of surveys. ▪ If burrowing owls are detected within the Project Study Area, measures consistent with the methodology as established in the Staff Report on Burrowing Owl Mitigation and in concurrence with the local CDFW office will be implemented. This includes, but is not limited to the use of buffers around burrows, inspection of equipment, monitoring, and the potential for development of a Burrowing Owl Exclusion Plan approved by the local CDFW office. ▪ Prior to the commencement of the construction phase, a qualified biologist shall conduct a preconstruction survey/sweep of Melrose Staging Yard to determine the presence of the western yellow bat. If the western yellow bat is not found during the initial preconstruction survey/sweep, the staging yard will be resurveyed weekly while the yard is in use for the project. Surveys will be conducted year-round. If roosts are found during the survey sweeps, a no disturbance buffer zone will be established of 165 feet from any active roost and 300 feet from any active maternity roost. The qualified biologist shall consult with CDFW to determine the appropriate buffer limits to adequately protect the species and the buffer sizes listed above may be reduced with concurrence from CDFW. The buffers will remain in place until the staging yard is no longer used for this project or until the bat(s) have left the roost and a buffer is no longer necessary.
Cultural/ Paleontological Resources	**APM CUL-1: Paleontological Resource Monitoring Program.** ▪ A paleontological resource monitoring program will be implemented during construction. The program will include construction monitoring, fossil salvage, laboratory preparation of salvaged specimens, curation of prepared specimens, and storage of curated specimens. A qualified paleontologist will be onsite to monitor all ground disturbing activities (e.g., grading and excavation) within native sediments, until the monitor determines monitoring activities are not necessary. The monitor will inspect all fresh cut slopes and trenches, spoils piles, and graded pad surfaces for unearthed fossil remains. If any paleontological find is identified during monitoring, then the monitor will communicate with the general environmental monitor and the construction manager. Salvage may include techniques such as "pluck-and-run," hand quarrying, and bulk matrix sampling and screen-washing. The monitor will also collect stratigraphic data to define the nature of fossiliferous sedimentary rock units within the Proposed Project area, their geographic distributions, and their lithologic characteristics. Paleontological monitoring would not be required in locations where artificial imported fill materials occur for the full depth of the proposed ground disturbance.

4.15 Electric and Magnetic Fields Summary

Recognizing that there is a great deal of public interest and concern regarding potential health effects from exposure to electric and magnetic fields (EMF) from power lines, this Initial Study provides information regarding EMF associated with electric utility facilities and the potential effects of the proposed project related to public health and safety. Potential health effects from exposure to ***electric fields*** from power lines (produced by the existence of an electric charge, such as an electron, ion, or proton, in the volume of space or medium that surrounds it) are typically not of concern since electric fields are effectively shielded by materials such as trees, walls, etc., therefore, the majority of the following information related to EMF focuses primarily on exposure to ***magnetic fields*** (invisible fields created by moving charges) from power lines. However, this Initial Study does not consider magnetic fields in the context of CEQA and determination of environmental impact. This is because (a) there is no agreement among scientists that EMF does create a potential health risk, and therefore, (b) there are no defined or adopted CEQA standards for defining health risk from EMF. As a result, EMF information is presented for the benefit of the public and decisionmakers.

After several decades of study regarding potential public health risks from exposure to power line EMF, research results remains inconclusive. Several national and international panels have conducted reviews of data from multiple studies and state that there is not sufficient evidence to conclude that EMF causes cancer. The International Agency for Research on Cancer (IARC), an agency of the World Health Organization (WHO), and the California Department of Health Services (DHS) both classified EMF as a *possible* carcinogen (WHO, 2001; DHS, 2002).

In addition, the 2007 WHO [Environmental Health Criteria (EHC) 238] report concluded that:

- Evidence for a link between Extremely Low Frequency (50–60 Hz) magnetic fields and health risks is based on epidemiological studies demonstrating a consistent pattern of increased risk for childhood leukemia. However, "…virtually all of the laboratory evidence and the mechanistic evidence fail to support a relationship between low-level ELF magnetic fields and changes in biological function or disease status….the evidence is not strong enough to be considered causal but sufficiently strong to remain a concern."
- "For other diseases, there is inadequate or no evidence of health effects at low exposure levels."

Currently, there are no applicable regulations related to EMF levels from power lines or substations. However, following a decision from 1993 (D.93-11-013) that was reaffirmed on January 27, 2006 (D.06-01-042), the CPUC requires utilities to incorporate "low-cost" or "no-cost" measures to mitigate EMF from new or upgraded electrical utility facilities up to approximately 4 percent of total project cost. To comply, SDG&E developed certain measures to reduce magnetic field levels in the vicinity of the proposed substation and subtransmission lines. SDG&E filed its Magnetic Field Management Plan for the Proposed Ocean Ranch Substation Project as Appendix F of its Application for a Permit to Construct (A.16-07-016; filed July 27, 2016).

4.16 Alternatives

Pursuant to CEQA, the purpose of an alternatives analysis is to identify options that would feasibly attain the project's objectives while reducing identified significant environmental impacts that would result from the proposed project being implemented. Alternatives analysis is not required in a Mitigated Negative Declaration because the Initial Study concludes that with incorporation of mitigation measures there would be no significant adverse impacts resulting from the proposed project.

However, CPUC's GO 131-D requires that an application for a PTC include the "reasons for adoption of the power line route or substation location selected, including comparison with alternative routes or locations, including the advantages and disadvantages of each" (GO 131-D, section IX.B.1.c.). A summary of the alternatives considered in SDG&E's PEA is provided below.

During the development of the Proposed Project, a No Project Alternative, six alternative locations for a new substation site, and three power line alternatives to serve the new substation were considered for further analysis. The Proposed Project was ultimately selected because it best meets all of the Proposed Project objectives.

Under the No Project Alternative, the proposed Ocean Ranch Substation would not be constructed. However, by 2018, San Luis Rey Substation and Melrose Substation are projected to be at 92 percent and 94 percent load, respectively. San Luis Rey Substation is projected to be experiencing transformer bank and circuit (line) overloads, and Melrose Substation will be experiencing a transformer bank overload. When the design rating for a transformer is exceeded, the equipment may be damaged; when the design rating for a circuit is exceeded, the conductor (line) may be damaged and the circuit may trip

and go offline. Both substations already are built out to ultimate four-transformer bank (120 MVA) capacity. Morro Hill Substation is projected to be at 96 percent of load by 2018, and is constrained by its proximity to Marine Corps Base Camp Pendleton and the San Luis Rey River. The No Project Alternative would not meet 3 of the 4 Proposed Project objectives; namely: it would not meet existing or forecasted load growth; would not maintain substation and circuit reliability; and would not reduce area substation loading to optimum operating conditions.

For substation site alternatives to the Ocean Ranch site, SDG&E considered 22 locations over several years and identified 6 for further analysis. These 6 alternative sites were rejected because of land use compatibility issues, size constraints, previously recorded archaeological sites, non-availability of parcels due to development/purchase by other parties, unwilling sellers, and/or need for business relocation.

Three power line configuration alternatives were selected for evaluation:

- Option A was to loop in the existing TL 6966 between San Luis Rey and Melrose Substations into Ocean Ranch Substation. (This was the preferred alternative.)
- Option B included the Option A loop in of TL 6966 as well as reconductoring 2.5 miles of lines TL 6966 and TL 693 from San Luis Rey Substation to Ocean Ranch Substation to serve the ultimate design of the Ocean Ranch Substation. The California Independent System Operator (CAISO) did not support this alternative because its 2015-2016 Transmission Planning Report did not find a need for the second transmission line into the new substation at this time.
- Option C included bundling of TL 6966 and TL 693 between San Luis Rey and Ocean Ranch Substations, and construction of 3 miles of new overhead/underground powerline between the substations. This would serve the ultimate design of Ocean Ranch Substation, but this option was not considered further for the same reasons Option B was no considered further.

Figure 4-1. Project Regional Location

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Figure 4-2. Project Site Location and Staging Yards
11x17

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Figure 4-3. Existing Configuration of Substations

Figure 4-4. Ultimate Configuration of Substations

Figure 4-5. Initial Layout of Ocean Ranch Substation

Figure 4-6. Ultimate Layout of Ocean Ranch Substation

Figure 4-7. Low Profile Substation

Figure 4-8. Typical 69 kV Underground Vault

Figure 4-9. Typical 69 kV Underground Duct Bank

Figure 4-10. Typical 12 kV Underground Duct Bank

Figure 4-11. Typical 12 kV Underground Manhole

Figure 4-12. Typical Telecommunication Monopole

Figure 4-13. Typical Underground Duct Package

Figure 4-14. Kearny Construction and Operations Center

Figure 4-15. North Coast Construction and Operations Center

Figure 4-16. Northeast Construction and Operations Center

Figure 4-17. Typical Underground Construction Process within Roadways

Section 5

Environmental Analysis and Mitigation

5. Environmental Setting and Environmental Impacts

5.1 Aesthetics

AESTHETICS Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?	☐	☐	☐	☒
c. Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐
d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

Significance criteria established by CEQA Guidelines, Appendix G.

5.1.1 Introduction

This section of the Initial Study describes the existing conditions and project-related impacts to aesthetic resources in the vicinity of the Proposed Project. The Proposed Project's effects on this resource were evaluated using the significance criteria set forth in Appendix G of the CEQA Guidelines.

As addressed in the California Environmental Quality Act (CEQA), Aesthetics addresses the visual aspects of a proposed project with regard to its effect on vistas, visual character, scenic resources, and light or glare. Aesthetics analysis, or visual resource analysis, uses a systematic process to logically assess visible changes in the physical environment and the anticipated viewer response to those changes. The Aesthetics section of this IS/MND describes the existing landscape character of the project area, existing views of the project location from various on-the-ground vantage points, the visual characteristics of the Ocean Ranch Substation Project (the Proposed Project), and the visible changes that would be associated with the construction and operation of the Proposed Project, as seen from various vantage points.

It is noteworthy that different people viewing the same landscape may have different responses to that landscape and to any visual changes in the landscape. These different responses are based upon their individual values; familiarity, concern, or expectations for that landscape; and its scenic quality. Because each person's attachment to and valuing of a particular landscape is unique, visual changes inherently affect viewers differently. Nevertheless, generalizations can be made about a viewer's sensitivity to scenic quality and visual changes. For example, recreationists, hikers, equestrians, tourists, and people driving for pleasure are expected to have high concern for scenery, visual quality, and landscape character. People who are commuting daily through the same landscape generally have a moderate concern for scenery, while people working at agricultural or industrial sites generally have a lower concern for scenic quality or changes to existing landscape character. The visual sensitivity of a landscape is affected by the viewing distances at which it is seen, such as close-up or far away. The visual sensitivity of a landscape also is affected by the speed at which a person is moving through and viewing the landscape (e.g., high speed on a highway, low speed on a hiking trail, or stationary at a residence).

Proximity is an important consideration. Distances between the viewer and the viewed elements comprising the observed scene generally are described as distance zones, which are delineated based on increasing distance away. A typical set of distance zones would include immediate foreground, fore-

ground, middleground, and background. When a viewer is in close proximity to a viewed feature in the landscape, more detail can be seen and there is greater potential for that feature to influence visual quality because of its form or scale (i.e., relative size of the object in relation to the viewer). In contrast, when the same landscape feature is viewed at background distances, details may be imperceptible even if overall forms are evident, and the horizon and skyline are dominant in the view. In the middleground, some detail is evident (as in a foreground view) and landscape elements are seen in context with other landforms and vegetation patterns (as in a background view). For analysis in largely undeveloped or open landscapes, four viewing distances are typically considered:

- Immediate Foreground (from the viewer to approximately 300 feet away)
- Foreground (approximately 300 feet to 0.5 miles away)
- Middleground (approximately between 0.5 and 4 miles away)
- Background (approximately 4 miles to the horizon)

In contrast to open landscapes, in a developed or topographically complex setting, where buildings, utilities, trees, and terrain are prominent features that contribute to the complexity of the visual environment and tend to limit viewing distances, an analysis of visual impacts tends to focus more on immediate foreground and foreground distances. Over greater distances, views of the changes introduced by a project in an urbanized setting are likely to be blocked by existing structures or vegetation and to not be visually dominant when compared to surrounding conditions. For these reasons, the analysis of visual impacts from the Proposed Project is focused on views from locations in close proximity to the project site, with less emphasis on long-distance views.

Visual Inventory Methodology

Visual resources of the project area were investigated based on the following criteria: (1) existing visual quality and scenic attributes of the landscape; (2) location of sensitive receptors in the landscape; (3) assumptions about receptors' concern for scenery and sensitivity to changes in the landscape; (4) the magnitude of visual changes in the landscape that would be brought about by construction and operation of the Proposed Project; and (5) compliance with State, County, and local policies for visual resources.

The viewshed of a project is defined as the geographic area within which the project is visible, omitting areas where views are blocked by buildings, vegetation, and terrain. Figure 5.1-1 identifies the computer-generated areas within 1.5 miles of the substation site from which project elements are potentially visible, based exclusively on topography. Existing vegetation and structures are not considered, and would block most views of the substation from a distance. (Note: All figures referenced in the text are located at the end of this section.) The figure also identifies public parks within this 1.5-mile radius. The result shows areas from which elements of the Proposed Project *may* be visible. The result is theoretical since it takes into account only the position of the viewer, the location of the element being viewed, and the intervening topography. It does not analyze the effects of trees, buildings, or other structures, all of which could block or screen project elements. It also does not take into account the effects of distance on the visibility of elements. It does, however, represent the worst-case visibility of prominent project elements. Overall, it is expected that areas with actual views of substation elements would be considerably fewer than indicated by Figure 5.1-1, given the built-up and vegetated nature of the project region.

The visual setting is described in terms of the existing *landscape character* and *visual quality* of the viewshed. Existing landscape character is an overall visual and cultural impression of landscape attributes —

the physical appearance and cultural context of a landscape that gives it an identity and sense of place. Existing landscape character is determined by landforms, vegetation patterns, waterbodies, and cultural features such as buildings and roads. Visual quality is a judgment of a landscape's attractiveness, as determined by attributes broadly recognized as being valued and preferred by most viewers. Visual quality is expressed as a range of valued landscape attributes and are often described in terms such as form, line, color, and texture. Combinations of these factors lead to evaluations of landscape character and visual quality, such as:

- High – a landscape of exceptional quality and beauty, valued for its scenic attributes.
- Moderate – a landscape that is common or average within the landscape character type.
- Low – a landscape that is lacking in scenic features.

The existing landscape setting and its viewers are characterized in terms of their overall *visual sensitivity*. Visual sensitivity consists of three components: *viewer exposure, viewer concern,* and *visual quality*. Viewer exposure affects a landscape's overall visual sensitivity. Landscapes that have very low viewer exposure (based on landscape visibility, the viewing distance, the number of people who view the landscape, or the duration of time that the landscape can be viewed) would tend to be less sensitive to overall visual change in the context of human experience of visual impacts.

Evaluations of existing landscape character and visual quality, combined with ratings of overall visual sensitivity, establish the visual inventory methodology.

Figures 5.1-2 provides photographs of existing conditions at the project site and surrounding area, including potential staging yards in the vicinity that may be used during project construction.

Around the substation site, seven viewpoints from public vantage points were analyzed for their potential to display worst-case visual effects of the Proposed Project in the scenic and aesthetic landscape. Of these seven viewpoints, three were identified as key observation points (KOPs) for which simulations were prepared. Figure 5.1-3 shows the location and orientation of the viewpoint photographs as well as KOP locations. The viewpoint photographs are shown in Figure 5.1-4. The three KOPs were identified that represent the most critical viewing locations and the viewer groups likely to be affected by a project; these KOPs are outlined in red on the figures. Assessments of visual impacts were determined from each KOP based on a comparison of existing conditions and simulations of the view with the Proposed Project in place. In the impact analysis, overall visual sensitivity is considered in combination with the level of visual change introduced by a project, as seen from a KOP, to arrive at preliminary findings of potential project impact significance. In this analysis impacts to foreseeable future viewers, such as occupants and visitors at currently un-built structures in the business park, were also analyzed to support the evaluation of cumulative impacts.

5.1.2 Setting

Existing Landscape Setting and Viewer Characteristics

This section discusses the existing visual character of the region, existing visual quality in the project area; viewer concern, and viewer exposure to the Proposed Project, leading to a rating of overall visual sensitivity. Also discussed are the existing sources of light and glare within the project area.

Regional Context. The Proposed Project is within an approved master plan area designed for commercial and light industrial uses. The substation site is in an urban setting, in an area of existing light indus-

trial and commercial buildings as well as vacant pads or lots planned for future light industrial or commercial development.

The proposed Ocean Ranch Substation site's surroundings are characterized by some vacant building pads or parcels, and office and light-industrial buildings that are generally two stories tall, but are permitted to be up to 80 feet tall. Street trees and landscaping are along both sides of the streets in the area, with earlier-developed areas having larger trees. Paved parking lots around existing buildings are either devoid of substantial vegetation or landscaped with shrubs, flowers, and trees. The area is highly uniform in appearance in that it is dominated by 2-story buildings, roads, parking areas, and landscape vegetation. The buildings, streetscapes, signage, and lot designs conform to the business park's design guidelines that create a highly intact visual environment. However, portions of the business park still contains empty lots, and these unpaved, un-landscaped areas interrupt the visual continuity of the business park where the lots are visible.

The proposed substation will be located on two vacant lots that are not highly visible from most public streets. The triangle-shaped site is located at a higher elevation than adjacent Avenida del Oro, which parallels the western site boundary. Existing business park buildings and parking lots abut the northeast and southeast boundaries of the site. The main entrance to the proposed substation would be by way of a cul-de-sac at the end of the Rocky Point Drive on the north side of the site. The proposed substation would tie into TL 6966, which is an existing underground 69 kV circuit with termination points at San Luis Rey Substation (to the west) and Melrose Substation (to the east). This circuit, as well as local distributions lines, would be underground. The new substation would contain the only aboveground features of the project; the underground lines are not discussed further with regard to aesthetic impacts since they would not be visible once installed and would not contribute to aesthetic and visual resources impacts. Within the substation, TL 6966 would connect to aboveground equipment and is accounted for in the analysis.

Project Viewshed and Key Observation Points.

As noted above, the area from which the substation would be potentially visible, absent intervening buildings and vegetation, is shown in Figure 5.1-1. Figures 5.1-2 and 5.1-4 provide photographs illustrating existing conditions in the vicinity, as well as at project yards areas and the substation site.

For the three key observation points (KOPs), photographs of the site and simulations visual conditions with substation built are provided to illustrate the viewing conditions.

Figure 5.1-5a shows the existing view looking northeast across Avenida del Oro toward the southern part of the substation site. Figure 5.1-5b shows the same view as it would appear with the substation built. The proposed communications tower and secondary access driveway are visible in the simulation, along with landscaping.

Figure 5.1-6a shows the existing view from the east side of the cul-de-sac on Rocky Point Road looking south. Figure 5.1-6b shows the same view as it would appear with the substation in place. The proposed wall surrounding the substation electrical equipment is show, with the upper parts of the low-profile substation visible beyond. One of the two main access driveways and gates is show, along with landscaping.

Figure 5.1-7a shows the existing view looking toward the northwest corner of the site from across and Avenida del Oro. Figure 5.1-7b shows the same view as it would appear with the substation built. From this location, only new landscaping would be visible. The height of the existing slope and the set back of the substation from the edge of the slope would result in it not being visible.

Regulatory Background

This section includes a description of the aesthetic resources regulatory framework. There are no federal regulations associated with aesthetics that are relevant to the Proposed Project.

State

California Department of Transportation: Scenic Highway Program.

The Scenic Highway Program in the State of California is aimed at the protection and long-term preservation of highway corridors of scenic value to ensure the aesthetic value of lands adjacent to highways. The State Scenic Highway System includes highways that are either eligible for designation as scenic highways or have been designated as such. The status of a state scenic highway changes from eligible to officially designated when the local jurisdiction adopts a scenic corridor protection program, applies to the California Department of Transportation for scenic highway designation approval, and receives the designation. A city or county may propose adding routes with outstanding scenic elements to the list of eligible highways; however, state legislation is required for them to become designated.

There are no designated state scenic highways in the Proposed Project area. There are two eligible state scenic highways in the general region of the Proposed Project site — Interstate 5 (approximately 6 miles away) and State Route 76 (approximately 2 miles away); however, neither of these are officially designated.

Local

As provided in CPUC General Order 131-D, the CPUC has exclusive jurisdiction over the siting, design, and construction of the Proposed Project, preempting local discretionary authority over the location and construction of electrical utility facilities. Therefore, the Proposed Project is not subject to local discretionary land use regulations. Nonetheless, as part of the environmental review process, consideration is given to relevant local land use plans and policies that pertain to aesthetics and visual resources.

City of Oceanside General Plan – Land Use Element

There are several goals pertaining to visual character and aesthetics in the Land Use Element. A Community Enhancement goal is: "the consistent, significant, long term preservation and improvement of the environment, values, aesthetics, character, and image of Oceanside as a safe, attractive, desirable, and well-balanced community." Another objective for utilities is: "To assure the long-term efficient economic and aesthetic provision of public utilities to the City and its residents and businesses."

- Policy 2.721 A states that "The City shall require sufficient screening, fencing, noise attenuation, landscaping, open space setbacks, or other permanent mitigation or buffering measures between utility corridors and adjacent and surrounding land uses. The employed measures shall be of sufficient scope to minimize to the maximum extent possible negative impacts to adjacent surrounding land uses from the particular utility corridor."
- Policy 2.725 D states that "The City shall require the undergrounding of energy transmission lines and distribution systems to new land developments or uses" (City of Oceanside, 2002).

Pacific Coast Business Park, Industrial Master Development Plan

The proposed Ocean Ranch Substation site is within the Pacific Coast Business Park Industrial Master Development Plan, which is a component of the Rancho Del Oro Specific Plan and is part of the industrially

designated area in the central portion of Oceanside encompassing 124.31 acres (City of Oceanside, 2005). Design and development within the Industrial Master Development Plan include:

Utilities and Communication Devices

- *All electric, telephone, gas, and cable service lines to individual lots or sites shall be installed and maintained underground,* and
- *Exterior onsite utilities, including but not limited to drainage systems, sewers, gas lines, water lines and electrical, telephone, and communications wires and equipment, shall be installed and maintained underground.*

Landscape Criteria

The landscape elements of the Pacific Coast Business Park Industrial Master Development Plan are intended to create an aesthetically pleasing setting for business park development and to be compatible with the design concepts of the adjacent industrial park areas while establishing a distinct identity for the Pacific Coast Business Park. The landscape design framework for the Proposed Project is established within the public street rights-of-way, including the project identification signage and landscaped parkways. The project guidelines include cross sections of each street within the development to show the overall planting scheme to be used within the Pacific Coast Business Park and the location of sidewalks within the parkway, which have been placed to accommodate landscaped parkways adjacent to the curb.

The planting palette for streetscapes within the Pacific Coast Business Park Industrial Master Development Plan complies with the horticultural requirements of the site and was created to provide a landscape in which the plants visually complement each other and have similar water requirements and seasonal temperature limitations in order to ensure the long-term success of the plant material. The Pacific Coast Business Park Industrial Master Development Plan palette incorporates many of the plants used throughout the Rancho Del Oro Specific Plan Area in order to provide continuity within the Specific Plan. The plan includes plant palettes with initial container sizes for developments, including for required landscape setback areas.

The design details are intended to be compatible with the design concepts of the adjacent industrial park areas while establishing a distinct identity for the Pacific Coast Business Park. The landscape design framework is established within the public street rights-of-way, including the project identification signage, the landscaped parkways, and, on Old Grove Road, median plantings. The intent of the Pacific Coast Business Park Industrial Master Development Plan landscape guidelines is to have the plants guide users to their final destination and provide visual cues to make access routes through the area easier to use. The plan includes use of taller plants at intersections to allow drivers to anticipate upcoming intersections, and delineates distinct tree species for each street. The planting guidelines also are intended to provide scale and green screens to shield views of parked vehicles, screen trash bin areas, and block walls.

Lighting

- *The streets and signs within the Pacific Coast Business Park shall be lit with adequate fixtures to provide safe and aesthetic illumination,* and
- *Building illumination and architectural lighting shall be soft and non-glaring in character. "Wall-washing," overhead down lighting and interior illumination that spills outside is encouraged. All lighting visible from adjacent streets shall be indirect and shall incorporate full cut-off shield fixtures.*

Business Park Sign Regulations

- *Project identification signage will utilize consistent color, logo and type-style elements, which will assist in unifying the signage throughout the development,* and
- *All project identification signage must be placed in such a location as to not obstruct sight distance. Signs may not be located within a public right-of-way. Signs located in the corner clear zone shall not exceed 30 inches in height, nor create a traffic sight obstruction or other pedestrian or traffic hazard.*

Applicant Proposed Measures

No Applicant Proposed Measures were presented for Aesthetics. However, SDG&E has proposed Standard Operating Procedures to be implemented as part of the Proposed Project. These are incorporated into the project and are summarized below.

- **Conceptual Landscape Plan.** The landscaping at the proposed Ocean Ranch Substation would be implemented as part of the Proposed Project following construction of the substation. (The Conceptual Site Plan is provided as Appendix C and shows the landscaping and other features). The substation equipment would be within a walled area toward the center of the property, set back from Avenida del Oro and Rocky Point Drive. Stormwater management basins, access driveways, and the microwave tower and antenna would be outside of the wall. Exterior to the wall, the site would be landscaped. The landscaping plan, planting scheme, lighting guidelines, and sign regulations, include street trees and shrubs along Rocky Point Drive and Avenida del Oro and landscape plants that are low-water use, regionally appropriate, and visually compatible with the surrounding area and that do not conflict with the Pacific Coast Business Park Industrial Master Development Plan. The existing slope between Avenida del Oro and the substation pad currently is landscaped and irrigated and would not be disturbed.

  Implementation of the landscape plan would ensure that the project perimeter wall, street-front areas, and slopes would be visually similar to the existing business park surrounding the project and would provide partial screening of the perimeter wall.

  The plan incorporates low-water-use, mostly native plants that are visually similar to existing plants on neighboring properties. The landscaping includes strawberry tree (*Arbutus unedo*) at the entrance to the site from Rocky Point Drive, and on the top of the slope along Avenida del Oro. The landscape plan leaves in place the existing street trees and slope planting along the west side of the parcels facing Avenida del Oro and adds more shrubs and trees to the slope as well. The Proposed Project's landscape elements have been selected to comply with existing streetscape guidelines and to visually blend with existing neighboring landscapes. Low-water-use, mostly native plants are proposed throughout the interior landscape areas of the site, including trees and shrubs that are visually similar to existing plants on neighboring lots, such as Australian willow (*Geijera parviflora*) and holly leaf cherry (*Prunus ilicifolia*). These trees would provide a visual connection to the surrounding streetscapes and would provide some screening of the Proposed Project's perimeter walls. Medium-sized shrubs and low-growing shrubs and ground covers are proposed as well. The site includes two retention basins, which will be planted with locally appropriate grasses and rushes.

- **Dulled Galvanized Steel Structures.** New structures are designed utilizing dulled galvanized steel to avoid potential adverse effects relating to fire and fire damage, as well as adverse effects due to high moisture content in coastal areas. The dulled aspect of the steel poles also minimizes the potential for visual impacts relating to glare.

- **Perimeter Wall.** The perimeter wall would be designed to blend with the neighboring buildings and provide continuity with the existing landscape and would not conflict with standard design criteria and requirements for electrical substations or the Pacific Coast Business Park Industrial Master Development Plan.
- **Restoring Appearance of Temporarily Disturbed Areas.** When the Proposed Project construction has been completed, all temporarily disturbed terrain will be restored as near to preconstruction conditions as possible. Revegetation would be used where appropriate (revegetation in certain areas is not possible due to vegetation management requirements related to fire safety) to reestablish a natural appearing landscape and reduce potential visual contrast between disturbed areas and the surrounding landscape.
- **Temporary Lighting.** Temporary lighting at staging and storage areas will be directed on site and away from any sensitive receptors.
- **Visual Screening of Staging Yards.** Where staging yards are visible to the public, opaque mesh or slats (or equivalent material) will be installed along the fence that will soften the view of the staging yard from public vantage points such as roads, residences, and public vantage points.

5.1.3 Environmental Impacts and Mitigation Measures

Visual Impact Assessment Methodology

This visual analysis used a Visual Sensitivity/Visual Change (VS/VC) methodology to assess the visual effects of the Proposed Project on the existing landscape. The VS/VC methodology includes a characterization of the visual sensitivity of the existing landscape, the characteristics of existing visual changes occurring and apparent in the landscape, and the characteristics of the Proposed Project.

Following professionally accepted practice in visual analysis, visual sensitivity consists of three components: *visual quality*, *viewer concern*, and *viewer exposure*. The description of visual quality notes the existing built structures and natural or introduced landscape features that contribute to overall visual quality. Viewer concern can be described as the personal expectations for the landscape that are held by the viewing public. Viewer concern often is reflected in public policy documents that identify landscapes of special concern or roadways with special scenic status, e.g., scenic highways. Viewer exposure also affects a landscape's overall visual sensitivity. Landscapes that have very low viewer exposure, based on landscape visibility, viewing distance, number of people who view the landscape, or duration of time that the landscape can be viewed, will tend to be less sensitive to overall visual change in the context of human experience of visual impacts. Landscapes with higher viewer exposure are more sensitive to overall visual changes. Overall visual sensitivity is rated on a scale, Low to Moderate to High.

Project-induced visual change can result from aboveground facilities; vegetation removal and planting; landform modification; component size or scale relative to existing landscape characteristics; and the placement of project components relative to other developed features in the landscape. The experience of visual change can also be affected by the degree of screening afforded by vegetation, landforms, and/or structures; distance from the observers; atmospheric conditions; and angle of view. Visual change describes the degree of actual visible change expected as a result of the project. The fundamental elements of visual change include *visual contrast*, *visual dominance*, and *scenic view obstruction*. Visual contrast refers to visual discrepancies of form, line, color or texture of the project against the existing landscape. Visual dominance refers to the degree to which this contrast would demand the attention of casual viewers. Scenic view obstruction refers to the degree to which the

project would block or intrude upon scenic view corridors, particularly those identified in public policies. Overall visual change is rated on a scale, Low to Moderate to High.

In addition, the project is evaluated for conformance with applicable local plans and policies. Adopted expressions of local public policy pertaining to visual resources are given great weight in determining both visual quality and viewer concern.

The determination of which aesthetic changes cross a threshold of "substantial adverse effect" or degradation is based upon the criteria described in the methodology above and in Table 5.1-1, Visual Impact Significance Criteria. This table was used primarily as a consistency check, as determinations of visual sensitivity and visual change were based primarily on analyst experience and site-specific circumstances.

Implicit in this rating methodology is the acknowledgment that for a visual impact to be considered significant two conditions generally exist: (1) the existing landscape is of reasonably high quality and is relatively valued by viewers; and (2) the perceived incompatibility of one or more elements or characteristics of the project tends toward the high extreme, leading to a substantial reduction in visual quality.

Table 5.1-1. Visual Impact Significance Criteria

Visual Sensitivity	Visual Change				
	Low	Low to Moderate	Moderate	Moderate to High	High
Low	No impact[1]	No impact	Less Than Significant[2]	Less Than Significant	Less Than Significant
Low to Moderate	No impact	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant with Mitigation Incorporated[3]
Moderate	Less Than Significant	Less Than Significant	Less Than Significant	Less Than Significant with Mitigation Incorporated	Less Than Significant with Mitigation Incorporated
Moderate to High	Less Than Significant	Less Than Significant	Less Than Significant with Mitigation Incorporated	Less Than Significant with Mitigation Incorporated	Potentially Significant Impact[4]
High	Less Than Significant	Less Than Significant with Mitigation Incorporated	Less Than Significant with Mitigation Incorporated	Potentially Significant Impact[4]	Potentially Significant Impact

1 - No Impact – Impacts may or may not be perceptible but are considered minor in the context of existing landscape characteristics and view opportunity.
2 - Less than Significant – Impacts are perceived as negative but do not exceed environmental thresholds.
3 - Less than Significant with Mitigation Incorporated – Impacts are perceived as negative and may exceed environmental thresholds depending on project and site-specific circumstances, but are Less Than Significant with mitigation incorporated.
4 - Potentially Significant Impact – Impacts with feasible mitigation may be reduced to levels that are not significant or avoided all together. Without mitigation, significant impacts would exceed environmental thresholds.

Project Visual Description

The triangular-shaped substation property is bounded on the north by existing two-story commercial/light industrial buildings on either side of Rocky Point Drive, the street leading to and ending in the cul-de-sac adjacent to the substation site. On its north side, the substation property is at nearly the same elevation as the adjacent commercial properties on Rocky Point Drive. Views from the north toward the substation site are largely blocked by the existing buildings and street trees, except for views directly along the Rocky Point Drive to its terminus at the substation site. An existing overhead power line runs east-west along the north side of the substation property, between the substation site and the adjacent existing commercial/industrial buildings.

Abutting the east/southeast edge of the property is a row of commercial and light industrial buildings facing Avenida de la Plata. The relative elevation of the properties facing Avenida de la Plata to the project site elevation varies. The substation site is at a somewhat lower elevation (approx. 5 feet) than the adjacent properties at the east end of the site and a somewhat higher elevation (approx. 5 feet) than the adjacent properties near Avenida del Oro. Views from Avenida de la Plata toward the substation site are screened by these existing commercial buildings and landscaping, except when looking across the parking areas and driveways separating the buildings. These building have mature landscaping, including extensive tree and shrub cover. The distance from Avenida de la Plata to the substation property behind these buildings is approximately 225 feet.

At the west side of the substation site is Avenida del Oro. A U.S. Post Office with a parking lot is west of the site across from the substation site. A number of moderate to large sized street trees border the street between the Post Office and the substation site. South of the Post Office are two vacant properties. North of the Post Office, a stormwater detention basin separates the Post Office from a large two-story Federal Express Ground sorting facility surrounded by extensive car and truck parking. Along the Avenida del Oro side of the site, the substation property is elevated above the road. It is approximately 20 feet above the street at the north end of the property and ranges to approximately 8 feet above the street at the south end.

The Proposed Project would consist of a low-profile substation surrounded by a 10-foot high tan-colored wall made of stone, block, or similar material. The wall would be constructed after initial site preparation, with subsequent construction activity and equipment installation occurring within the walled property. Portions of the property outside of the wall may be used for temporary material staging during construction. With completion of construction, the area external to the wall would be landscaped. Access to the substation would be provided at two locations. Primary access would be by way of two driveways and gates in the Rocky Point Road cul-de-sac on the north side of the property. Secondary access would be way of one driveway and gate at the south end of the property that would be entered from Avenida del Oro. The Rocky Point Road gates would be 30 feet wide and made of chain-link fencing with slats inserted into the fencing. The secondary access from Avenida del Oro would be through a similar gate 20 feet wide. Lighting would be provided at the exterior of the primary entrance, with additional lighting on the interior side of the substation walls at the control building. Except for the exterior gate light, these lights would be off except when required for nighttime work. Although the substation is a low-profile design, some project elements would extend above the height of the surrounding wall and gates; the upper parts of this equipment would be visible from Rocky Point Drive. The most visually prominent feature of the Proposed Project from offsite would be a monopole and microwave dish installed at the south end of the property, outside of the substation wall (see Figure 5.1-5b). Transmission and distribution lines associated with the project would be installed underground. Exterior to the substation wall, landscaping would be installed along with stormwater management basins, as shown in

Appendix C. The landscaping and wall would comply with the Pacific Coast Business Park plan and standards, so as to be consistent with existing and future site development in the business park.

There are no residences in the vicinity of the substation site.

Immediate Foreground views are those occurring within 300 feet of the site. At this close distance, views from the north toward the substation site would be largely screened by existing 2-story commercial and light industrial buildings and their associated landscaping. A portion of the substation wall and gates, as well as the taller parts of substation equipment, would be visible to traffic and pedestrians on Rocky Point Road. Because the road ends in a cul-de-sac, there is no through traffic. Viewers would be limited to motorists and pedestrians traveling to and from the nearby business properties. The visual environment on Rocky Point Road is dominated by existing commercial and light industrial buildings, light standards, and vehicle parking. As a light industrial type of use, the substation would be in keeping with the character of its surroundings.

Along the southeast side of the substation site are existing commercial and light industrial buildings with associated landscaping and parking. The buildings face Avenida de la Plata, separating the substation site from the street by approximately 225 feet. These buildings and their landscaping and parking screen most of the site from offsite views from the southeast. Motorists and pedestrians looking perpendicular to the direction of travel on the road would have brief views of the substation wall and any equipment visible above the wall between the existing buildings. However, the existing buildings, parking, and vegetation would dominate the view and the visual character of the substation would be consistent with the visual character of the buildings in the foreground.

On the west side of the site, the Proposed Project would be visible from Avenida del Oro, a 2-lane road with a center turn lane and bike lanes, but no curbside parking. The view toward the substation for motorists, bicyclists, and pedestrians along this road would consist primarily of an engineered slope up from the street to the substation pad and the substation wall at the top of the slope. The slope would be landscaped. Motorists and pedestrians would see an 8- to 20-foot-high slope topped by a 10-foot wall. Based on the elevation of the top of the wall above the street, the wall's setback from the street, and the position of substation equipment and facilities toward the middle of the property, little if any of the equipment is anticipated to be visible at Immediate Foreground viewing distances. The one exception would be the monopole with microwave antenna proposed at the south apex of the triangular site, near Avenida del Oro's intersection with Avenida de la Plata. The 40-foot monopole and microwave dish would be visible, but not out of scale or character with existing development and vertical elements in the local visual environment. They would be a non-reflective grey color and would be a visual element consistent with other vertical elements in the vicinity, including landscape trees, street light standards, and transmission line poles.

Foreground view opportunities (ranging in distance from 300 feet to 0.5 miles of the substation project and site) are limited by topography, existing buildings, and trees. Figure 5.1-1 indicates those areas within 1.5 miles of the substation site from which the wall and/or equipment might be visible, based on topography alone. However, this figure does not account for the numerous existing buildings and trees that would block or filter most views of the substation. From the north, nearly all views except ones looking directly south down Rocky Point Drive would be blocked. If visible, the monopole would not penetrate above the height of many trees in the area and would be lower than nearby transmission lines. From the southeast, potential foreground views would be limited to the properties along Avenida de la Plata. Here, as well, the existing buildings and vegetation would largely block or filter views. From the west, views toward the substation are blocked by existing buildings. Motorists on eastbound Avenida del la Plata approaching Avenida del Oro would have the clearest view of the substation. This is

because the properties at this location (south of the Post Office) are vacant. Existing street trees would provide some view filtering. Moreover, most of the equipment and structures in the substation would be screened by the surrounding wall. Those that extend higher than the wall would be visible against a backdrop of buildings on Rocky Point Drive. The monopole and microwave antenna would be silhouetted against the sky, but would be a substantial visual element as it would be consistent with other vertical elements in the site vicinity, including trees, light standards, utility poles, and transmission lines.

Middleground views (from 0.5 miles to 4 miles distant) and Background views (beyond 4 miles distant) toward the Proposed Project would be mostly blocked. Buildings, landscaping, and topography would obstruct most sight lines between viewers and the site. In situations where the site may be visible from these distances the proposed substation would blend in with the existing commercial and light industrial buildings, roads, light standards, and trees that dominate the landscape and create its visual character. The substation would not be more prominent than the existing structures and features surrounding it. The 40-foot monopole and microwave dish would be visible, but not out of scale or character, with existing development in the area. Light standards along roads and in parking areas of commercial properties, as well as existing overhead transmission lines, are existing vertical elements in the existing visual landscape.

Aesthetics Impacts

a. Would the project have a substantial adverse effect on a scenic vista?

NO IMPACT. The proposed substation would be in an urbanized area and set amidst numerous commercial and light industrial buildings, landscape trees, light standards, utility poles, and roads. The flat to rolling coastal plain topography in this part of the City of Oceanside does not provide scenic vistas, which typically are views of open spaces or views from elevated topographic positions. The nearest mountains or areas of high elevation that would provide panoramic views that could include the substation site are 4 to 5 miles away. Views from these locations would overlook the highly developed urban landscape, within which the substation would be barely discernable, if visible at all. At these distances, haze and moisture in the air diminish colors and softens the distinctness of objects. The substation would be a minor new element in the overall view as seen from these distant potential vista points. No mitigation is required.

b. Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?

NO IMPACT. The substation site consists of two filled and graded, minimally vegetated building lots. Offsite vegetation in the project vicinity is planted landscaping consisting primarily of trees and shrubs along roads and around buildings. There are no important rock outcroppings or historic buildings in the area. State Route 76, approximately 1.7 miles north of the substation site, is the nearest State scenic highway. Based on these circumstances, there would be no substantial damage to scenic resources. No mitigation is required.

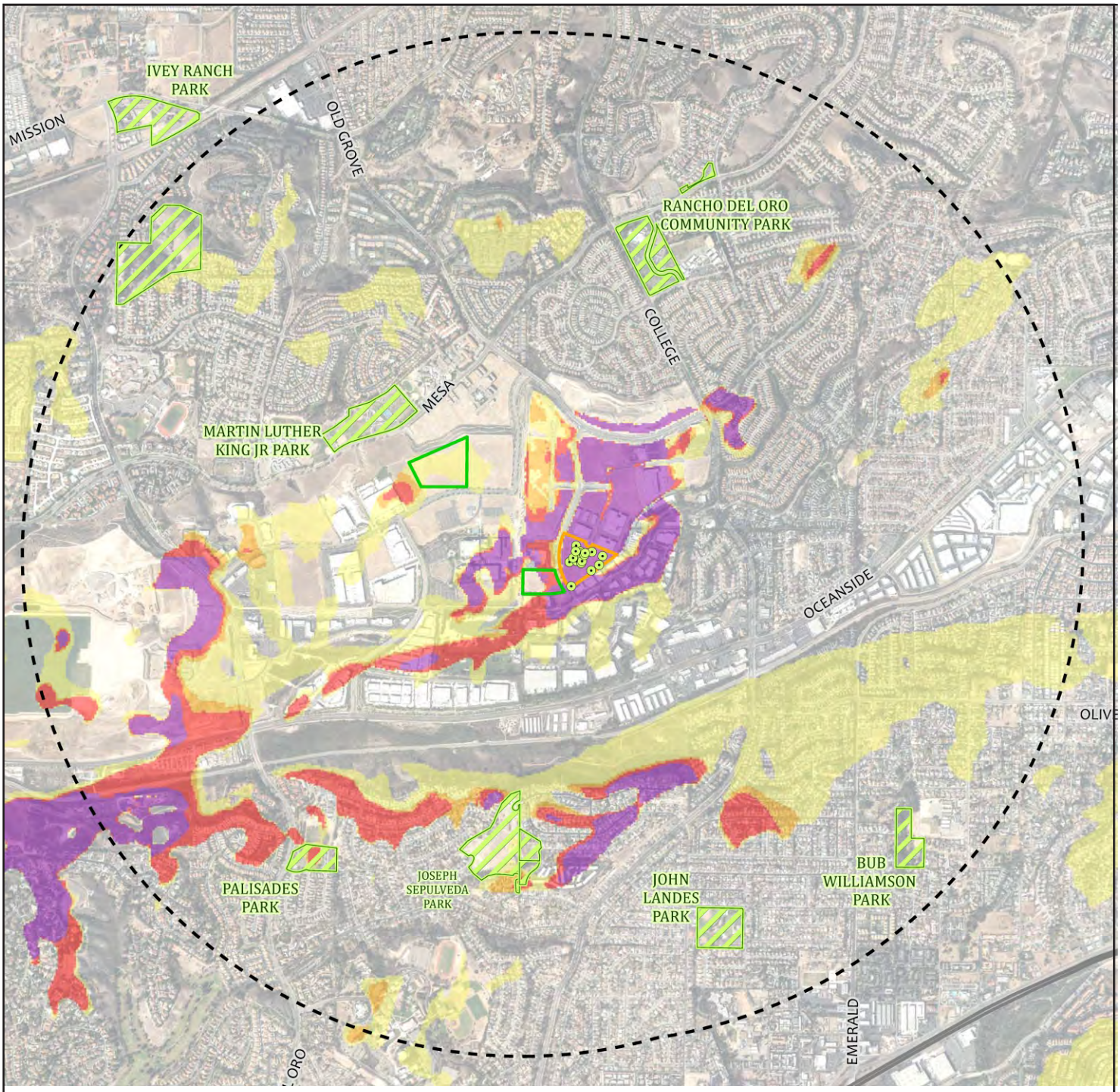
c. Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

LESS THAN SIGNIFICANT. The substation would introduce a neutral-colored wall and grey, dull-finished electrical equipment to a currently vacant property. This would change the visual character of the site, from an open, flat site to a built site. The site's surroundings are largely built out in commercial or light industrial land uses. The substation's wall and landscaping would be consistent with the design standards for

the larger business park within which it would be located. The substation equipment within the project's exterior wall would alter the existing visual character of the site and its surroundings. However, it would be consistent with the dominant visual character of the area, which has been established by the existing buildings, streets, light standards, trees, overhead transmission lines, and other elements associated with the business park. Most of the equipment associated with the substation would be screened from view by the surrounding wall and the area outside of the substation wall would be landscaped. The impact on the existing visual character of the site and surroundings would be less than significant. No mitigation is required.

d. Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

LESS THAN SIGNIFICANT. Lighting would be provided at the substation for safety, security, and nighttime emergency maintenance. Lights would be installed at the entry gate and at various locations within the walled substation. The lights would be less than 10 feet high, which is the height of the wall. Most substation lighting would be off, except on occasions when nighttime access is required. Safety/security lighting would consist of a light at the Rocky Point Road entrance and would be on during the night. There are existing street lights, parking area lights, and building-mounted lights on the streets, buildings, and properties abutting and near the substation site. The introduction of substation lighting would not represent a new source of substantial light or glare. The new light fixtures would add an imperceptible level of additional lighting in the vicinity, but would not adversely affect nighttime views. Materials used in the construction of the substation wall as well as equipment and appurtenances within the wall, such as the electrical equipment and monopole and antenna, would have dull, non-specular finishes and would not create glare. No mitigation is required.



Source: SDG&E, 2016a.

0 264 528 Feet

Figure 5.1-1

Substation Viewshed

Avenita de la Plata, looking Northeast

Ocean Ranch Boulevard, looking Southeast

Avenida del Oro, looking Northeast

Rocky Point Drive cul-de-sac, looking Southwest

Parking lot of US Post Office on Avenida Del Oro, looking East

Avenida del Oro, looking West

Source: SDG&E, 2016a.

Figure 5.1-2

Existing Conditions Photographs

Southwest corner of Project Site, looking West

Northwest corner of Project Site, looking Northwest

Avenida del Oro and Windansea Street, looking South

Avenida del Oro at northwest corner of Project Site, looking Southeast

Construction site at Avenida del Oro, looking West

Senior Center Drive, looking East

Source: SDG&E, 2016a.

Figure 5.1-2

Existing Conditions Photographs, Continued

Corporate staging yard at northeast corder, looking West

USPS staging yard from Avenida de la Plata looking North

Melrose staging yard from Melrose Drive, looking Southwest

San Luis Rey staging yard at northwest corner, looking West

Source: SDG&E, 2016a.

Figure 5.1-2

Existing Conditions Photographs, Continued

Simulated Key View Location
Key View Location

Proposed Project

Proposed Ocean Ranch Substation
Pulling Site
Staging Yard
Monopole

Underground 69 kV Power Line
Proposed

Underground 69 kV Power Line Vault
Proposed

Underground 12 kV Distribution Line
Proposed

Underground 12 kV Distribution Line Manhole/Handhole
Proposed Handhole
Proposed Manhole

Source: SDG&E, 2016a.

0 200 400 Feet

Figure 5.1-3
Viewpoint Locations and Orientation

Key View 1
North of intersection of Avenida Del Oro and Avenida De La Plata looking Northeast

Key View 2
Cul-de-sac at southern end of Rocky Point Drive looking Southwest

Key View 3
Parking lot of US Post Office on Avenida Del Oro, looking East

Key View 4
West of intersection of Avenida Del Oro and Avenida De La Plata looking West

Note: Views outlined in Red have been selected for simulation.

Source: SDG&E, 2016a.

Figure 5.1-4

Viewpoints Near Substation Site

Key View 5
Southeast corner of Project Site looking Southwest

Key View 6
Avenida del Oro and Windansea Street, looking South

Key View 7
Avenida del Oro at northwest corner of Project Site, looking Southeast

Note: Views outlined in Red have been selected for simulation.

Source: SDG&E, 2016a.

Figure 5.1-4

Viewpoints Near Substation Site, Continued

Source: SDG&E, 2016b.

Figure 5.1-5a
KOP 1: Existing View
Looking Northeast Across Avenida del Oro to Site

Source: SDG&E, 2016b.

Figure 5.1-5b
KOP 1: Simulation
Looking Northeast Across Avenida del Oro to Site

Source: SDG&E, 2016b.

Figure 5.1-6a
KOP 2: Existing View
Looking South from Rocky Point Road

Source: SDG&E, 2016b.

Figure 5.1-6b
KOP 2: Simulation
Looking South from Rocky Point Road

Source: SDG&E, 2016b.

Figure 5.1-7a
KOP 3: Existing Conditions
Looking Southeast Across Avenida del Oro to Site

Source: SDG&E, 2016b.

Figure 5.1-7b
KOP 3: Simulation
Looking Southeast Across Avenida del Oro to Site

5.2 Agriculture and Forestry Resources

AGRICULTURE AND FORESTRY 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 forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. **Would the project:**	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
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?	☐	☐	☐	☒
b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d. Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
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?	☐	☐	☐	☒

Significance criteria established by CEQA Guidelines, Appendix G.

5.2.1 Setting

The Proposed Project is located in a developed industrial area. The substation site would occupy two previously disturbed and graded building pads surrounded by existing commercial and light-industrial buildings and public roads. There is no agricultural activity at the site and it is not zoned for agricultural uses by the City of Oceanside, nor is there agricultural activity in the vicinity of the site (City of Oceanside, 2002a). The Proposed Project site is not in an area designated as "good" or "fair" for farming (City of Oceanside, 2002a). The substation site is zoned for Limited Industrial uses and Planned Development. The surrounding lands are designated as Urban and Built-Up Land under the California Department of Conservation (DOC) Farmland Mapping and Monitoring Program (FMMP), which identifies various categories of farmland throughout the State. The substation property and other properties in the area are not under California Land Conservation Act of 1965 (referred to as the Williamson Act) contracts. The Williamson Act allows counties to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use in return for a reduction in assessed property taxes.

Regulatory Background

This section includes a description of the aesthetic resources regulatory framework. There are no federal regulations associated with agriculture and forestry resources that are relevant to the Proposed Project.

State

Farmland Mapping and Monitoring Program (FMMP)

The FMMP was established in 1982 to identify various categories of farmland throughout California and to assess the location, quantity, and quality of agricultural lands and conversion of these lands to other uses. Every even-numbered year, FMMP issues a Farmland Conversion Report. FMMP data are used in elements of some county and city general plans, in regional studies on agricultural land conversion, and in environmental documents as a way of assessing project-specific impacts on Prime Farmland.

The DOC classifies lands as follows (DOC, 2016):

- **Prime Farmland:** Land that has the best combination of physical and chemical properties for the production of crops
- **Farmland of Statewide Importance:** Similar to Prime Farmland, but with minor shortcomings (e.g., steeper slopes, inability to hold water)
- **Unique Farmland:** Land of lesser quality soils, but recently used for the production of specific high economic value crops. Land is usually irrigated, but may include non-irrigated orchards or vineyards as found in some climatic zones in California
- **Farmland of Local Importance:** Land essential to the local agricultural economy
- **Grazing Land:** Land on which existing vegetation is suitable for livestock grazing.
- **Urban and Built-Up Land:** Land that is occupied by buildings or other structures at a minimum density of one unit to 1.5 acres (or approximately six structures to 10 acres). These lands are used for development purposes, including residential, commercial, industrial, construction, public administration, institutional, transportation yards, airports, cemeteries, golf courses, sewage treatment, sanitary landfills, and water control structures.
- **Other Land:** Land that is not in any other map category, such as waterbodies smaller than 40 acres; low-density rural developments; confined livestock, poultry, or aquaculture facilities; and brush, timber, wetland, and riparian areas not suitable for livestock grazing.
- **Water:** Perennial waterbodies that are a minimum of 40 acres.

Williamson Act

The Williamson Act is intended to help preserve farmland by allowing counties to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use in return for a reduction in assessed property taxes. The contracted land is then restricted to agricultural and compatible uses through a rolling-term, 10-year contract between the private land owner and the local government, which has the discretion to determine uses compatible with Williamson Act enrollment. As stated in Section 51222 of the California Government Code, the minimum acreage requirement for individual parcels to enter into Williamson Act contracts is 100 acres.

Local

As provided in CPUC General Order 131 D, the CPUC has exclusive jurisdiction over the siting, design, and construction of the Proposed Project, preempting local discretionary authority over the location and construction of electrical utility facilities. Therefore, the Proposed Project is not subject to local discretionary land use regulations. Nonetheless, as part of the environmental review process, consideration is given to relevant local land use plans and policies that pertain to agriculture and forestry resources.

County of San Diego

Farmland of Local Importance is land of value to the local economy, as defined by each county's local advisory committee and adopted by its board of supervisors. Farmland of Local Importance is either currently producing, or has the capability to produce agricultural products, but does not meet the criteria of Prime Farmland, Farmland of Statewide Importance, or Unique Farmland. Authority to adopt or to recommend changes to the category of Farmland of Local Importance rests with the San Diego County Board of Supervisors (DOC, 2015, as cited in SDG&E, 2016).

City of Oceanside General Plan – Land Use Element

The objective of the city's agricultural policies in the *Land Use Element* is to identify, conserve, and enhance agricultural areas (City of Oceanside, 2002b; SDG&E, 2016). The following policies generally relate to the Proposed Project:

- Policy 2.03A states that the City shall assure in all sections that the legal parcels or interests in agricultural lands are sufficient size to viably conduct agricultural practices.
- Policy 2.5C states that the City shall, in all proposed actions converting agricultural land to other land uses, consider the loss of those lands to the potential agricultural productivity to the community; and shall assure that land use compatibility to agricultural land is fully defined and assured.
- Policy 2.5D states that Land Use compatibility is of primary importance to agricultural areas, since land use conflicts between agricultural and non-agricultural uses can force the economic non-viability of agricultural areas.
- Policy 3.19A states that the City shall apply agricultural land use designations and zoning classifications to areas of significant productive agricultural use.
- Policy 3.19C states that the City shall encourage participation of agricultural property owners in Williamson Act contracts.

City of Oceanside General Plan – Environmental Resource Management Element

The purpose of the *Environmental Resource Management Element* is to conserve natural resources and preserve open space in the City of Oceanside. It provides information on agricultural resources and lands that are capable of supporting agricultural operations.

Applicant Proposed Measures

There are no APMs proposed with regard to Agriculture.

5.2.2 Environmental Impacts and Mitigation Measures

a. Would the project 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?

NO IMPACT. The Proposed Project site is designated as Urban and Built-Up Land on the Farmland Mapping and Monitoring Program maps. The site and all of the land in the site vicinity are designated as Urban and Built-Up Land on the FMMP maps. Agriculture is not practiced on the site. The Proposed Project would not result in conversion of Farmland to non-agricultural use.

b. Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?

NO IMPACT. The substation site is zoned for Limited Industrial uses and Planned Development. The Proposed Project would not conflict with zoning for agricultural use and the property is not under a Williamson Act contract.

c. Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

NO IMPACT. The proposed Ocean Ranch Substation site is in an urban area and is not forested. The Proposed Project would not conflict with zoning for forest land, timberland, or timber production.

d. Would the project result in the loss of forest land or conversion of forest land to non-forest use?

NO IMPACT. The Proposed Project will not affect any forest land. There would be no impact related to the conversion of forest land to non-forest use.

e. Would the project 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?

NO IMPACT. There is no Farmland, agriculture, or forestland at or near the project site. The development of the substation would not result in changes in the environment that would result in the conversion to non-agricultural or non-forest uses.

5.3 Air Quality

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:**	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a. Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☒	☐
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)?	☐	☐	☒	☐
d. Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
e. Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

Significance criteria established by CEQA Guidelines, Appendix G.

5.3.1 Setting

Climate and Meteorology. The proposed project site is located 6 miles east of the Pacific Ocean, within the City of Oceanside, San Diego County and in the San Diego Air Basin. Local meteorological conditions in the project area produce a mild climate with limited rainfall that primarily occurs in the winter months. Table 5.3-1 presents a monthly climate summary for the City of Oceanside with average annual maximum and minimum temperatures of 68°F and 53°F, respectively, and average total precipitation of 10.3 inches.

Thermal surface gradients between ocean and land temperatures produce daytime onshore winds (particularly in the summer) and nighttime offshore winds (particularly in the winter). When cooler, moist air travels inland to higher elevations a temperature inversion can occur, limiting the rise of polluted air and preventing dispersion. Figure 5.3-1 presents typical wind speeds and directions for the project area with a weak predominant onshore flow from the west-southwest and southwest, and a weak offshore flow from the north-northwest and northwest.

Table 5.3-1. Monthly Climate Data, Oceanside, California, 1953-2005

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (°F)	63.9	63.8	63.8	65.1	66.6	68.5	72.1	74.3	73.7	71.5	68.2	64.9	68.0
Average Min. Temperature (°F)	44.6	45.7	47.6	50.4	54.8	58.4	62.2	63.4	60.9	55.9	48.9	44.5	53.1
Average Total Precipitation (in.)	2.11	2.14	1.73	0.97	0.20	0.08	0.03	0.07	0.27	0.40	1.06	1.26	10.31

Source: Western Regional Climate Center, 2016 (http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?caocea+sca)

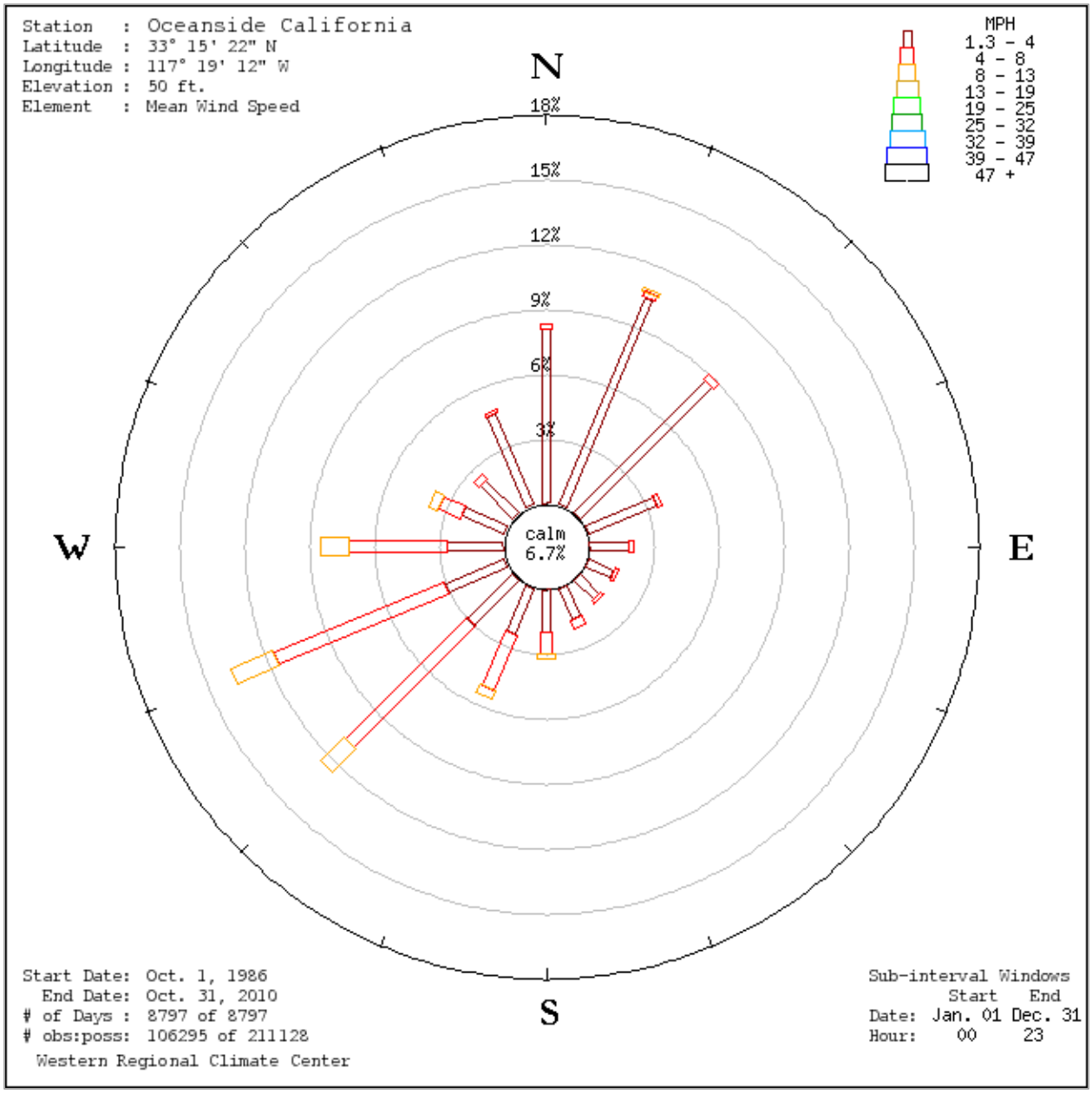


Figure 5.3-1. Windrose, Oceanside, CA, 1988-2010
Source: Western Regional Climate Center, 2016 (http://www.wrcc.dri.edu/cgi-bin/wea_windrose.pl?caZOCE)

Ambient Air Quality Standards. Ambient air quality is assessed by measuring concentrations of air pollutants in the ambient air. National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) are planning standards that define the upper limits for airborne concentrations of pollutants. The standards are designed to protect public health and welfare with a reasonable margin of safety. At the national level, the federal Clean Air Act requires the U.S. Environmental Protection Agency (USEPA) to establish NAAQS and designate geographic areas that are either attaining or violating the standards. In California, air quality management and regulation is the responsibility of the California Air Resources Board (CARB) and local air quality management districts, in this case the San Diego Air Pollution Control District (SDAPCD). The current national and California ambient air quality standards are shown in Table 5.3-2.

Table 5.3-2. National and California Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards	National Standards
Ozone	1-hour 8-hour	0.09 ppm 0.070 ppm	— 0.070 ppm
Respirable Particulate Matter (PM10)	24-hour Annual Mean	50 µg/m^3 20 µg/m^3	150 µg/m^3 —
Fine Particulate Matter (PM2.5)	24-hour Annual Mean	— 12 µg/m^3	35 µg/m^3 12 µg/m^3
Carbon Monoxide (CO)	1-hour 8-hour	20 ppm 9.0 ppm	35 ppm 9.0 ppm
Nitrogen Dioxide (NO_2)	1-hour Annual Mean	0.18 ppm 0.030 ppm	100 ppb 0.053 ppm
Sulfur Dioxide (SO_2)	1-hour 24-hour Annual Mean	0.25 ppm 0.04 ppm —	75 ppb 0.14 ppm 0.03 ppm

Notes: ppm=parts per million; ppb=parts per billion; µg/m3= micrograms per cubic meter; "—" =no standard.
Source: CARB (http://www.arb.ca.gov/research/aaqs/aaqs2.pdf). Revised May 2016.

Criteria Air Pollutants. The NAAQS and CAAQS are established for "criteria pollutants." These are ozone, respirable particulate matter (PM10), fine particulate matter (PM2.5), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead. Ozone is an example of a secondary pollutant that is not emitted directly from a source (e.g., an automobile tailpipe), but it is formed in the atmosphere by chemical and photochemical reactions. Reactive organic gases (ROG), including volatile organic compounds (VOC), are regulated as precursors to ozone formation. The USEPA and CARB both have independent authority to develop and establish ambient air quality standards.

Attainment Status and Air Quality Plans. The USEPA, CARB, and the local air district classify an area as attainment, unclassified, or non-attainment. The classification depends on whether the monitored ambient air quality data show compliance, insufficient data available, or non-compliance with the ambient air quality standards, respectively. The proposed substation would be located within San Diego County, under the jurisdiction of the SDAPCD. Table 5.3-3 summarizes attainment status for the criteria pollutants in the SDAPCD with both the federal and state standards.

Table 5.3-3. Attainment Status for San Diego Air Basin

Pollutant	Federal Designation	State Designation
Ozone (1-hour)	No Federal Standard	Nonattainment
Ozone (8-hour)	Nonattainment	Nonattainment
PM10	Attainment	Nonattainment
PM2.5	Attainment	Nonattainment
CO	Attainment	Attainment
NO_2	Attainment	Attainment
SO_2	Attainment	Attainment

Source: San Diego Air Pollution Control District (http://www.sdapcd.org/content/sdc/apcd/en/air-quality-planning/attainment-status.html).

Table 5.3-4 presents recent historical air quality data for the project area collected at the nearest representative monitoring station in San Diego County. The station used to provide ozone, PM2.5, and NO_2 concentrations is located at the Camp Pendleton monitoring station, approximately 6 miles west-northwest of the proposed project site. This is the most representative site of the project area given its coastal location. PM10 and SO_2 concentrations are from the El Cajon–Redwood Avenue and El Cajon–Floyd Smith Drive monitoring stations, approximately 35 miles and 33 miles southeast of the proposed project site, respectively. The Redwood Avenue monitoring station was moved to the current Floyd Smith Drive location in 2014 resulting in insufficient data for 2014, and only 75 percent of the 2015 PM10 data is

complete. Carbon monoxide concentrations are from the San Diego 1110 Beardsley Street station approximately 36 miles south of the proposed project site.

The ambient air quality data indicates that from 2013-2015, the proposed project area had experienced exceedances of the state and federal ozone and PM2.5 standards and state PM10 standards, but experienced no exceedance of the federal PM10 standards, or federal or state SO_2, NO_2, and CO standards.

Table 5.3-4. San Diego Air Basin Ambient Air Quality

		Maximum Concentration		
Pollutant	**Averaging Time**	**2013**	**2014**	**2015**
Ozone	1-hour (ppm)	0.078	0.097	0.093
	8-hour (ppm)	0.066	0.079	0.077
PM10	24-hour (µg/m^3)	41.1	—	50.3
	Annual (µg/m^3)	24.1	—	23.4
PM2.5	24-hour 98th Percentile (µg/m^3)	41.0	54.4	43.7
	Annual (µg/m^3)	17.8	19.1	18.8
CO	1-hour (ppm)	3.0	2.7	2.6
NO_2	1-hour (ppm)	0.081	0.060	0.060
	1-hour 98th Percentile (ppm)	0.049	0.051	0.044
	Annual (ppm)	0.019	0.018	0.017
SO_2	1-hour (ppm)	0.007	—	0.001

Source: CARB, 2016c.
Notes: ppm = parts per million; µg/m^3 = micrograms per cubic meter; "—" = no data or insufficient annual coverage currently available.

Toxic Air Contaminants. Toxic air contaminants (TACs) are air pollutants that may lead to serious illness or increased mortality, even when present in relatively low concentrations. Potential human health effects of TACs include birth defects, neurological damage, cancer, and death. There are hundreds of different types of TACs with varying degrees of toxicity. Individual TACs vary greatly in the health risk they present; at a given level of exposure, one TAC may pose a hazard that is many times greater than another's. TACs are not subject to ambient air quality standards but are regulated by SDAPCD using a risk-based approach. If the projected emissions of a specific air toxic compound from a proposed new or stationary modified source suggest a potential public health risk, then each applicant is subject to a health risk assessment for the source in question. Such an assessment also evaluates the chronic and acute hazards and the potential increased cancer risk stemming from exposure to a change in airborne TACs. The three TACs that do have state ambient air quality standards (lead, vinyl chloride, and hydrogen sulfide) are pollutants that are in attainment of the state standards in San Diego County and that are not relevant to the air pollutant emissions sources for this project. Mobile sources powered by diesel fuel emit diesel particulate matter (DPM), which is classified as a TAC because many toxic compounds adhere to diesel exhaust particles. Statewide programs for mobile sources and diesel-fired equipment set mandatory exhaust standards for manufacturers of these engines and require equipment owners or operators to register portable equipment.

Sensitive Receptors. While the project site is located within a commercial/industrial park, air pollution emission impacts on sensitive receptors surrounding the project area are of concern. Sensitive receptors include but are not limited to children, pregnant women, the elderly, and acutely or chronically ill. These individuals may be present at educational or daycare facilities, convalescent homes, hospitals, residences, or open recreational areas. The nearest sensitive receptor to the proposed project site is the

Coastal Academy Elementary School approximately 850 feet south southeast. There are three other educational facilities, a daycare, an outdoor golf training facility, a public park, two convalescent homes, and several medical clinics within one mile of the project site. The nearest single family residences are approximately 1,200 feet east of the project site.

Regulatory Background

Sources of air pollutants in San Diego County are subject to regulation and oversight by the USEPA, CARB, and SDAPCD. Although the proposed project is within the City of Oceanside, this analysis also notes the guidelines for determining significance in the California Environmental Quality Act (CEQA) process, as approved by the County of San Diego.

Federal Clean Air Act (CAA)

The NAAQS (Table 5.3-2) for criteria air pollutants were established in 1970 with a mandate for periodic updating. The CAA places responsibility on state and local air agencies to maintain these ambient air quality standards. In San Diego County, the CARB and SDAPCD establish the regulations, enforce air pollution control requirements, and develop the attainment plans for the NAAQS. The USEPA implements most aspects of the CAA, and reviews local and state air quality management plans and regulations to ensure attainment with the NAAQS.

California Clean Air Act

Implemented by the CARB, the California Clean Air Act establishes broad authority for California to regulate emissions from mobile sources and requires regions to develop and enforce strategies to attain CAAQS. In San Diego County, the SDAPCD is responsible for periodically preparing air quality management plans demonstrating how these standards will be met.

USEPA/CARB Off-Road Mobile Sources Emission Reduction Program

The California Clean Air Act mandates that CARB achieve the maximum degree of emission reductions from all off-road mobile sources in order to attain the state ambient air quality standards. Off-road mobile sources include construction equipment. Tier 1, Tier 2, Tier 3, and Tier 4 standards for large compression-ignition engines used in off-road mobile sources began to go into effect in California for new equipment in 1996, 2001, 2006, and 2008, respectively. These standards and standards applicable to fleets that are already in-use address emissions of nitrogen oxides (NOx) and toxic particulate matter from diesel combustion.

CARB In-Use Off-Road Diesel-Fueled Fleet Regulation

The regulations for in-use off-road diesel equipment are designed to reduce NOx and DPM from existing fleets of equipment. CARB expects to gradually enforce this rule with emissions performance requirements for large fleets starting on July 1, 2014 and for small fleets starting on January 1, 2019 (according to CARB Mail-Out #MSC 14-1, February 2014). Depending on the size of the fleet, the owner would need to ensure that the average emissions performance of the fleet meets certain state-wide standards. In lieu of improving the emissions performance of the fleet, electric systems can be installed to replace diesel equipment in the fleet average calculations. Presently, all equipment owners are subject to a five-minute idling restriction in the rule (13 California Code of Regulations, Chapter 10, Section 2449).

CARB Portable Equipment Registration Program (PERP)

This program allows owners or operators of portable engines and associated equipment commonly used for construction or farming to register their units under a statewide portable program that allows them to operate their equipment throughout California without having to obtain individual permits from local air districts.

SDAPCD Rules and Regulations

The SDAPCD is responsible for planning, implementing, and enforcing federal and state ambient standards within San Diego County. It is also responsible for permitting and controlling stationary source criteria and air toxic pollutants as delegated by the USEPA. Applicable rules and regulations to the proposed substation project include:

- **Regulation II – Permits.** The rules under this regulation require the permitting of stationary sources, require new emission sources use best available control technology (BACT) to control criteria pollutant emissions, and require offsetting of emissions if permitted emissions would exceed designated thresholds. There is the potential that portable internal combustion engines being used during Project construction would require permits from SDAPCD if they are not permitted under the CARB PERP program.
- **Regulation IV – Prohibitions**
  - **Rule 50 – Visible Emissions.** This rule prohibits discharge of air contaminants or other material, which are as dark or darker in shade as that designated No. 1 on the Ringelmann Chart or obscure an observer's view.
  - **Rule 51 – Nuisance.** This rule prohibits discharge of air contaminants or other material that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public; or that endanger the comfort, repose, health, or safety of any such persons or the public; or that cause, or have a natural tendency to cause, injury or damage to business or property.
  - **Rule 55 – Fugitive Dust Control.** The rule limits visible dust opacity and visible dust plumes beyond property lines, and requires control of track-out onto paved roads to control the amount of PM entrained in the atmosphere from man-made sources of fugitive dust.

City of Oceanside General Plan – Land Use Element

The Natural Resource Management section in the City of Oceanside General Plan, Land Use Element contains an air quality policy stating the city shall cooperate with the San Diego County Air Pollution Control Board (SDCAPCB) and participate in the Regional Air Quality Control Strategy (RAQS). The RAQS is developed by the San Diego Quality Planning Team which is comprised of representatives from the SDCAPCB, Comprehensive Planning Organization, and the California Department of Transportation (Caltrans). Within the Environmental Resource Management Element are several air quality policies. The long-range policy direction restates that the city shall cooperate with county, state, and federal agencies in continuing programs of air quality improvement. The environmental resource management plan restates that industry and development projects are subject to regulations and controls of the SDAPCB and should exercise dust controls and noise abatement measures as necessary to protect the health and wellbeing of the surrounding community.

Applicant Proposed Measures

There are no applicant proposed measures for air quality.

5.3.2 Environmental Impacts and Mitigation Measures

Significance Criteria. The SDAPCD rules and regulations include trigger levels for potential ambient air quality impacts, in SDAPCD Regulation II, Rule 20.2, Table 20.2-1, and these regulatory levels provide the basis for screening criteria for potential impact significance. Within the jurisdiction of SDAPCD, lead agencies commonly note these regulatory levels and the CEQA guidelines for determining significance in that are approved by the County of San Diego, Department of Planning and Land Use (March 19, 2007). A project that emits over these guideline levels would normally require a detailed air quality impact assessment, especially if sensitive receptors are likely to be impacted or if the potential exists for a significantly cumulative air quality impact. If emissions during construction of the proposed project exceed the thresholds, then construction activities would be deemed likely to have the potential to violate air quality standards or contribute substantially to existing violations.

Table 5.3-5. Air Quality Significance Thresholds

Significance Threshold	NOx	VOC	PM10	PM2.5	CO	SOx
Pounds Per Day (lb/day)	250	75	100	55	550	250
Tons Per Year (tpy)	40	13.7	15	10	100	40

Source: County of San Diego, Guidelines for Determining Significance, Air Quality. March 19, 2007.

a. Would the project conflict with or obstruct implementation of the applicable air quality plan?

LESS THAN SIGNIFICANT. The SDAPCD manages local air quality, subject to oversight by CARB and USEPA, and administers California and federal air pollution control programs ensuring attainment and maintenance of the ambient air quality standards. A project could be inconsistent with the applicable air quality management plan or attainment plan if it could cause population and/or employment growth or growth in vehicle miles traveled in excess of the growth forecasts included in the attainment plan. The proposed project would not create any new permanent employment; the substation would be unstaffed. Construction of the proposed substation is expected to take approximately 20 months to complete with the expected required personnel peaking at 40 workers. Routine operations are expected to require one or two workers to visit the station on a daily or weekly basis. Routine maintenance is expected to require approximately six trips to the station per year by two to four workers.

Construction-related emissions for the proposed project were estimated using the California Air Pollution Officers Association (CAPCOA), California Emissions Estimator Model (CalEEMod), version 2016.3.1, and the results are shown in Table 5.3-6. The maximum daily emissions generated during construction of the proposed substation do not exceed the SDAPCD rules and regulations.

Table 5.3-6. Estimated Maximum Daily Construction Emissions (lb/day)

Anticipated Construction	NOx	VOC	PM10	PM2.5	CO	SOx
2017	106	9	22	12	54	0.11
2018	119	10	23	13	67	0.14
2019	40	4	3	2	33	0.06
Significance Threshold	250	75	100	55	550	250
Significant?	No	No	No	No	No	No

Source: SDG&E 2016; response dated November 18, 2016.

Regional air quality plans and emissions inventories anticipate growth, and this anticipated growth includes the construction of some new infrastructure, such as the proposed project. Conducting project construction and operational activities in compliance with applicable SDAPCD rules and regulations would ensure the project-related activities would not conflict with or obstruct attainment and maintenance of the ambient air quality standards. Project-related emissions occurring in compliance with these standards would not conflict with or obstruct implementation of the applicable air quality plan. This impact would be less than significant.

b. Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

DURING CONSTRUCTION, *LESS THAN SIGNIFICANT*. Emissions during the construction phase would include criteria air pollutants that could contribute to existing or projected violations of the ambient air quality standards for ozone and PM10. Construction of the proposed substation, subtransmission line segments, and other project facilities would result in air pollutant emissions from construction equipment and material handling at the various work areas and from off-site motor vehicle trips carrying workers and materials. Motor vehicles, off-road equipment, and other construction equipment would directly emit criteria air pollutants and toxic air contaminants.

The proposed project includes a substation facility that is planned to occupy 9.66 acres. The substation would tie into adjacent SDG&E facilities via approximately 1,500 feet of underground power line duct bank and would have an approximate 4,650-foot long electrical distribution line, mostly on the proposed substation parcel. A 40-foot telecommunication monopole would also be constructed at the southern corner of the parcel. Construction of the substation is expected to require an average of 24 workers and a peak of 40 workers. The equipment anticipated are detailed in Table 4-4 (Project Description).

During construction, emissions would be generated at the proposed substation site, at staging yards, along the subtransmission line and fiber optic line work areas, and along the roadways used to access these locations. Construction emissions would be caused by exhaust from vehicles and equipment (e.g., ozone precursors [volatile organic compounds and NOx], CO, and particulate matter [PM10 and PM2.5]) and fugitive dust/particulate matter from ground-disturbing activities and travel on unpaved roads. Diesel and gasoline-powered construction equipment at work sites would include dozers, loaders, graders, backhoes, lifts, a crane, and haul trucks for lifting, delivery, concrete, water, and work crews. Outside of work sites, exhaust emissions would be caused by vehicles transporting equipment and supplies to the sites, trucks removing debris or importing fill, and workers commuting to and from work sites. Table 5.3-6 (Estimated Maximum Daily Construction Emissions) summarizes the estimated total construction emissions modeled in CalEEMod, version 2016.3.1 (SDG&E 2016; response dated November 18, 2016).

Emissions were calculated based on anticipated equipment and workforce needs during construction of the proposed substation (Table 4-4) over an estimated 20-month construction period. During construction, the emissions generated would not exceed the SDAPCD threshold levels for any air pollutants. Project construction activities would need to be compliant with federal, state, and SDAPCD rules and regulations and would adhere to SDG&E Construction Practices in the Standard Operating Procedures (see Section 4.12.3, in Project Description). Because the project would not violate any air quality standard or contribute substantially to an existing or projected air quality violation, the impacts resulting from construction-related emissions would be less than significant.

DURING OPERATION, *LESS THAN SIGNIFICANT*. The operation and maintenance of the proposed substation and related facilities would require occasional use of mobile sources and some portable equipment that cause

routine emissions of criteria air pollutants. The substation itself would not include any stationary sources of air pollutants, although the on-site unintentional release of insulating gas would cause greenhouse gas emissions (Section 5.7). During operations, emissions would result from vehicles used for periodic visits, inspections, and routine maintenance or as needed during an emergency. Operation and maintenance activities are described in Section 4.12, Operation and Maintenance (Project Description), and these activities would largely be included in SDG&E's regular operations and maintenance schedule with nearby facilities. The substation would not be staffed, and the routine operation and maintenance activities would result in a small, but unquantified amount of air pollutant emissions from mobile sources. SDG&E claims that operation and maintenance activities would not materially increase with the addition of the proposed facilities to SDG&E's system. Crews would conduct maintenance roughly six times per year, and one or two workers would visit the substation daily or weekly. As such, the operation and maintenance emissions would be less than the level of emissions during construction activities, which would also be less than the significance thresholds. These operation and maintenance emissions would not be likely to violate any air quality standard or contribute substantially to an existing or projected air quality violation, and the impacts of emissions during operation and maintenance would be less than significant.

c. Would the project 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)?

DURING CONSTRUCTION, *LESS THAN SIGNIFICANT*. The proposed project is within the San Diego Air Basin which is state and federally designated nonattainment for ozone, and state designated nonattainment for PM10 and PM2.5 (Table 5.3-3). Concurrent construction of other projects in close proximity to the proposed project would result in increased local air quality impacts for the duration of simultaneous construction activities. However, simultaneous construction projects would also need to comply with SDAPCD rules and regulations regarding criteria pollutants. Table 5.3-6 shows that construction-related emissions would not exceed the significance thresholds and therefore not be at a cumulatively considerable level. In addition to the implementation of SDG&E's Standard Operating Procedures (see Section 4.12.3, in Project Description), the proposed project would not result in a cumulatively considerable new increase of any criteria pollutants. The impact would be less than significant.

DURING OPERATION, *LESS THAN SIGNIFICANT*. During operation, emissions would result from limited vehicle use related to routine maintenance at the project site. The associated emissions levels would be below the significance thresholds and would not result in a cumulatively considerable increase of any criteria pollutants. The impact would be less than significant.

d. Would the project expose sensitive receptors to substantial pollutant concentrations?

LESS THAN SIGNIFICANT. The project site is located within an industrial park surrounded by commercial and industrial uses and undeveloped land. Sensitive receptors include but are not limited to children, pregnant women, the elderly, and acutely or ill. These individuals may be present at educational or daycare facilities, convalescent homes, hospitals, residences, or open recreational areas. The nearest sensitive receptor to the proposed project site is the Coastal Academy Elementary School approximately 850 feet south southeast and the nearest residences are 1,200 feet east of the project site.

Excavation, grading, and other construction-related activities could potentially expose sensitive receptors to construction-related emissions, including emissions of fugitive dust, DPM, and other toxic air contaminants, which would expose the receptors to increased health risk and hazards. The estimated construction-related emissions (Table 5.3-6) would not exceed the significance thresholds set by the

SDAPCD. Compliance with the SDAPCD rules and regulations and implementation of SDG&E's Standard Operating Procedures (see Section 4.12.3, in Project Description) would further reduce the construction-related emissions of TACs and fugitive dust. Therefore, the total project construction-related emissions would not be of a magnitude or duration that would expose the nearest sensitive receptors to substantial pollutant concentrations. During operation, the emissions produced by the proposed substation are limited to the use of vehicles for routine maintenance and would not expose sensitive receptors to substantial concentrations of air pollutants. The impact would be less than significant.

e. Would the project create objectionable odors affecting a substantial number of people?

LESS THAN SIGNIFICANT. The proposed project would not include any sources of objectionable odors during operation. The temporary generation of minor odors from combustion of diesel by construction equipment and emissions of dust would occur during construction activities. Any odors due to construction activities would be intermittent, dissipate quickly, and be localized to the work area. Odors from diesel combustion would be minimized through use of ultra-low sulfur diesel fuel, which is mandatory through federal and state diesel fuel standards. Odors would be limited by a prohibition on nuisances (SDAPCD Regulation IV, Rule 51), and fugitive dust emissions would be minimized through implementation of local rules and regulations (SDAPCD Regulation IV, Rule 55). Project-related activities occurring in compliance with these rules and regulations would not create objectionable odors affecting a substantial number of people. This impact would be less than significant.

5.4 Biological Resources

BIOLOGICAL RESOURCES Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
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 Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☒	☐
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?	☐	☐	☐	☒
d. Interfere substantially 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?	☐	☒	☐	☐
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan?	☐	☐	☐	☒

Significance criteria established by CEQA Guidelines, Appendix G.

5.4.1 Setting

This section describes the biological resources that occur, or could potentially occur, in the Project area. It includes a description of the existing biotic environment, including common plants and wildlife, sensitive habitats, special-status species and their locations in relation to the Proposed Project. The following section (5.4.2) presents an analysis of potential impacts to biological resources and, where necessary, specifies mitigation measures to reduce potential impacts to less-than-significant levels. Information used in preparing this section was derived from:

- Proponent's Environmental Assessment for the Ocean Ranch Substation Project (SDG&E, 2016a);
- Final Biological Technical Report: Ocean Ranch Substation Project (Pangea, 2016);
- Data Request Response No. 1 to CPUC Data Request No. 1 (SDG&E, 2016b)
- Records of sensitive species locations from the California Natural Diversity Database (CNDDB; CDFW, 2016) for the following 7.5-minute USGS topographic quads: San Luis Rey, Las Pulgas Canyon, Morro Hill, Bonsall, Oceanside, San Marcos, Encinitas, and Rancho Santa Fe; and
- Records of sensitive species locations from the California Native Plant Society Inventory of Rare and Endangered Vascular Plants of California for the topographic quads listed above (CNPS, 2016).

The Proposed Project would be located approximately 35 miles north of downtown San Diego. The Proposed Project site is found on the U.S. Geological Survey (USGS) San Luis Rey 7.5 minute quadrangle

map. Average annual precipitation in the area is approximately 10 inches, most of which falls between November and April (WRCC, 2016).

For the purposes of this section, the Project site is defined as all areas that would be directly affected by construction activities. For biological resources, the Project Study Area (PSA) includes the Project site plus a surrounding 50-foot buffer; see Figure 5.4-1. (Note: All figures referenced in the text are located at the end of this section.) The Project area includes the Project site and its general vicinity.

The proposed Ocean Ranch Substation site occupies 9.66 acres, which is primarily disturbed habitat dominated by non-native vegetation. The site has gentle to moderately sloping topography. There is evidence of past site disturbance including grading, mowing, and agricultural use. Past earthwork at the site (the most recent during 2006 to 2007) consisted primarily of infilling of existing drainage features with artificial fill. That grading resulted in the formation of an enclosed basin in the central portion of the site with a subdrain that allows the basin to drain toward the southwest (Kleinfelder, 2015). This drainage basin supports a small area of riparian vegetation. The site was mowed most recently in July 2016.

The proposed substation site is composed of two parcels. A 4- to 7-foot-high slope planted with small, immature ornamental trees and landscaping ground cover divides the two parcels. Landscaped slopes run along the western edge of the site adjacent to Avenida del Oro and along the northwestern edge adjacent to a paved driveway. These slopes are also planted with ground cover and small, immature ornamental trees. Mature ornamental trees are found along the southeastern edge of the site along the fence separating the site from adjacent commercial/industrial buildings. The entire substation site would be permanently impacted by construction of the facility.

Four potential construction staging yards, with a total area of approximately 17.5 acres, have been identified in the vicinity of the proposed substation. The staging areas may be used for various activities in support of construction, including parking, storage, lighting, construction trailers, portable restrooms, refueling of vehicles and equipment by a mobile fueling truck, and pole framing and assembly. In-ground fencing would be installed at the staging yards, unless already present. Gravel, class II road base, or other best management practice (BMP) may be used to line the ground at staging yards to avoid mud conditions and sediment transport off site. The staging yards are temporary work areas and are intended to be restored as near to pre-construction conditions as possible following the completion of construction. The 4 yards are the Corporate Center, USPS, San Luis Rey, and Melrose Staging Yards:

- The Corporate Center Staging Yard is approximately 11.5 acres of disturbed habitat that has been previously mass graded as part of an approved industrial development plan. The Corporate Center parcel is mowed annually for vegetation management. Surrounding areas are open space, also subject to previous grading and recent vegetation management, commercial/industrial buildings, public roadways, and landscaped areas.
- The USPS Staging Yard is approximately 5 acres of undeveloped land composed of disturbed habitat that has been previously graded. The site is periodically mowed for vegetation management, most recently in October 2016. Surrounding areas are commercial/industrial buildings, public roadways, and landscaped areas. There is a small area of undeveloped land, also subject to previous disturbance and vegetation management, to the southeast, and the proposed substation site is across the street (Avenida del Oro) from this staging yard.
- The San Luis Rey Staging Yard is approximately 0.5 acres of paved area next to the existing San Luis Rey Substation. The area to the south is the substation, but just to the north is open space with native coastal scrub habitat. This area to the north of the yard is U.S. Fish and Wildlife Service (USFWS) designated critical habitat for the federally threatened coastal California gnatcatcher (*Poliptila californica*

californica). At its closest point, the edge of the critical habitat is approximately 60 feet north of the staging yard (USFWS, 2016).

- The Melrose Staging Yard is approximately 0.5 acres of land next to the existing Melrose Substation. This area has several mature ornamental landscaping trees, including palm trees. The substrate at the staging yard consists of wood chips. Surrounding areas are the substation, residential and commercial/ industrial development, and additional landscaped areas.

Other existing SDG&E paved material storage yards may also be used to support construction. No improvements would occur at these existing sites as a result of the Proposed Project. Other Project components (Power Line TL 6966 Loop-In, 12 kV Distribution System, Telecommunications System, Pulling Sites) would be installed either within the footprint of the proposed substation or underground along paved public roadways. Most work areas are accessible by vehicle in paved/developed areas or other existing disturbed areas. Vehicles would remain within existing access roads, previously disturbed areas, and designated temporary work areas, where feasible. No new access roads are proposed for the Project. See Section 4.0, Project Description, for full details.

Previous Site Disturbance

Ocean Ranch Substation Site and USPS Staging Yard

The Ocean Ranch Substation site and the USPS Staging Yard are located within the Pacific Coast Business Park Master Development Plan, which is an industrial development plan within the Rancho del Oro Specific Plan area.

The Pacific Coast Business Park Master Development Plan was approved and its Environmental Impact Report was certified in August 2005. Per that plan, the entire plan area has been graded to create development pads, and all infrastructure was installed including roads, drainages, and utilities.

The proposed Ocean Ranch Substation site was used as agricultural land in the early 2000s (Google Earth aerial photos dated 2003 and 2004). By 2008, the Ocean Ranch Substation site and the USPS Staging Yard were mass graded for the development of industrial uses per the approved Pacific Coast Business Park Master Development Plan. Currently, the proposed Ocean Ranch Substation site is entirely bounded by roads and existing industrial and commercial development. Soils that underlie the Proposed Project area consist primarily of loose to medium dense fill, medium dense to hard to very hard colluvium, and at depth very dense formational soils, which are primarily of the Santiago Formation. The Project site consists of documented fill overlying alluvial and colluvial deposits. The substation site is mowed annually, most recently in July 2016. The USPS Staging Yard site has been mowed annually for the past 10 to 12 years, most recently in October 2016.

Corporate Center Staging Yard

The Corporate Center Staging Yard is a vacant property within the Ocean Ranch Corporate Center, west of the Pacific Coast Business Park area. The site for the staging yard was approved for industrial development (Windstar Project) and has been previously graded. The Corporate Center Staging Yard is mowed annually.

Vegetation Communities

General biological resource and reconnaissance-level field surveys of the PSA were conducted by Pangea Biological in March, May, and October 2015, and March 2016. The purpose of the surveys was to determine the vegetation communities present and the special-status species that occur or have the potential

to occur. Aspen Environmental Group (Aspen) conducted a site visit in September 2016 to verify existing conditions.

Vegetation community classifications generally follow Holland (1986), as modified by Oberbauer et al. (2008). The PSA supports three vegetation communities and cover types: Disturbed Southern Riparian Scrub, Disturbed Habitat, and Urban/Developed/Landscape/Ornamental/Bare Ground; see Figure 5.4-2. The acreages of each vegetation community and anticipated impacts are provided in Table 5.4-1.

The proposed Ocean Ranch Substation site includes disturbed habitat with dominant species that include within the graded pad the native species western ragweed (*Ambrosia psilostachya*) and telegraph weed (*Heterotheca grandiflora*), and non-native species Russian thistle (*Salsola tragus*), brome grass (*Bromus* spp.), Australian saltbush (*Atriplex semibaccata*), crown daisy (*Chrysanthemum coronarium*), and lavender (*Limonium* sp.); within the developed desiltation basin is Disturbed Southern Riparian Scrub habitat that is dominated by native mulefat (*Baccharis salicifolia*) and arroyo willow (*Salix lasiolepis*), and non-native iceplant (*Mesembryanthemum* sp.) and sweet fennel (*Foeniculum vulgare*); and the urban/developed areas consist of bare ground, pavement-asphalt, and landscape/ornamental vegetation. Regular maintenance activities at this site consist of mowing and removal of trash and debris.

The Corporate Center Staging Yard includes disturbed habitat with dominant species that include native telegraph weed and non-native Russian thistle and wild oat (*Avena fatua*); and urban/developed areas that consist of pavement-asphalt and landscape/ornamental vegetation. Regular maintenance activities at this site consist of mowing and removal of trash and debris.

The USPS Staging Yard includes disturbed habitat with dominant plant species non-native wild oat and ripgut brome (*Bromus diandrus*) and urban/developed areas that consist of pavement-asphalt and landscape/ornamental vegetation. Regular maintenance activities at this site consist of mowing and removal of trash and debris. The jurisdictional delineation report for the Proposed Project (Pangea and Borcher, 2016) indicates that there is one “small patch” of emergent wetland with cattail (*Typha latifolia*) in the southwest corner of the yard that is supported by an irrigation leak on the slope above. Photos included with the jurisdictional report show that the patch is, at most, a few square feet (See Appendix I).

The San Luis Rey Staging Yard is a paved area at an existing substation. While the yard is paved, the surrounding PSA includes disturbed habitat with dominant species that include non-native eucalyptus (*Eucalyptus* sp.), Russian thistle, oxalis (*Oxalis* sp.), and foxtail chess (*Bromus madritensis* ssp. *rubens*); and urban/develop areas that consist of pavement-asphalt and landscape/ornamental vegetation. The San Luis Rey Substation Staging Yard consists of pavement and therefore no vegetation maintenance activities occur at this site.

The Melrose Staging Yard includes urban/developed areas that consist of pavement-asphalt, bare ground, and landscape/ornamental vegetation. The landscape/ornamental plant species include Peruvian pepper tree (*Schinus molle*), olive tree (*Olea europea*), bottlebrush (*Callistemon viminalis*), fan palm (*Washingtonia* sp.), date palm (*Phoenix* sp.), oleander (*Nerium oleander*), and ornamental pine trees (*Pinus* sp.). Maintenance activities at this site consist of vegetation trimming twice per month and annual trimming of any trees that encroach into the area required for minimum clearance from power lines.

Vegetation communities found in the PSA are summarized in Table 5.4-1 and described below. Sensitive vegetation communities are defined as riparian habitat or other sensitive natural communities identified in local or regional plans, policies, or regulations, or designated by the USFWS and the California Department of Fish and Wildlife (CDFW). One sensitive vegetation community, Disturbed Southern Riparian Scrub, occurs on the Project site, as described below.

Approximately 43 plant species were observed within the PSA during surveys, most of which are non-native. A list of plant species observed during field surveys is included in the Biological Technical Report (Appendix G).

Table 5.4-1. Vegetation Communities and Anticipated Impacts in the PSA

Vegetation Community	Area (acres)	Temporary Impacts (acres)	Permanent Impacts (acres)
Riparian/Wetland			
Southern Riparian Scrub (Disturbed)	0.16	0	0.16
Subtotal	0.16	0	0.16
Developed/Disturbed			
Disturbed Habitat	24.37	16.39	7.98
Urban/Developed/Landscape/Ornamental/Bare Ground	3.34	1.82	1.52
Subtotal	27.71	18.21	9.50
Total	27.86	18.21	9.66

Source: Pangea (2016)

Southern Riparian Scrub (Disturbed)

Southern riparian scrub is a vegetation community dominated by small trees or shrubs that are associated with drainages or river systems (Oberbauer et al., 2008). Disturbed Southern Riparian Scrub was observed at one location within the PSA, in the engineered drainage basin within the Ocean Ranch Substation site; see Figure 5.4-2. Google Earth images (Google Earth, 2016) indicate that this riparian vegetation developed only in the past few years after construction of the drainage basin.

The dominant species within the basin are a mix of native and non-native species including native arroyo willow and mulefat, and non-native crown daisy, wild oat, Russian thistle, and iceplant.

Southern riparian scrub has a CNDDB State rank (S rank) of 3.2, meaning that this vegetation type is considered by CDFW to be rare and threatened (CDFW, 2010).

Disturbed Habitat

Disturbed habitat includes vegetation and soils characterized by physical disturbance, such as clearing for fuel management, repeated grading, maintenance of firebreaks, or repeated use as construction staging areas, trails, access roads, or dirt parking lots. Disturbed habitat in the PSA is generally dominated by invasive non-native species, such as black mustard (*Brassica nigra*), Russian thistle, tocalote (*Centaurea melitensis*), and ripgut brome (*Bromus diandrus*). Native species are also found in the disturbed habitat in the PSA and include fascicled tarweed (*Deinandra fasciculata*), coyote brush *(Baccharis pilularis)*, coastal goldenbush (*Isocoma menziesii*), telegraph weed, and western ragweed. Disturbed habitat occurs throughout most of the substation site and the Corporate Center Staging Yard, and is also found in a narrow strip along the north edge of the PSA buffer at the San Luis Rey Staging Yard; see Figure 5.4-2.

Developed/Disturbed

Developed/disturbed areas, including landscaping, have been physically altered to an extent that native vegetation communities are no longer supported (Oberbauer et al., 2008). Developed/disturbed areas occur throughout the PSA, and include paved and dirt roads, bare ground associated with disturbance or development, buildings, paved parking lots, road medians and roadsides, and landscaped areas.

Common Wildlife

Surveys identified 21 common wildlife species within the PSA. A full list of wildlife species observed is included in the Biological Technical Report (Appendix G). Some of the species observed are rock pigeon (*Columba livia*), American crow (*Corvus brachyrhynchos*), house finch (*Haemorhous mexicanus*), northern mockingbird (*Mimus polyglottos*), American kestrel (*Falco sparverius*), red-tailed hawk (*Buteo jamaicensis*), and western meadowlark (*Sturnella neglecta*) (Pangea, 2016).

Special-status Species

Special-status species include those listed, proposed for listing, or candidates for listing as threatened or endangered under the federal or State Endangered Species Acts, California Species of Special Concern, and other species that have been identified by the USFWS, CDFW, or other agency as unique or rare, and those listed as regionally sensitive in the SDG&E Natural Community Conservation Plan (NCCP) (SDG&E, 1995). See Regulatory Background section below for a description of the SDG&E NCCP.

Special-status Plants

Five special-status plant species have been documented within 1 mile of the PSA; see Figure 5.4-3. These are listed in Table 5.4-2. The PSA does not include suitable habitat for these species. A CNDDB (CDFW, 2016) and CNPS (CNPS, 2016) search of the nine 7.5-minute USGS topographic quads that include and surround the PSA was also performed. This search found no additional special-status plant species that are likely to occur in the PSA; see Appendix H.

Reconnaissance-level field surveys did not identify any special-status plant species within the PSA. A list of plant species observed is included the Biological Technical Report (Appendix G) and consists of common native plants as well as non-native and ornamental species.

San Diego ambrosia. San Diego ambrosia (*Ambrosia pumila*) is federally listed as endangered and may be found in disturbed habitat. Only 16 extant occurrences of this species are known. Two occurrences have been documented within one mile of the Project. One occurrence is approximately 0.7 miles north of the San Luis Rey Staging Yard. This occurrence was threatened by construction of State Highway 76 and some San Diego ambrosia were transplanted to another site, located approximately 4.3 miles northeast of the proposed Ocean Ranch Substation site. Some potential habitat may still exist in the vicinity of this occurrence; however, no San Diego ambrosia were observed in 2009 and 2012. A second occurrence is located approximately 0.9 miles north of the Corporate Center Staging Yard. No suitable habitat appeared to remain in the area in 2012 and the occurrence is presumed extirpated.

San Diego ambrosia is a perennial species and can be detected year-round. It was not identified in the PSA during biological surveys. Based on the current soils and level of disturbance within the PSA, and the lack of detection of this species during biological surveys, San Diego ambrosia is not expected to occur.

Table 5.4-2. Special-Status Plant Species Documented within One Mile of the PSA

Species	Status	Habitat	Potential for Occurrence in the PSA
Plants			
Ambrosia pumila San Diego ambrosia	FE, CRPR 1B.1, NCCP	Perennial herb; clay soils, sometimes in or around vernal pools, grasslands or openings in shrublands, disturbed areas; sea level to about 1400 ft. elev. Blooms Apr–July, sometimes thru Oct.	**Not likely to occur.** Not observed during surveys. Only 16 extant occurrences known.

Table 5.4-2. Special-Status Plant Species Documented within One Mile of the PSA

Species	Status	Habitat	Potential for Occurrence in the PSA
Brodiaea filifolia Thread-leaved brodiaea	FT, SE, CRPR 1B.1, NCCP	Perennial bulbiferous herb; mesic clay soils in chaparral openings, coastal scrub, vernally moist grassland, vernal pools, cismontane woodland; 80 to 3675 feet elev. Blooms Apr-May, occasionally Mar–Jun.	**Not likely to occur.** PSA does not include suitable habitat.
Ceanothus verrucosus Wart-stemmed ceanothus	CRPR 2B.2, NCCP	Evergreen shrub; chaparral on mesas and hillsides, sea level to about 1250 ft. elev. Blooms Dec–May.	**Not likely to occur.** PSA does not include suitable habitat, not observed during surveys.
Euphorbia misera Cliff spurge	CRPR 2B.2	Subshrub; rock slopes, coastal bluffs below about 1700 ft. elev. Blooms Jan–Aug.	**Not likely to occur.** PSA does not include suitable habitat.
Nama stenocarpa Mud nama	CRPR 2B.2	Annual/perennial herb. Intermittently wet areas – freshwater marshes and swamps, lake margins, riverbanks. Elev. 0-2,700 ft. Blooms Jan-Jul.	**Not likely to occur.** PSA does not include suitable habitat.

Definitions Regarding Potential Occurrence:

Present:	Species or sign of its presence observed on the site
High:	Species or sign not observed on the site, but reasonably certain to occur on the site
Moderate:	Species or sign not observed on the site, conditions suitable for occurrence
Low:	Species or sign not observed on the site, conditions marginal for occurrence
Not likely to occur:	Species or sign not observed on the site, conditions unsuitable for occurrence

STATUS CODES:

FE	Federally Endangered
FT	Federally Threatened
FC	Federal Candidate
SE	State Endangered
ST	State Threatened
SC	State Candidate
SR	State Rare
NCCP	Regionally Sensitive Species covered under the SDG&E Subregional NCCP
CRPR	California Rare Plant Rank
1B	Plants Rare, Threatened, or Endangered in California and elsewhere
2	Plants Rare, Threatened, or Endangered in California, but more common elsewhere
3	Plants about which we need more information – a review list
4	Plants of limited distribution – a watch list
.1	Seriously threatened in California (high degree/immediacy of threat)
.2	Fairly threatened in California (moderate degree/immediacy of threat)
.3	Not very threatened in California (low degree/immediacy of threats or no current threats known)

Special-status Wildlife

Thirteen special-status wildlife species have been documented within 1 mile of the PSA; see Figure 5.4-3. A CNDDB (CDFW, 2016) search of the nine 7.5-minute USGS topographic quads that include and surround the PSA found seven additional special-status wildlife species that may occur in the PSA; see Table 5.4-3. Of these 20 species, 10 are absent or not likely to occur. Descriptions of additional species from the CNDDB search that are not likely to occur in the PSA are provided in Appendix H.

No special-status wildlife species were detected during reconnaissance-level field surveys of the PSA. A list of the common wildlife species observed is included in the Biological Technical Report (Appendix G).

Stephens' kangaroo rat. Stephens' kangaroo rat (*Dipodomys stephensi*) is generally found in plant communities transitional between grassland and coastal sage scrub, but can be found in disturbed habitat. The most recent documented sighting within 1 mile of the PSA was in 1973. According to the CNDDB (CDFW, 2016), the nearest Stephens' kangaroo rat population was documented approximately 0.5 miles

north of the Corporate Center Staging Yard, but this population was extirpated by subsequent development activities. Due to the specific soil requirements of this species, based on the current soils and level of disturbance within the Project area, and the lack of detection of sign or potential sign for this species during biological surveys, Stephen's kangaroo rat is not expected to occur in the PSA.

Coastal California gnatcatcher. The Project site does not include suitable habitat for coastal California gnatcatcher (*Polioptila californica californica*). However, as described below, the San Luis Rey Staging Yard is in close proximity to USFWS-designated critical habitat for coastal California gnatcatcher; see Figure 5.4-4. This area is also identified in the Oceanside Subarea Species Plan (SAP) (Oceanside, 2010) as part of the regional coastal California gnatcatcher corridor, and the Oceanside SAP depicts observations of coastal California gnatcatcher near the San Luis Rey Staging Yard; see Figure 5.4-5.

Burrowing owl. Surveys identified potentially suitable habitat for burrowing owl (*Athene cunicularia*) at the Ocean Ranch Substation site, USPS Staging Yard, and Corporate Center Staging Yard. The area outside the San Luis Rey Staging Yard PSA could provide nesting and foraging habitat for burrowing owl. Culverts that could be used by burrowing owl were observed in the northern portion of the Ocean Ranch Substation site. Burrows that could be used by burrowing owl were observed within the Corporate Center Staging Yard. No burrowing owls or burrowing owl sign (e.g., whitewash, pellets, feathers, etc.) were observed during surveys. Applicant Proposed Measure (APM) BIO-4 specifies that protocol surveys for burrowing owl would be conducted in suitable habitat prior to construction and, if found, measures would be implemented to reduce and avoid impacts.

Western yellow bat. Surveys also identified potential roosting habitat for western yellow bat (*Lasiurus xanthinus*) in the Melrose Staging Yard. This yard includes mature non-native ornamental trees, including palm trees. No trimming or removal of these trees is anticipated for the Proposed Project. APM BIO-4 requires preconstruction surveys for western yellow bat at the Melrose Staging Yard. Western yellow bat may occur year-round in California and probably does not hibernate. Individuals usually roost in trees, and are commonly found roosting in the skirt of dead fronds in both native and non-native palm trees. Pupping season is June to July. The western yellow bat is believed to be non-colonial, although aggregations of up to 15 have been found in a single roost site and it probably forms small maternity groups (Pierson and Rainey, 1998; CDFW, 2008). Roost sites may be day roosts, used during inactive daylight hours, or maternity roosts, where female bats congregate to give birth and raise young.

Special-status raptors and songbirds. Common raptors (i.e., American kestrel [*Falco sparverius*] and red-tailed hawk [*Buteo jamaicensis*]) were observed during field surveys (see Appendix G) and special-status raptors, such as Cooper's hawk (*Accipiter cooperii*), northern harrier (*Circus cyaneus*), and white-tailed kite (*Elanus leucurus*) may utilize the Project site for foraging, although the habitat is marginal. As listed in Table 5.4-3, the Project site includes potentially suitable, although marginal, foraging habitat for other special-status birds, including tricolored blackbird (*Agelaius tricolor*), California horned lark (*Eremophila alpestris actia*), and bank swallow (*Riparia riparia*). These species have a low potential to occur. Western bluebird (*Sialia mexicana*) is included as a special-status species because it is covered under the NCCP, but it has no other conservation status. This species was observed in the PSA during field surveys. Other special-status bird and bat species may fly over the area during migration.

Nesting birds. A variety of birds may nest on the Project site. Nests may be built in trees or other vegetation or on the ground in the staging yards or substation site, or on adjacent structures. Nesting birds are protected under the Migratory Bird Treaty Act (MBTA) as well as California Fish and Game Code.

Table 5.4-3. Special-Status Wildlife Species Documented within One Mile of the PSA

Species	Status	Habitat	Potential for Occurrence in the PSA
Fish			
Eucyclogobius newberryi Tidewater goby	FE, SSC	Brackish water estuaries and lagoons, lower reaches of freshwater coastal streams; entire California coast.	**Absent.** Documented within 1 mile, but no aquatic habitat present in the PSA.
Reptiles			
Phrynosoma blainvillii Coast (San Diego) horned lizard	SSC, NCCP	Inhabits coastal sage scrub and chaparral in arid and semi-arid climate zones; prefers friable, rocky, or shallow sandy soils; requires native ant food source.	**Not likely to occur.** Documented within 1 mile, but PSA does not include suitable habitat.
Thamnophis sirtalis ssp. South Coast garter snake	SSC	In and around marshlands and riparian habitat; coastal plain, foothills, and mountains, sea level to about 2700 ft. elev.; Ventura Co. to San Diego Co., inland to SW Riverside Co.	**Not likely to occur.** Documented within 1 mile, but PSA does not include suitable habitat.
Birds			
Accipiter cooperii Cooper's hawk	WL, NCCP	Nests and hunts in forest & woodland, also forages in open areas.	**Low.** Project site does not include suitable nesting habitat, but potentially suitable foraging habitat is present. Known from the region.
Agelaius tricolor Tricolored blackbird	SSC, NCCP	Breeds colonially in freshwater marshes and grain fields; nomadic among marshes and fields in winter; almost completely endemic to Calif. Forages in grasslands, fields, pastures.	**Low.** Documented within 1 mile, but PSA does not include suitable nesting habitat, may provide marginal foraging habitat.
Athene cunicularia Burrowing owl	SSC, NCCP	Open, dry grasslands, deserts and ruderal areas with suitable small mammal burrows, especially those of California ground squirrels. May use surrogate burrows (e.g., culverts, debris piles).	**Low.** Documented within 1 mile. PSA includes potentially suitable habitat, no burrowing owl or owl sign observed during surveys.
Buteo swainsoni Swainson's hawk	ST, NCCP	Stands with few trees, juniper-sage flats, riparian habitat, and oak savannah. Forages in adjacent grasslands and agricultural fields and pastures. Winters in South America, migrates to western U.S. to breed, site is outside breeding range.	**Not likely to occur.** Documented within 1 mile, but PSA does not include suitable nesting habitat. Species does not nest in the region. Potential occurrence only as seasonal migrant.
Circus cyaneus Northern harrier	SSC, NCCP	Breed and forage in a variety of open habitats that provide adequate cover, prey abundance, and perching sites.	**Low.** Project site does not include suitable nesting habitat, but potentially suitable foraging habitat is present. Known from the region.
Elanus leucurus White-tailed kite	FP	Breeds in woodlands and riparian forests, forages over open terrain; Pacific Coast (Calif., N Baja, Oregon), scattered coastal regions N & S Amer.	**Low.** Project site does not include suitable nesting habitat, but potentially suitable foraging habitat is present. Known from the region.
Empidonax traillii extimus Southwestern willow flycatcher	FE, SE, NCCP	Breeds in dense riparian forests & shrublands, esp. in willows; scattered locations in Calif. and N. Baja; near sea level to about 8000 ft. elev.; winters in Cent. Amer.	**Not likely to occur.** Documented within 1 mile, but PSA does not include suitable habitat. Patch of riparian vegetation on the substation site is not large or dense enough to provide suitable habitat.

Table 5.4-3. Special-Status Wildlife Species Documented within One Mile of the PSA

Species	Status	Habitat	Potential for Occurrence in the PSA
Eremophila alpestris actia California horned lark	WL	Open habitats, forages in bare dirt in short and/or sparse grassland and areas of scattered shrubs.	**Low.** Project site includes potentially suitable habitat. Known from the region, but no recent documented occurrences in the Project vicinity.
Icteria virens Yellow-breasted chat	SSC	Riparian thickets of willow, brushy tangles near watercourses. Nests in riparian woodland throughout much of western North America. Winters in Central America.	**Not likely to occur.** Documented within 1 mile, but PSA does not include suitable habitat. Patch of riparian vegetation on the substation site is not large or dense enough to provide suitable habitat.
Polioptila californica californica Coastal California gnatcatcher	FT, SSC, NCCP	Coastal sage scrub habitats of southern California coastal slope, generally below 950 feet.	**Low.** Documented within 1 mile. PSA does not include suitable nesting habitat. Critical habitat and gnatcatcher observations near San Luis Rey Staging Yard; yard is within identified regional gnatcatcher corridor, but does not include suitable habitat.
Riparia riparia Bank swallow	ST	Nests in widely scattered colonies, N half of U.S. and much of Canada; excavates burrows in riverbanks, steep soil cliffs, and road cuts; winters in S Amer.	**Low.** Project site does not include suitable nesting habitat, but potentially suitable foraging habitat is present. Known from the region.
Setophaga petechia Yellow warbler	SSC	Riparian plant associations; prefers willows, cottonwoods, aspens, sycamores, and alders for nesting and foraging.	**Not likely to occur.** Documented within 1 mile, but PSA does not include suitable habitat. Patch of riparian vegetation on the substation site is not large or dense enough to provide suitable habitat.
Sialia mexicana Western bluebird	NCCP	Scattered trees, open coniferous forest, farms, brush, deserts. Common to very common resident and winter visitor in San Diego County.	**Present.** Observed during field surveys.
Vireo bellii pusillus Least Bell's vireo	FE, SE, NCCP	Summer resident of southern California in low riparian habitats in vicinity of water or dry river bottoms; found below 2000 ft; nests placed along margins of bushes or on twigs projecting into pathways, usually willow, mesquite, mulefat.	**Not likely to occur.** Documented within 1 mile, but PSA does not include suitable habitat. Riparian habitat on the substation site is not large or dense enough to support this species.
Mammals			
Chaetodipus fallax fallax Northwestern San Diego pocket mouse	SSC, NCCP	Open shrublands and sandy areas, grassland; coastal and interior valleys of SW Calif.	**Not likely to occur.** PSA does not include suitable habitat.

Table 5.4-3. Special-Status Wildlife Species Documented within One Mile of the PSA

Species	Status	Habitat	Potential for Occurrence in the PSA
Dipodomys stephensi Stephens' kangaroo rat	FE, ST, NCCP	Found in plant communities transitional between grassland and coastal sage scrub, with perennial vegetation cover of less than 50%, can be found in disturbed habitat. Requires well-drained soils with compaction characteristics suitable for burrow construction. Occurs only in western Riverside County, northern and central San Diego County, and extreme southern San Bernardino County, below 3,000 feet elevation.	**Not likely to occur.** No kangaroo rat burrows observed during field surveys. Most recent documented sighting within 1 mile of the PSA was in 1973.
Lasiurus xanthinus Western yellow bat	SSC	Found in valley foothill riparian, desert riparian, desert wash, and palm oasis habitats. Roosts in trees, particularly palms. Forages for insects over water and among trees.	**Low.** Documented within 1 mile of the PSA. Palm trees at Melrose Staging Yard may provide roosting habitat.

Definitions Regarding Potential Occurrence:

Present:	Species or sign of its presence observed on the site
High:	Species or sign not observed on the site, but reasonably certain to occur on the site
Moderate:	Species or sign not observed on the site, conditions suitable for occurrence
Low:	Species or sign not observed on the site, conditions marginal for occurrence
Not likely to occur:	Species or sign not observed on the site, conditions unsuitable for occurrence
Absent:	Required habitat not present (e.g., aquatic species are absent from terrestrial habitats)

STATUS CODES:

FE	Federally Endangered
FT	Federally Threatened
FC	Federal Candidate
BGEPA	Federal Bald and Golden Eagle Protection Act
SE	State Endangered
ST	State Threatened
SC	State Candidate
SR	State Rare
SSC	California Species of Special Concern
FP	California Fully Protected
WL	CDFW Watch List
SA	CDFW Special Animal
NCCP	Regionally Sensitive Species covered under the SDG&E Subregional NCCP

Critical Habitat and Preserves

Under the federal Endangered Species Act, to the extent prudent and determinable, the USFWS is required to designate critical habitat for endangered and threatened species (16 U.S.C. § 1533 (a)(3)). Critical habitat is defined as areas of land, water, and air space containing the physical and biological features essential for the survival and recovery of federally listed endangered and threatened species, including sites for breeding and rearing, movement or migration, feeding, roosting, cover, and shelter. Designated critical habitats require special management and protection of existing resources, including water quality and quantity, host animals and plants, food availability, pollinators, sunlight, and specific soil types. A critical habitat designation delineates all suitable habitat, occupied or not, essential to the survival and recovery of the species.

The Project site is within 5 miles of critical habitat for San Diego ambrosia, San Diego thornmint, spreading navarretia, thread-leaved brodiaea, cushenbury oxytheca, San Diego fairy shrimp, tidewater goby, arroyo toad, coastal California gnatcatcher, least Bell's vireo, and southwestern willow flycatcher; see Figure 5.4-4. No critical habitat is located within the Project site. However, critical habitat for coastal California

gnatcatcher is located immediately north of the San Luis Rey Staging Yard, about 0.14 miles west of the Corporate Center Staging Yard, approximately 0.6 miles northwest of the USPS Staging Yard and the Ocean Ranch Substation site, and approximately 1 mile southwest of the Melrose Substation Staging Yard.

The San Diego Multiple Habitat Conservation Program (MHCP) is a planning process that addresses plant and animal species in northwestern San Diego County, including the City of Oceanside. The Oceanside Subarea Plan (SAP) is the city's implementing conservation plan under the MHCP; see Regulatory Background, below. The Oceanside SAP identifies areas within the City of Oceanside to be preserved for the conservation of natural biotic communities and sensitive plant and wildlife species. The Proposed Project site is not located within any designated preserve areas as delineated in the City of Oceanside SAP (Oceanside, 2010). Identified preserves are in proximity to the San Luis Rey Staging Yard and the Corporate Center Staging Yard; see Figure 5.4-6. Preserve boundaries are immediately adjacent to the northwest corner of the Corporate Center Staging Yard and immediately north of the San Luis Rey Staging Yard.

Wildlife Corridors and Biological Connectivity

Wildlife corridors are defined as areas that connect suitable habitat in a region otherwise fragmented by rugged terrain, changes in vegetation, or human disturbance. Natural features, such as drainages, ridge-lines, or areas with vegetation cover, can provide corridors for wildlife travel. Roadways, fences, and other barriers to wildlife movement may incorporate specially designed structures (e.g., culverts, underpasses, overpasses, landscape bridges, and fish passages) to maintain biological connectivity. Wildlife corridors are important because they provide access to mates, food, and water; allow for dispersal of individuals; and facilitate gene flow between populations. Wildlife corridors are considered sensitive by resource and conservation agencies.

Movement and dispersal corridors that connect large blocks of habitat are essential to the long-term viability of plant, fish, and wildlife populations. At every scale, planning for biological connectivity must consider species or populations that may travel through a corridor or linkage regularly (perhaps seasonally or even daily), and other species that may "move" through a corridor or linkage over multiple generations, at a population scale rather than as individual animals.

Terrestrial wildlife species tend to travel along natural drainages such as Loma Alta Creek and the San Luis Rey River, in order to have cover from predators and a water and food source. Migrating avian species would use native habitat areas as stopovers on their journey through the area.

Much of the City of Oceanside is developed, and the remaining natural open space consists of small, fragmented patches of habitat, often disturbed, and isolated or only tenuously connected to adjacent habitat. There are no broad north to south habitat linkages remaining. However, undeveloped areas within the city appear to be critical to regional habitat connectivity and conservation for bird species, especially the coastal California gnatcatcher. Preserves within the City of Oceanside and the existing SDG&E electric transmission corridor provide linkages between stepping-stone patches of habitat. This stepping-stone corridor allows for continued genetic and demographic connectivity between gnatcatcher core areas on Marine Corps Base Camp Pendleton to the north and Carlsbad to the south (Oceanside, 2010).

The Project sites, including the substation site and staging yards, are within an urbanized area and adjacent to busy roadways. However, pockets of open space remain and may be used by wildlife for foraging and breeding habitat and dispersal routes. The Oceanside SAP (Oceanside, 2010) identifies the existing San Luis Rey Substation, and the power line from the San Luis Rey Substation east along El Camino Real to Rancho Del Oro Road as being within a designated Wildlife Corridor Planning Zone (WCPZ); see Figure 5.4-6. The Oceanside SAP provides development standards for projects that are located within the WCPZ;

however, the Proposed Project does not include any development at the San Luis Rey Staging Yard. Storage of materials and equipment within this existing facility would not constitute development and the Proposed Project's use of this facility would be consistent with the SAP and the WCPZ. The San Luis Rey Staging Yard is also within the regional gnatcatcher corridor, as identified in the Oceanside SAP (Oceanside, 2010); see Figure 5.4-5.

As described above, the San Luis Rey Staging Yard and Corporate Center Staging Yard are in proximity to preserve areas identified in the Oceanside SAP, which may function as stepping-stone patches of habitat for bird species. The Ocean Ranch Substation site and other staging yards are not located within areas that represent an important corridor for terrestrial wildlife movement.

Jurisdictional Waters

A delineation of wetland and non-wetland jurisdictional waters within the PSA was conducted in May and October 2015 by Pangea and Borcher Environmental Management (Pangea and Borcher, 2016). The methodology followed U.S. Army Corps of Engineers (USACE) wetland delineation guidelines (USACE, 2008). The results of the delineation indicate that the PSA does not include water resources under the jurisdiction of the USACE, CDFW, or Regional Water Quality Control Board (RWQCB).

Non-jurisdictional features in the PSA include concrete v-ditches and channels designed to provide a controlled runoff system, erosional features created by on-time or rapid surface flows in areas that were disturbed and not properly compacted or areas with erosive soil, and sedimentation basins installed as temporary stormwater management features that connect to the underground storm system (Appendix I).

Regulatory Background

This section includes a description of the biological resources regulatory framework.

Federal

Federal Endangered Species Act of 1973

The federal Endangered Species Act (FESA) designates and provides for protection of threatened and endangered plant and wildlife species and their critical habitat. "Take" of a federally listed species is prohibited without the appropriate permits, which may be obtained through Section 7 consultation (between federal agencies) or a Section 10 Habitat Conservation Plan.

Migratory Bird Treaty Act.

The Migratory Bird Treaty Act (MBTA) makes it unlawful to take or possess any migratory non-game bird (or any part of such migratory non-game bird) as designated in the MBTA unless permitted by regulation (e.g., duck hunting).

Clean Water Act (33 USC §§ 1251-1376)

The Clean Water Act (CWA) regulates the chemical, physical, and biological integrity of the nation's waters. Section 401 of the CWA requires that an applicant obtain State certification for discharge into waters of the United States. The Regional Water Quality Control Boards administer the certification program in California. Section 404 of the CWA established a permit program, administered by the U.S. Army Corps of Engineers, to regulate the discharge of dredged or fill material into waters of the United States, including wetlands.

Final Rule for Revised Designation of Critical Habitat for the Coastal California Gnatcatcher

The USFWS designates critical habitat for endangered and threatened species under the federal ESA (16 U.S.C. § 1533 (a)(3)). Critical habitat is designated for the survival and recovery of federally listed endangered and/or threatened species. Critical habitat includes areas used for foraging, breeding, roosting, shelter, and movement or migration.

In the USFWS 2003 Proposed Rule to Revise Designation of Critical Habitat for the Coastal California Gnatcatcher, the USWFS considered but did not propose as critical habitat, pursuant to sections 3(5)(A) and 4(b)(2) of the Act, reserve lands covered by three completed and approved regional/subregional Habitat Conservation Plans (68 CFR 20228). These lands include SDG&E right-of-way (ROW) within SDG&E's Natural Community Conservation Plan (NCCP). Although these areas were not included in the proposed critical habitat, the USFWS sought public review and comment on these lands, provided maps to facilitate the public's ability to comment, and alerted the public that the lands could potentially be included in the final designation. Lands considered but not proposed for designation were also analyzed for potential economic impacts in the Draft Economic Analysis.

In 2007, USFWS issued the Revised Final Rule, reaffirming exclusion of lands within approved regional and subregional Habitat Conservation Plans under section 4(b)(2) of the federal ESA. USFWS determined that lands owned by SDG&E and covered under SDG&E's NCCP provided greater benefits to coastal California gnatcatcher than other areas designated as critical habitat. As such, the USFWS designation of critical habitat for the coastal California gnatcatcher specifically excludes SDG&E ROW within SDG&E's NCCP area.

State

CEQA Guidelines § 15380

Enacted in 1970, CEQA requires an applicant to fully disclose environmental impacts before issuance of a permit by state and local agencies. State CEQA Guidelines Section 15380(b) articulates the classifications of species to be analyzed under CEQA. In general, impacts to plants or their habitat having a California Rare Plant Rank of 1A (plants presumed extirpated in California and either rare or extinct elsewhere), 1B (plants rare, threatened, or endangered in California and elsewhere), 2A (plants presumed extirpated in California, but common elsewhere), 2B (plants rare, threatened, or endangered in California), or 3 (plants about which more information is needed — a review list) must be analyzed during preparation of the environmental documents relating to CEQA. According to the California Native Plant Society's (CNPS) Rare Plant Program, species with these California Rare Plant Rank rankings meet the definition of "rare and endangered" under the aforementioned CEQA Guidelines.

California Endangered Species Act (Fish and Game Code § 2050 et seq.)

The California Endangered Species Act (CESA) prohibits take of state-listed threatened or endangered species, except as authorized by the California Department of Fish and Wildlife (CDFW). Authorization may be issued as an Incidental Take Permit or, for species listed under both CESA and FESA, through a Consistency Determination with the federal incidental take authorization.

Fully Protected Designations (Fish and Game Code §§ 3511, 4700, 5515, and 5050)

The California Fish and Game Code (CFGC) designates 36 fish and wildlife species as "fully protected" from take, including hunting, harvesting, and other activities. The CDFW may only authorize take of designated fully protected species through a Natural Community Conservation Plan.

Native Birds (Fish and Game Code §§ 3503 and 3513)

The CFGC prohibits take, possession, or needless destruction of bird nests or eggs except as otherwise provided by the code. Birds of prey, that is, birds in the orders *Falconiformes* or *Strigiformes*, are protected from possession and egg or nest destruction.

Natural Community Conservation Planning Act (Fish and Game Code §§ 2800 et seq.)

The Natural Community Conservation Planning Act provides a regional approach to conservation for multiple species. The Program is implemented by CDFW as a cooperative effort by the State of California and private and public partners, to protect species and their habitats. The program helps identify and provide for large area-wide protection of plants, animals, and their habitats while allowing for compatible and appropriate economic activity.

Native Plant Protection Act (Fish and Game Code §§ 1900-1913)

Prior to enactment of CESA and FESA, California adopted the Native Plant Protection Act (NPPA). CESA (above) generally replaces the NPPA for plants originally listed as endangered under the NPPA. However, plants originally listed as rare retain that designation, and take is regulated under provisions of the NPPA.

Lake and Streambed Alteration Agreements (Fish and Game Code §§ 1600-1616)

The CDFW regulates projects that would divert, obstruct, or change the natural flow, bed, bank, or channel of a river, stream, or lake. Regulation is formalized in a Lake and Streambed Alteration Agreement (LSAA), which generally includes measures to protect any fish or wildlife resources that may be substantially affected by the project.

Porter-Cologne Water Quality Control Act (Water Code Section 13000 et seq.)

This act regulates surface water and groundwater and assigns responsibility for implementing federal CWA Section 401. It established the State Water Resources Control Board (SWRCB) and nine Regional Water Quality Control Boards (RWQCBs) to protect State waters.

Local

As provided in CPUC General Order 131-D, the CPUC has exclusive jurisdiction over the siting, design, and construction of the Proposed Project, preempting local discretionary authority over the location and construction of electrical utility facilities. Therefore, the Proposed Project is not subject to local discretionary land use regulations. Nonetheless, as part of the environmental review process, the CPUC considers relevant local land use plans and policies that pertain to biological resources as discussed below.

North County Multiple Habitat Conservation Program

The Multiple Habitat Conservation Program (MHCP) is a planning process that addresses plant and animal species in northwestern San Diego County, including Oceanside. The goal of the program is to conserve approximately 19,000 acres of habitat (of which 8,800 acres are already in public ownership and contribute toward the habitat preserve system) to protect over 80 rare, threatened, or endangered species.

Subarea plans for the Cities of Carlsbad, Encinitas, Escondido, Oceanside, San Marcos, and Vista are being prepared and must be adopted by each City Council. Then implementing agreements with the CDFW and the USFWS must be signed before incidental take permits can be issued.

The City of Oceanside is in the process of updating the Subarea Habitat Conservation Plan/Natural Community Conservation Plan (SAP) that will address how the City will conserve natural biotic communities and sensitive plant and wildlife species pursuant to the California NCCP Act of 1991, the CESA and the federal ESA. If adopted, this could provide landowners with more regulatory certainty and aid in conserving the area's biodiversity.

City of Oceanside General Plan – Land Use Element

The Land Use Element has a policy that the City shall protect, maintain, and enhance existing sensitive habitats. The Environmental Resource Management Element is also designed to conserve natural resources and preserve open space. It includes goals and objectives geared toward preservation, including ones specifically to enhance vegetation and wildlife habitats, especially those areas with rare, endangered, or threatened species. Areas with unique vegetation and wildlife habitats receive a high priority in the planning of parks; and in areas where habitat modification is inevitable, mitigating and/or compensatory measures such as native plant restoration, land reclamation, or donation will be considered.

Vegetation and Wildlife Habitats Policies

- *A biological survey report, including a field survey, shall be required for a proposed project site if the site is largely or totally in a natural state or if high interest species of plants or animals have been found on nearby properties.*
- *In areas where vegetation or wildlife habitat modification is inevitable, mitigation and/or compensatory measures such as native plant restoration, land reclamation, habitat replacement, or land interest donation will be considered.*
- *Areas containing unique vegetation or wildlife habitats shall receive a high priority for preservation.*
- *Specific plans shall be developed in conjunction with regional and county agencies where appropriate, for areas where there is occurrence of endangered or threatened species.*

SDG&E Company Subregional Natural Community Conservation Plan

Under Section 10(a) of the FESA, SDG&E developed this comprehensive multiple species and habitat NCCP to effectively preserve and enhance covered sensitive species and their native habitats during operation, maintenance, and expansion of its electric and natural gas transmission system (SDG&E, 1995). In addition, the NCCP is a permit issued pursuant to CFGC Section 2081 with an implementation agreement with the CDFW for the management and conservation of multiple species and their associated habitats as established according to the CESA and the state's NCCP Act.

The purpose of the SDG&E NCCP is to establish and implement a long-term agreement between SDG&E, the USFWS, and the CDFW for the preservation and conservation of sensitive species and their habitats while allowing SDG&E to develop, install, maintain, operate, and repair the facilities necessary to provide energy services to customers living within the SDG&E service area. The NCCP does not cover major expansions of the SDG&E electrical system and only covers new electrical substations that result in no more than 20 acres of habitat disturbance.

The NCCP identifies 61 Operational Protocols designed to avoid and minimize potential impacts to sensitive species and their habitats, and to provide appropriate mitigation where such impacts are unavoidable, thus ensuring conservation of protected species and their habitats. These 61 protocols include provisions for personnel training, pre-activity studies, and procedures used to avoid or minimize environmental impacts during maintenance, repair, and construction of facilities.

As described in the Implementing Agreement for the SDG&E NCCP, SDG&E, the USFWS, and the CDFW agree that, absent unforeseen circumstances, the mitigation measures provided in the SDG&E NCCP constitute the only mitigation measures that would be required for any activity covered by the NCCP when a project results in an impact to a covered species or its habitat. The Proposed Project falls within the area where SDG&E utility operations are governed by the NCCP.

While the Proposed Project is located within areas included in both the North County Multiple Habitat Conservation Program and the Oceanside Subarea Plan, SDG&E public utility activities, such as the Proposed Project, are generally not subject to the discretionary regulatory jurisdiction of such local governments; therefore, they are not governed by the terms and conditions of such plans. However, the NCCP is designed to be consistent with local Habitat Conservation Plans.

The Proposed Project would not use the take authority granted by the USFWS and the CDFW in the NCCP for impacts to covered species. Potential take of state species would be handled, as necessary, through consultation with the CDFW in accordance with applicable sections of the CESA. Although the SDG&E Subregional NCCP would not be used for the Proposed Project and the Proposed Project is within the City of Oceanside's Multiple Habitat Conservation Program, proposed construction activities would implement applicable avoidance and minimization measures specified in the NCCP Operational Protocols as standard operating procedures (SDG&E, 1995).

Standard Operating Procedures

The Proposed Project includes design features and construction and operating procedures that avoid and minimize environmental impacts during the construction and operations and maintenance (O&M) phases. The standard operating procedures incorporated into the Proposed Project include measures that are routinely implemented by SDG&E. Many of these features and procedures have been developed over time to avoid and minimize environmental impacts to comply with applicable environmental laws and regulations. Consistent with its existing operation and maintenance practices, SDG&E would implement these operating procedures as appropriate during construction and O&M to avoid and minimize potential environmental impacts.

Natural Community Conservation Plan (NCCP) Operation Protocols. SDG&E would implement the following construction and operation protocols; relevant sections are very briefly summarized below. See SDG&E (1995) for the full text of these protocols.

Section 7.1.1 – General Behavior for All Field Personnel

- Restrict vehicles to access roads and observe a 15 mph speed limit.
- Avoid collecting plants or wildlife, feeding wildlife, or harming wildlife.
- Prohibit littering, pets, and firearms on project rights-of-way.
- Employ appropriate measures to prevent wildfires.
- Refer environmental issues or questions to SDG&E Environmental Surveyor.

Section 7.1.2 – Training

- Worker training program, including the biology, habitat, and legal protections of species covered by the SDG&E Subregional NCCP and a review of the NCCP Operational Protocols.

Section 7.1.4 – Maintenance, Repair, and Construction of Facilities

- Avoid erosion and siltation; minimize disturbance to wetlands and riparian areas.
- Vehicles and equipment to remain on existing access roads and cleared areas.

- Survey for active nests, burrows, or dens prior to clearing brush during breeding season.
- Removed cleared vegetation and dispose of it at a permitted facility.
- Schedule tree trimming at non-sensitive times and conduct pre-activity surveys.
- Avoid or minimize impacts to any previously unidentified dens, burrows, or plants found after the pre-activity survey.
- Conduct monitoring as recommended in the pre-activity survey report and verify compliance.
- Avoid wildlife entrapment in materials and excavations.
- Control fugitive dust.
- Conduct pre-activity survey before using pesticides in areas where burrowing owls may be found.

Section 7.1.5 – Maintenance of Access Roads

- Limit disturbance areas.
- Mow, rather than grade, vegetation for temporary access.

Section 7.1.8 – Survey Work

- Vehicles to remain on existing access roads.
- Approval from Environmental Surveyor required prior to clearing brush during breeding season to avoid impacts to sensitive species.

Section 7.1.9 – Emergency Repairs

- Prohibit unnecessary carelessness resulting in environmental damage.
- Follow Operational Protocols to fullest extent possible during emergency repairs.
- Develop and implement a mitigation plan for any unavoidable environmental damage that occurs during emergency repairs.

Applicant Proposed Measures

In order to reduce or avoid impacts to biological resources during the construction phase, SDG&E has proposed the following Applicant Proposed Measures (APM). APMs would apply only during the construction phase. Subsequent to submitting its PEA, SDG&E revised some APMs. The APMs below reflect these revisions and are the APMs that would apply to the Proposed Project. During the O&M phase of the Proposed Project, SDG&E would use standard operational protocols, as described above.

APM BIO-1: General Biological Resources.

- The Proposed Project work areas shall be limited to the sites specified in the project description. Access to the project site shall utilize existing access roads, where possible. Parking, driving, and storing of vehicles will be limited to previously disturbed, compacted, and developed areas, where possible.
- A contractor education program will be conducted by a qualified biologist. It will be conducted during all project phases and cover: (1) the potential presence of listed species and their habitats; (2) the requirements and boundaries of the project (e.g., areas delineated on maps and by flags or fencing); (3) the importance of complying with avoidance and minimization measures; (4) environmentally responsible construction practices; (5) identification of sensitive resource areas in the field; and (6) problem reporting and resolution methods.
- A qualified biologist will be assigned to the Proposed Project. The designated biologist will have the authority to halt construction in that segment of the Proposed Project to prevent impact to any listed species.

- Heavy equipment, construction, equipment maintenance, and staging activities will occur in designated areas and be restricted to existing roads and disturbed areas to the maximum extent practicable.
- Where possible, laydown, stockpiling, parking, driving, and storing of vehicles and equipment will be limited to previously disturbed/compacted and developed areas within and immediately adjacent to existing roads.

APM BIO-2: Vegetation and Special Status Plant Species.

- Disturbance to adjacent native vegetation will be avoided to the greatest extent.

APM BIO-3: Migratory Birds.

- Pre-construction nest surveys will be conducted by a qualified biologist if construction or demolition activities on the project site occurs between January 1 and August 31 (nesting season). Surveys shall cover all potential nesting habitat within the PSA and be repeated on a weekly basis throughout the nesting season. If SDG&E determines that any staging yards included in the proposed project, is not needed, then those staging yards will be exempt from nest surveys
- If an active nest is found within the Proposed Project at any time, work will stop immediately in the immediate area of the nest and redirected away from the nest location. A no disturbance buffer zone will be established around each nest. The size of the buffer zone for non-special-status species will be determined by a qualified biologist. Any activities that might, in the opinion of the biological monitor, disturb nesting activities, will be prohibited in the buffer zone. If an active nest of a special-status species is identified, SDG&E shall consult with the USFWS and CDFW to determine the size of the buffer zone (except for burrowing owls, which will be determined in accordance with APM BIO-4). Nest locations will be mapped using GPS technology.
- The biological monitor will monitor all active nests and buffers at least once per week, to determine whether birds are being disturbed. If signs of disturbance or distress are observed, the biological monitor shall immediately implement adaptive measures to reduce disturbance. These measures could include, but are not limited to, increasing buffer size, halting disruptive construction activities in the vicinity of the nest until fledging is confirmed, or placement of visual screens or sound dampening structures between the nest and construction activity.
- The qualified biologist or biological monitor will monitor the nest until he or she determines that nestlings have fledged and dispersed or the nest is no longer active. The results of nest surveys and nest monitoring shall be included in biological monitoring reports, described in Mitigation Measure B-1 (Biological Monitoring and Reporting).

APM BIO-4: Special Status Wildlife Species.

- Protocol-level surveys for the burrowing owl shall occur prior to the commencement of construction. The survey shall be conducted by a qualified biologist in accordance with the Staff Report on Burrowing Owl Mitigation. The surveys shall commence at least 30 days and not less than 14 days prior to construction. The survey results shall be provided to SDG&E within 14 days following completion of surveys.
- If burrowing owls are detected within the Project Study Area, measures consistent with the methodology as established in the Staff Report on Burrowing Owl Mitigation and in concurrence with the local CDFW office will be implemented. This includes, but is not limited to the use of buffers around burrows, inspection of equipment, monitoring, and the potential for development of a Burrowing Owl Exclusion Plan approved by the local CDFW office.

- Prior to the commencement of the construction phase, a qualified biologist shall conduct a preconstruction survey/sweep of Melrose Staging Yard to determine the presence of the western yellow bat. If the western yellow bat is not found during the initial preconstruction survey/sweep, the staging yard will be resurveyed weekly while the yard is in use for the project. Surveys will be conducted year-round. If roosts are found during the survey sweeps, a no disturbance buffer zone will be established of 165 feet from any active roost and 300 feet from any active maternity roost. The qualified biologist shall consult with CDFW to determine the appropriate buffer limits to adequately protect the species and the buffer sizes listed above may be reduced with concurrence from CDFW. The buffers will remain in place until the staging yard is no longer used for this project or until the bat(s) have left the roost and a buffer is no longer necessary.

5.4.2 Environmental Impacts and Mitigation Measures

Method and Thresholds for Determining Significance

A significant impact is defined under CEQA as "a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project" (Cal Code Regs. tit. 14, [hereinafter CEQA Guidelines] section 15382). In this analysis, the following impacts to biological resources are considered significant if the project would:

- 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 CDFW or USFWS.
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by CDFW or USFWS.
- 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.) either individually or in combination with the known or probable impacts of other activities through direct removal, filling, hydrological interruption, or other means.
- Interfere substantially 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 wildlife nursery sites.
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Communities Conservation Plan, or other approved local, regional, or State habitat conservation plan?

Direct and Indirect Impacts and Mitigation. CEQA Guidelines define direct impacts as those impacts that result from the project and occur at the same time and place. Indirect impacts are caused by the project, but can occur later in time or farther removed in distance and are still reasonably foreseeable and related to the operation of the project. Direct or indirect impacts on biological resources could be permanent or temporary in nature. All impacts that result in the irreversible removal of biological resources are considered permanent. Any impact considered to have reversible effects on biological resources can be viewed as temporary.

Temporary impacts are generally associated with construction activities and the clearing and use of temporary workspace (i.e., staging yards). Temporary impact areas may vary slightly within the PSA because

the positioning of construction vehicles, equipment, and materials cannot be accurately anticipated prior to construction, as locations are dependent upon the contractor safely performing the work. These areas are intended to be restored as near to preconstruction conditions as possible once construction is complete. Permanent impacts are associated with construction and operation of the proposed Ocean Ranch Substation.

Direct impacts to biological resources may include the physical loss or removal of vegetation due to the installation of new facilities or work at staging yards. Indirect impacts to biological resources during construction may include the interruption of normal nesting or foraging behaviors, loss of prey items, such as insects or food resources, or harm due to excessive dust or noise. Impacts to special-status species may occur either through temporary or permanent habitat loss or degradation, interruption of normal behaviors, or through injury or mortality.

a. Would the project 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 Game or U.S. Fish and Wildlife Service?

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED.

Special-status plants.

As described above, five special-status plant species have historically been documented within one mile of the PSA. The PSA does not include suitable habitat for any of these species, and no special-status species were observed within the PSA during reconnaissance-level biological surveys.

Due to the previous grading and site preparation activities that were conducted for the Pacific Coast Business Park Master Development Plan and the Ocean Ranch Corporate Center Master Plan, no habitat for special-status plant species remains on the Ocean Ranch Substation site, USPS Staging Yard, or Corporate Center Staging Yard. The San Luis Rey Staging Yard and Melrose Staging Yard are located at existing developed substations and there is no native habitat present. Therefore, construction and O&M of the Proposed Project would have no impacts to special-status plants or their habitat and no mitigation is proposed.

Special-status wildlife. Construction and O&M activities could impact special-status wildlife. Direct impacts to special-status wildlife species could include the removal of suitable habitat by construction of project facilities, or direct mortality to individuals, nests, burrows, and young as a result of construction or O&M activities. Temporary impacts may include disturbance from construction or O&M activities that alters normal behavior patterns, including migration and dispersal, courtship and mating, and foraging and roosting. Ten special-status wildlife species have potential to occur within the PSA; see Table 5-4.3.

To ensure sensitive wildlife is not affected, SDG&E would use established Operational Protocols, as applicable and described in the SDG&E Subregional Natural Community Conservation Plan (SDG&E, 1995) for construction and O&M. These protocols include, but are not limited to, providing environmental training to workers, conducting pre-construction surveys, monitoring during clearing and grading activities, requiring all excavations and materials to be inspected for wildlife entrapment, requiring wildlife escape ramps in open excavations, and avoiding wildlife impacts to the extent practicable. Additionally, SDG&E would implement APM BIO-1 through BIO-4, as described above. APM BIO-1 (General Biological Resources) requires activities to be limited to specified work sites and access roads, implementation of a worker environmental awareness education program, and assignment of a qualified biologist to the project. APM BIO-2 (Vegetation and Special status Plant Species) requires that disturbance to adjacent native vegetation be avoided. APM BIO-3 (Migratory Birds) requires biological surveys prior to construction activities during

the nesting season and avoidance of active nests. APM BIO-4 (Special-status Wildlife Species) requires surveys and avoidance for burrowing owl and western yellow bat.

Mitigation Measure B-1 (Biological Monitoring and Reporting) would require a biological monitor to inspect the Project site periodically and prepare monthly summary reports. APM BIO-4 (Special Status Wildlife Species) would require implementation of avoidance buffers if special-status bats are found in Melrose Staging Yard. APM BIO-3 (Migratory Birds) specifies surveys and avoidance buffers for nesting birds. Mitigation Measure B-2 (Worker Training) expands on and adds detail to APM BIO-1 and SCE's Natural Community Conservation Plan (NCCP) Operation Protocols, discussed under Standard Operating Procedures. With implementation of SDG&E's NCCP Operational Protocols, APM BIO-1 through BIO-4, and Mitigation Measures B-1 and B-2, the Proposed Project would have a less-than-significant impact on special-status wildlife species.

Coastal California gnatcatcher. The San Luis Rey Staging Yard is in adjacent to occupied coastal California gnatcatcher habitat and USFWS-designated critical habitat (discussed below). This staging yard is located in a paved area at the existing San Luis Rey Substation. There is no native habitat in the San Luis Rey Staging Yard. Impacts to adjacent habitat associated with the temporary use of the staging yard would include noise and disturbance during the construction phase. However, the activities associated with the proposed staging yard would be consistent with current activities and use of the proposed staging yard area for O&M activities at the San Luis Rey Substation. Therefore, temporary construction noise and activity adjacent to coastal California gnatcatcher habitat is not anticipated to be substantially greater than existing conditions. The San Luis Rey Staging Yard would be used for the Proposed Project only during the construction phase and no project-related O&M impacts to coastal California gnatcatcher habitat are anticipated. Implementation of APM BIO-1 (General Biological Resources), APM BIO-2 (Vegetation and Special-status Plant Species), Mitigation Measure B-1 (Biological Monitoring and Reporting), and SDG&E NCCP Operational Protocols would further avoid and reduce potential impacts by limiting staging activities to designated areas, imposing vehicle speed limits, requiring worker training, and assigning a qualified biologist to the Proposed Project to conduct periodic inspections. With implementation of APM BIO-1, APM BIO-2, Mitigation Measure B-1, and SDG&E NCCP Operational Protocols, potential temporary impacts to coastal California gnatcatcher would be less than significant.

Burrowing owl. Surveys identified potentially suitable habitat for burrowing owl at the Ocean Ranch Substation site, USPS Staging Yard, and Corporate Center Staging Yard. The area outside the San Luis Rey Staging Yard PSA could provide potential habitat for burrowing owl. If burrowing owl is present on the Project site, construction impacts could include habitat loss, disturbance, destruction of burrows, and mortality of adults and young. The staging yards would be used for the Proposed Project only during the construction phase and no O&M impacts to burrowing owl are anticipated at the yards. The entire substation site would be permanently impacted by construction, the developed facility would not provide suitable habitat for burrowing owl, and no additional O&M impacts to burrowing owl are anticipated at the substation site. APM BIO-4 (Special-status Wildlife Species) specifies that protocol surveys for burrowing owl be conducted in suitable habitat prior to construction and, if found, measures be implemented to avoid and reduce impacts. Implementation of APM BIO-1 (General Biological Resources), APM BIO-2 (Vegetation and Special-status Plant Species), Mitigation Measure B-1 (Biological Monitoring and Reporting), and SDG&E NCCP Operational Protocols would further avoid and reduce potential impacts by limiting staging activities to designated areas, requiring worker training, and assigning a qualified biologist to the Proposed Project to conduct periodic inspections. Habitat within the staging yards would be restored to pre-project conditions after construction. Habitat within the proposed substation site would be permanently impacted. However, as described above, the substation site has been previously graded and existing disturbed habitat is of low ecological value. With implementation of APM BIO-1, APM BIO-2, APM

BIO-4, Mitigation Measure B-1, and SDG&E NCCP Operational Protocols, potential impacts to burrowing owl would be less than significant.

Western yellow bat. Surveys identified potential roosting habitat for western yellow bat in the trees, particularly palm trees, at the Melrose Staging Yard. No trimming or removal of these trees is anticipated for the Project, but temporary impacts include construction noise, vibration, and disturbance. If present, western yellow bat may be deterred from using the trees as roosts during construction activities. Impacts to maternity roosts, if present, would be particularly adverse. The Melrose Staging Yard would be used for the Proposed Project only during the construction phase and no project-related O&M impacts to western yellow bat are anticipated. APM BIO-4 (Special-status Wildlife Species) requires preconstruction surveys for western yellow bat at the Melrose Staging Yard and implementation of avoidance measures if bat roosts are found. SDG&E NCCP Operational Protocols and Mitigation Measure B-1 (Biological Monitoring and Reporting) would further avoid and reduce potential impacts by limiting staging activities to designated areas, requiring worker training, and assigning a qualified biologist to the Proposed Project to conduct periodic inspections. In addition, implementation of APM BIO-4, SDG&E NCCP Operational Protocols, and Mitigation Measure B-1, potential impacts to western yellow bat would be less than significant.

Special-status birds. Special-status birds may use the Project site for foraging, although the habitat is marginal and potential for occurrence of these species is low; special-status birds are not likely to nest on the Project site. If present on the Project site, construction impacts to foraging special-status birds could include habitat loss and disturbance. The staging yards would be used for the Proposed Project only during the construction phase and would be restored to pre-project conditions after construction. No project-related O&M impacts are anticipated at the staging yards. The entire substation site would be permanently impacted by construction and no additional adverse O&M impacts to special-status birds are anticipated at the substation site, except as discussed below.

Implementation of APM BIO-1 (General Biological Resources), APM BIO-2 (Vegetation and Special-status Plant Species), Mitigation Measure B-1 (Biological Monitoring and Reporting), and SDG&E NCCP Operational Protocols would further avoid and reduce potential impacts by limiting staging activities to designated areas, controlling fugitive dust, requiring worker training, avoiding disturbance to adjacent native vegetation, and assigning a qualified biologist to the Proposed Project to conduct periodic inspections. With implementation of APM BIO-1, APM BIO-2, Mitigation Measure B-1, and SDG&E NCCP Operational Protocols, impacts to foraging special-status birds, if any, would be adverse, but less than significant, and no mitigation is proposed.

Nesting birds. A variety of common birds may nest on the Project site and in adjacent areas. Nests may be built in trees or other vegetation or on the ground in the staging yards or substation site, or on adjacent structures. Birds may nest on structures in the proposed Ocean Ranch Substation, both during construction of the substation and once completed. Birds may also attempt to nest in construction materials or on idle construction equipment.

Nesting birds are protected under the MBTA as well as California Fish and Game Code. Potential impacts to nesting bird species include the removal of potential nesting habitat (e.g., trees and vegetation), damage to nests and injury or mortality to eggs and young, and disruption of nesting behavior or care of young due to noise and disturbance during construction and O&M.

To avoid and minimize impacts to nesting birds, SDG&E would implement APM BIO-3 (Migratory Birds), which requires a biological survey prior to construction activities during the breeding season and avoidance of active bird nests. SDG&E would also use Operational Protocols that require pre-construction

surveys for bird nests prior to brush clearing during the breeding season. APM BIO-3 provides specifications regarding surveys and avoidance buffers for nesting birds. Mitigation Measure B-1 (Biological Monitoring and Reporting) would require a biological monitor to inspect the Project site periodically. With implementation of SDG&E's NCCP Operational Protocols, APM BIO-3, and Mitigation Measure B-1, the Proposed Project would have a less than significant impact on nesting birds.

Critical habitat and preserves. There is no USFWS-designated critical habitat within the Proposed Project site. However, critical habitat for coastal California gnatcatcher is located immediately north of the San Luis Rey Staging Yard. Potential impacts to adjacent critical habitat associated with the temporary use of the staging yard would include noise and disturbance during the construction phase. However, the activities associated with the proposed staging yard would be consistent with the current use of the proposed staging yard area for O&M activities for the San Luis Rey Substation. Therefore, construction noise and activity is not anticipated to be substantially greater than existing conditions. The San Luis Rey Staging Yard would be used for the Proposed Project only during the construction phase and no project-related O&M impacts to coastal California gnatcatcher critical habitat are anticipated.

The Proposed Project site is located within the City of Oceanside SAP. This plan designates preserves that are set aside as protected areas of importance for wildlife, flora, or other resources. A preserve area is reserved and managed for conservation. Preserve boundaries are immediately adjacent to the northwest corner of the Corporate Center Staging Yard and immediately north of the San Luis Rey Staging Yard. As with critical habitat, construction noise and activity at the San Luis Rey Staging Yard is not anticipated to be substantially greater than existing conditions and no project-related O&M impacts to preserve areas are anticipated.

Habitat in the preserve area adjacent to the Corporate Center Staging Yard has been disturbed through past grading and vegetation management activities. Adjacent land uses include commercial/industrial buildings, public roadways, and landscaped areas. The Corporate Center Staging Yard would be used for the Proposed Project only during the construction phase and would be restored to pre-project conditions after construction. No project-related O&M impacts to preserve areas are anticipated.

Implementation of APM BIO-1 (General Biological Resources), APM BIO-2 (Vegetation and Special-status Plant Species), Mitigation Measure B-1 (Biological Monitoring and Reporting), and SDG&E NCCP Operational Protocols would further avoid and reduce potential impacts to critical habitat and preserves by limiting staging activities to designated areas, controlling fugitive dust, requiring worker training, avoiding disturbance to adjacent native vegetation, and assigning a qualified biologist to the Proposed Project to conduct periodic inspections. With implementation of APM BIO-1, APM BIO-2, Mitigation Measure B-1, and SDG&E NCCP Operational Protocols, impacts to critical habitat and preserves at the San Luis Rey and Corporate Center Staging Yards would have an adverse, but less than significant effect.

Collision and electrocution. Birds are known to collide with communications towers, power lines, and other elevated structures. Estimates of the number of bird fatalities specifically attributable to interactions with utility structures vary considerably. Nationwide, it is estimated that hundreds of thousands to as many as 175 million birds are lost annually to fatal collisions with transmission and distribution lines (Erickson et al., 2001). In California, even general estimates are unavailable, although it is plausible that such collisions result in the deaths of hundreds of thousands of birds each year (Hunting, 2002).

The risk of bird collisions with power lines is influenced by a number of factors, including the type and size of bird, weather, visibility, season, surrounding habitat, and size, configuration, and placement of power lines (APLIC, 2012). Collisions with power lines are generally due to poor visibility of electrical lines, but

collisions may also occur with other structures such as utility poles and substation structures. Collisions may occur in poor weather or visibility conditions, or when birds are startled and flushed from cover, fleeing from predators, or focused on pursuing prey.

Electrocution can occur when a bird perches, lands or takes off from a utility pole or substation structure if the animal makes contact with two conductors to complete the electrical circuit, or simultaneously contacts energized phase conductors and other equipment, or simultaneously contacts an energized wire and a grounded wire. Electrocution on power lines is a greater potential hazard to larger birds, such as raptors, because their body size and wing span are large enough to span the distance between the conductor wires and thus complete the electrical circuit. Within substations, raptor electrocutions are uncommon, but smaller birds such as songbirds and crows may perch, roost, or nest on substation structures and be exposed to electrocution risks (APLIC, 2006).

The power line component of the Proposed Project consists of new underground line segments. No additional electrocution or collision impacts are anticipated from power lines associated with the Proposed Project because they would be underground.

The new substation would create opportunities for birds to perch, roost, and nest on electrical equipment within the substation, creating the potential for electrocution. New substation structures, including the telecommunications monopole, would also create the possibility for bird collisions to some degree. However, within this urbanized area, additional structures associated with the proposed Ocean Ranch Substation would not substantially increase the collision hazard relative to existing conditions. Limited night lighting would be employed at the substation; however, with the exception of the gate entry lights, which would remain on at night for safety purposes, the remaining substation lighting would not be turned on unless it is required for nighttime work or an emergency. The existing urban environment is extensively lit at night, including street lighting in the substation vicinity. Night lighting can disorient migrating birds and lead to collisions, but in this urbanized area the substation lighting would not substantially increase the overall wildlife collision hazard relative to the existing condition.

To reduce potential collision and electrocution risks to birds and bats, SDG&E would construct the power line and substation in compliance with current Avian Power Line Interaction Committee (APLIC) guidelines (APLIC, 2006). SDG&E has incorporated the APLIC's Suggested Practices for Avian Protection into SDG&E's Avian Protection Plan and SDG&E's standard for both transmission and distribution substations (SDG&E, 2016b). These methods ensure a minimum separation between electrical components to prevent simultaneous contact and covering electrical components with protective materials to prevent contact. Implementation of APLIC guidelines and SDG&E's Avian Protection Plan would reduce impacts to birds from electrocution and collision to a less than significant level.

Water quality basins. The proposed Ocean Ranch Substation would include water quality basins, constructed as flow-through planters. The flow-through planters have been proposed to comply with the Municipal Storm Water Permit and associated stormwater standards adopted by the City of Oceanside. The proposed flow through planters would be landscaped and would be comprised of a soil matrix that includes well-draining planting soil and layers of pea gravel and crushed rock, underlain by an impermeable liner. Runoff from the site would be directed to the flow through planters and allowed to filter through the layers of soil and gravel, eventually being collected in a perforated subdrain pipe that would connect to the existing storm drain infrastructure. The planters would be gently sloped on at least one side to allow wildlife to exit the facility. The planters would be maintained by SDG&E throughout the life of the Proposed Project. Maintenance includes removal of excessive trash, sediment or debris from within each planter; pruning of overgrowth that interferes with the function of the planters; replacement of mulch as necessary; removal of and replacement of dead vegetation as necessary; and removal of invasive species.

Wildlife may be attracted to the flow-through planters, but with lack of open surface water, the sloping design to allow wildlife escape, and implementation of SDG&E Operational Protocols, no adverse impacts to special-status or common wildlife as a result of the flow-through planters is anticipated and no mitigation is proposed.

Mitigation Measure for Special-Status Animal Species

B-1 **Biological monitoring and reporting.** SDG&E shall assign a qualified biologist or biological monitor to the Project to monitor work during the construction phase and inspect the Project site at least once per week, or until such time that construction activities at locations identified by the monitor no longer have the potential to impact special-status species, native vegetation, wildlife habitat, or sensitive biological resources. The qualified biologist or biological monitor is responsible for ensuring that impacts to special-status species, native vegetation, wildlife habitat, and sensitive or unique biological resources are avoided or minimized to the fullest extent safely possible. Monitors are also responsible for communicating with construction supervisors and crews to ensure that work activities are conducted in compliance with APMs, mitigation measures, permit conditions, and other project requirements.

The qualified biologist or biological monitor shall clearly mark sensitive biological resource areas with staking, flagging, or other appropriate materials that are readily visible and durable, and ensure that work activities are contained within approved disturbance area boundaries at all times. The monitors will inform work crews of these areas and the requirements for avoidance, and will inspect these areas at appropriate intervals for compliance with regulatory terms and conditions.

The qualified biologist or biological monitor shall have the authority and responsibility to halt any project activities that are not in compliance with applicable mitigation measures, APMs, permit conditions, or other project requirements, or will have an unauthorized adverse effect on biological resources.

The qualified biologist or biological monitor shall, to the extent safe, practicable, and consistent with mitigation measures and permit conditions, actively or passively relocate wildlife out of harm's way. Handling, relocation, release from entrapment, or other interaction with wildlife shall be performed consistent with mitigation measures, safety protocols, permits (including CDFW and USFWS permits), and other project requirements. If safety or other considerations prevent the qualified biologist or biological monitor from aiding trapped wildlife or wildlife in harm's way, SDG&E shall consult with the construction contractor, CDFW, wildlife rehabilitator, or other appropriate party to obtain aid for the animal.

The qualified biologist or biological monitor shall communicate with work crews to ensure that all excavations, open tanks, trenches, pits, or similar wildlife entrapment hazards have been covered or have ramps installed to prevent wildlife entrapment, and communicate with work crews to ensure these structures are installed and functioning properly.

Monitoring activities shall be thoroughly and accurately documented during each monitoring visit or inspection and shall include:

- Any special-status species observations, including location of observation, location and description of project activities in the vicinity, and any measures taken to avoid the species. In addition, all special-status species observations shall be reported to the California Natural Diversity Database (CNDDB).

- Bird nesting activities and buffers established.
- Wildlife entrapments and relocations.
- All non-compliance incidents, including nest buffer incursions, with resolution or remedial actions taken.
- Any other information relevant to compliance with biological resource APMs, mitigation measures, permit conditions, or other project requirements.

The qualified biologist or biological monitor shall compile this information into a brief monthly summary report to be submitted to the CPUC within 30 calendar days of the end of each month. At the conclusion of construction activities, a final project summary report shall be submitted to the CPUC within 90 calendar days of the end of construction.

B-2 **Worker Training.** The contractor education program defined by APM BIO-1 shall stipulate the following general behavior requirements:

1. No wildlife may be harmed, except to protect life and limb.
2. Firearms shall be prohibited except for those used by security personnel.
3. Feeding of wildlife shall be prohibited.
4. SDG&E personnel shall not bring pets to work areas.
5. Plant or wildlife species shall not be collected under any circumstance, unless by an authorized/permitted biologist.
6. Littering shall not be allowed. SDG&E shall not deposit or leave any food or waste in any work area.
7. Wildfires shall be prevented or minimized by exercising care when driving and by not parking vehicles where catalytic converters can ignite dry vegetation. The use of shields, protective mats, or other fire prevention methods shall be used during grinding and welding to prevent or minimize the potential for fire. Care shall be exhibited when smoking in permitted areas.
8. Field crews shall refer environmental issues, including wildlife relocation, dead or sick wildlife, hazardous waste, or questions about avoiding environmental impacts, to a biologist(s) approved by the CPUC, USFWS, and CDFW. Other CPUC, USFWS, or CDFW biologists or experts in wildlife handling may need to be brought in for assistance with wildlife relocations.
9. Night lighting shall be of the lowest illumination allowed for human safety, selectively placed, shielded, and to the maximum extent practicable, directed so as to not disturb adjacent land uses or streets.
10. Vehicle speeds on the project site shall be maintained at 15 mph or less.

b. Would the project have a substantial 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. Fish and Wildlife Service?

LESS THAN SIGNIFICANT. Sensitive natural communities are communities that have limited distribution statewide or within a county or region and are often vulnerable to the environmental effects of projects. One sensitive vegetation community was identified in the Proposed Project site: Disturbed Southern Riparian Scrub. The construction of the proposed Ocean Ranch Substation would result in 0.16 acres of permanent impacts to Disturbed Southern Riparian Scrub, see Table 5.4-1.

This vegetation is supported by runoff that collects in the drainage basin and developed only in the past few years. It is a mix of native and non-native species in an isolated patch of disturbed riparian habitat. The ecological value of this patch of disturbed habitat is low. Therefore, permanent loss of 0.16 acres of Disturbed Southern Riparian Scrub on the Project site would be adverse, but less than significant, and no mitigation is proposed.

The jurisdictional delineation report for the Proposed Project (Pangea and Borcher, 2016) indicates that there is one "small patch" of emergent wetland with cattail in the southwest corner of the USPS Staging Yard that is supported by an irrigation leak on the slope above. Photos included with the jurisdictional report show that the patch is, at most, a few square feet. Permanent loss of a few square feet of cattails on the Project site would be adverse, but less than significant, and no mitigation is proposed.

c. Would the project 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.) either individually or in combination with the known or probable impacts of other activities through direct removal, filling, hydrological interruption, or other means?

NO IMPACT. A jurisdictional delineation did not identify any waters or wetlands in the PSA under the jurisdiction of USACE, RWQCB, or CDFW. Therefore, construction of the Proposed Project would not result in impacts to jurisdictional waters or wetlands.

d. Would the project interfere substantially 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 wildlife nursery sites?

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED. The Project site, including the substation site and staging yards, is within an urbanized area and adjacent to busy roadways. However, pockets of open space remain and may be used by wildlife for foraging and breeding habitat and dispersal routes. The Oceanside SAP (Oceanside, 2010) identifies the existing San Luis Rey Substation, and the power line from the San Luis Rey Substation, east along El Camino Real to Rancho Del Oro Road as being within a designated Wildlife Corridor Planning Zone (WCPZ); see Figure 5.4-6. The San Luis Rey Staging Yard is also within the regional coastal California gnatcatcher corridor, as identified in the Oceanside SAP (Oceanside, 2010); see Figure 5.4-5. As described above, the San Luis Rey Staging Yard and Corporate Center Staging Yard are in proximity to preserve areas identified in the Oceanside SAP, which may function as stepping-stone patches of habitat for bird species.

The San Luis Rey and Corporate Center Staging Yards would be used for the Proposed Project only during the construction phase and no project-related O&M impacts to preserve areas are anticipated. The Corporate Center Staging Yard would be restored to pre-project conditions after construction.

The proposed San Luis Rey Staging Yard consists of a paved area located immediately north of the existing San Luis Rey Substation. The proposed staging yard would be used to store equipment needed during the construction phase of the Proposed Project. However, construction noise and activity at the San Luis Rey Staging Yard are not anticipated to be substantially greater than existing conditions. The temporary impacts that result from using the site to store equipment and the additional vehicles traveling to and from the staging yard are not expected to significantly affect the movement of wildlife along any existing or potential wildlife movement corridors with the PSA.

The Corporate Center Staging Yard has been disturbed through past grading and vegetation management activities and adjacent land uses include commercial/industrial buildings, public roadways, and landscaped areas. Construction noise and activity at the Corporate Center Staging Yard would have an adverse, but less-than-significant effect on preserve areas that may function as wildlife movement corridors.

The Ocean Ranch Substation site, the USPS Staging Yard, and the Melrose Staging Yard are not located within areas that represent an important corridor for terrestrial wildlife movement. Furthermore, the Proposed Project would not occur within or adjacent to existing drainages that can serve as wildlife movement corridors.

Implementation of APM BIO-1 (General Biological Resources), APM BIO-2 (Vegetation and Special-status Plant Species), Mitigation Measure B-1 (Biological Monitoring and Reporting), and SDG&E NCCP Operational Protocols would further avoid and reduce potential impacts by limiting staging activities to designated areas, requiring worker training, and assigning a qualified biologist to the Proposed Project to conduct periodic inspections. With implementation of APM BIO-1, APM BIO-2, Mitigation Measure B-1, and SDG&E NCCP Operational Protocols, potential impacts to wildlife movement corridors would be less than significant. There are no established native wildlife nursery sites located in the PSA; therefore, no impacts to native wildlife nursery sites are anticipated as a result of the Proposed Project.

e. Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

NO IMPACT. Construction and operation and maintenance of the Proposed Project will not conflict with any local environmental policies or ordinances promulgated to protect biological resources. Implementation of Project APMs, mitigation measures, and SDG&E Standard Operating Procedures would ensure the Proposed Project would be consistent with the goal of preserving regional ecosystems and conserving endangered, threatened, and key sensitive species and their habitats.

f. Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Communities Conservation Plan, or other approved local, regional, or State habitat conservation plan?

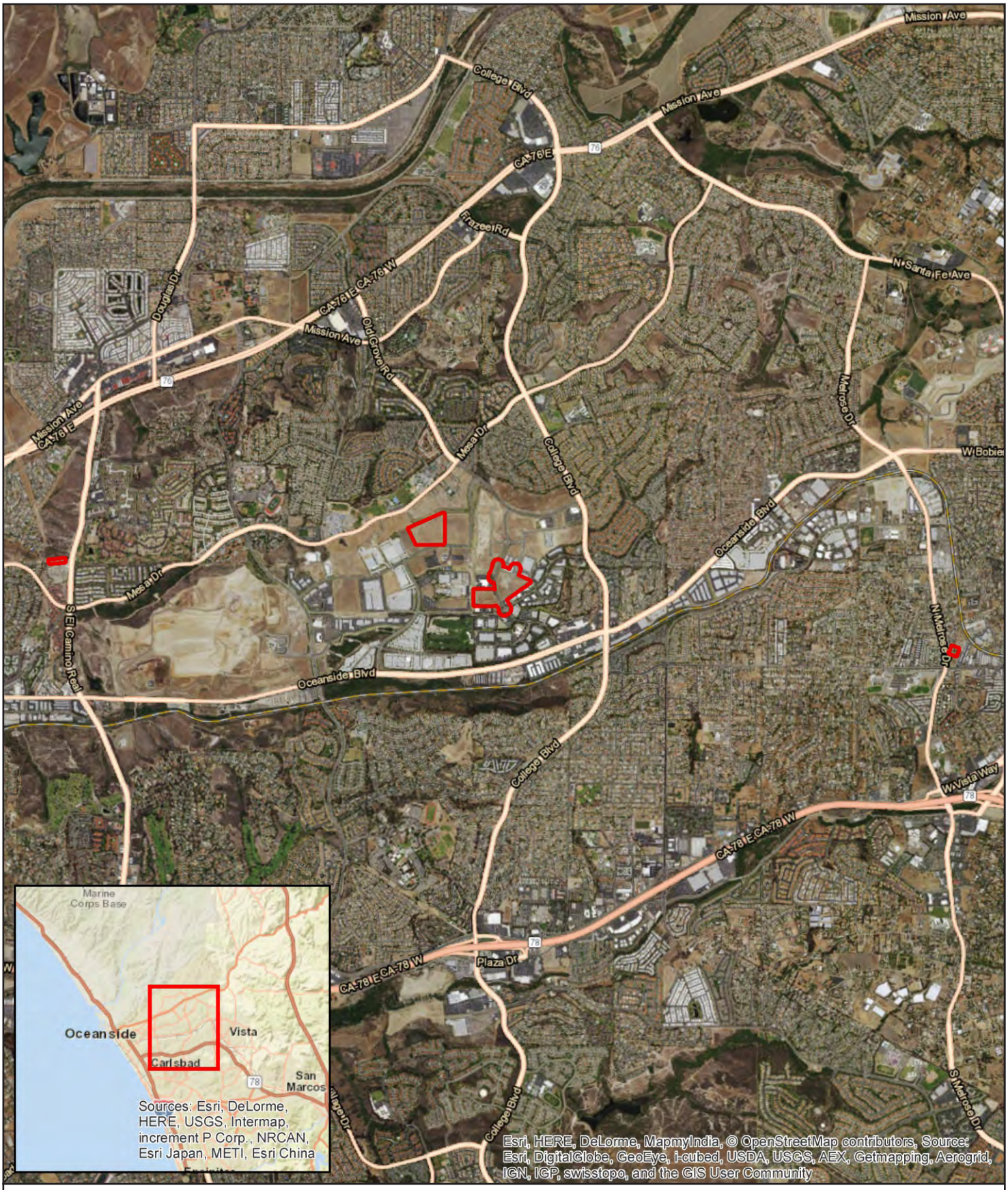
NO IMPACT. The SDG&E NCCP and the San Diego MHCP are the only conservation plans that apply to the Proposed Project. The Oceanside SAP is the City's implementing conservation plan under the MHCP.

The City of Oceanside SAP identifies areas within the City that are envisioned to provide natural community conservation or require special considerations for habitat modification due to preserve planning parameters from the SAP. The project is located in areas that are designated as Wildlife Corridor Planning Zone and Off-site Mitigation Zone; see Figure 5.4-6. The proposed San Luis Rey Staging Yard is located within an area designated as a Wildlife Corridor Planning Zone within the City of Oceanside SAP. However, as discussed above, the Proposed Project would be located in an existing SDG&E transmission corridor on a paved area adjacent to the existing San Luis Rey Substation. The activities associated with the proposed staging yard would be consistent with activities that occur at the existing substation and the current use of this staging yard for operation and maintenance activities, and therefore, impacts to the wildlife corridor would not result.

Although the proposed underground portion of the power line (TL 6966), the proposed Ocean Ranch Substation, Corporate Center Staging Yard, and USPS Staging Yard would be located in an area designated as an Off-site Mitigation Zone, construction would be conducted within disturbed or developed lands or paved roads. The Oceanside SAP does not require mitigation for impacts to these land types. Therefore, the Proposed Project does not conflict with the SAP.

The Proposed Project would not use the take authority granted by the USFWS and the CDFW in the NCCP for impacts to covered species. Potential take of state species would be handled, as necessary, through consultation with the CDFW in accordance with applicable sections of the CESA. Although the SDG&E NCCP take authority would not be used for the Proposed Project, proposed construction activities would implement applicable avoidance and minimization measures specified in the NCCP Operational Protocols as standard operating procedures.

The Proposed Project would not conflict with the SDG&E NCCP or the Oceanside SAP, and no impact would occur.

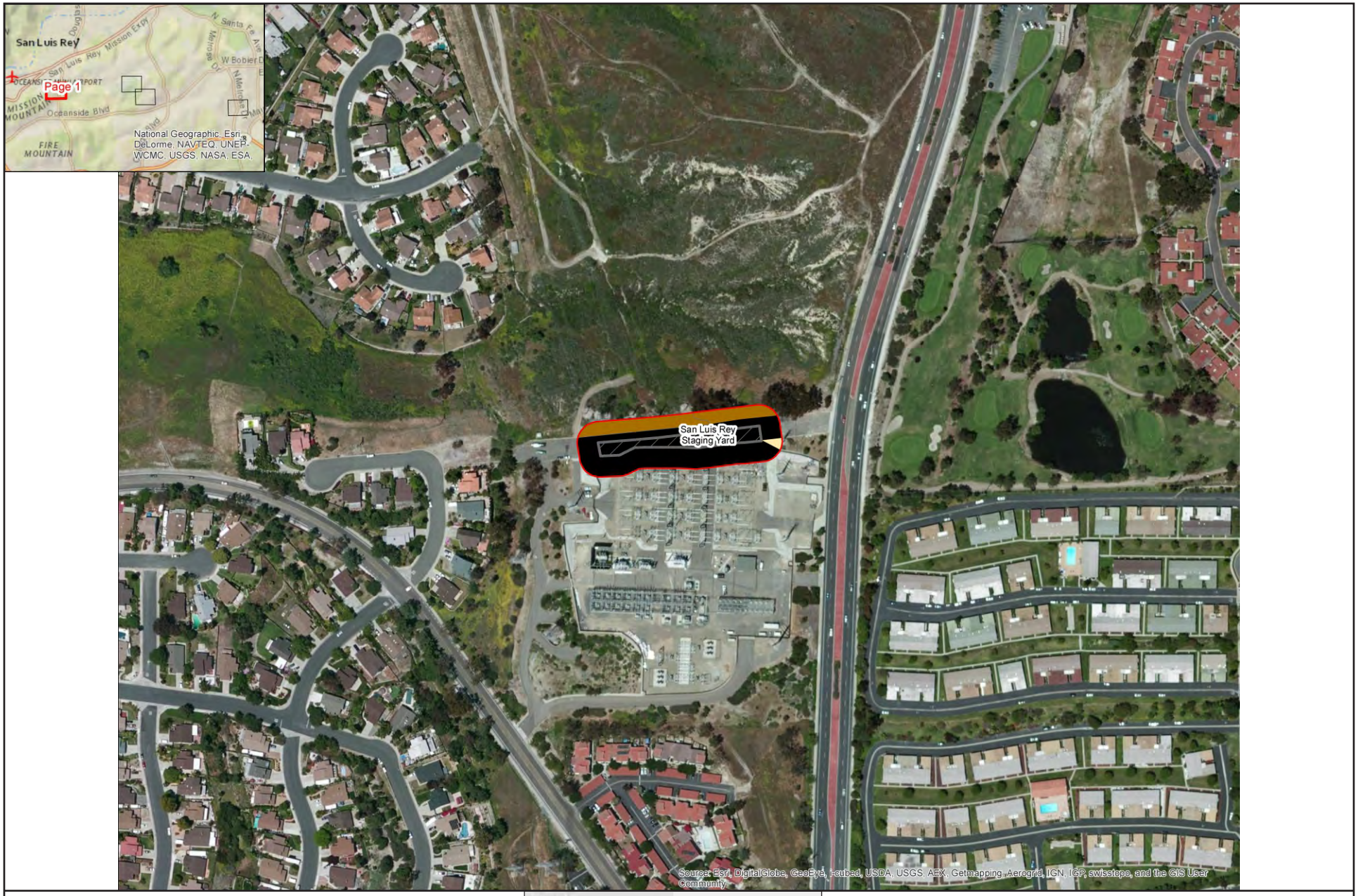


Source: Pangea, 2016.

0 0.5 1 Miles

Project Survey Area

Figure 5.4-1
Project Survey Area - Biological Resources



Source: Pangea, 2016.

0 375 750 Feet

Legend

Staging Yard

Project Survey Area

Vegetation

Disturbed Habitat

Landscape/Ornamental

Pavement/Developed

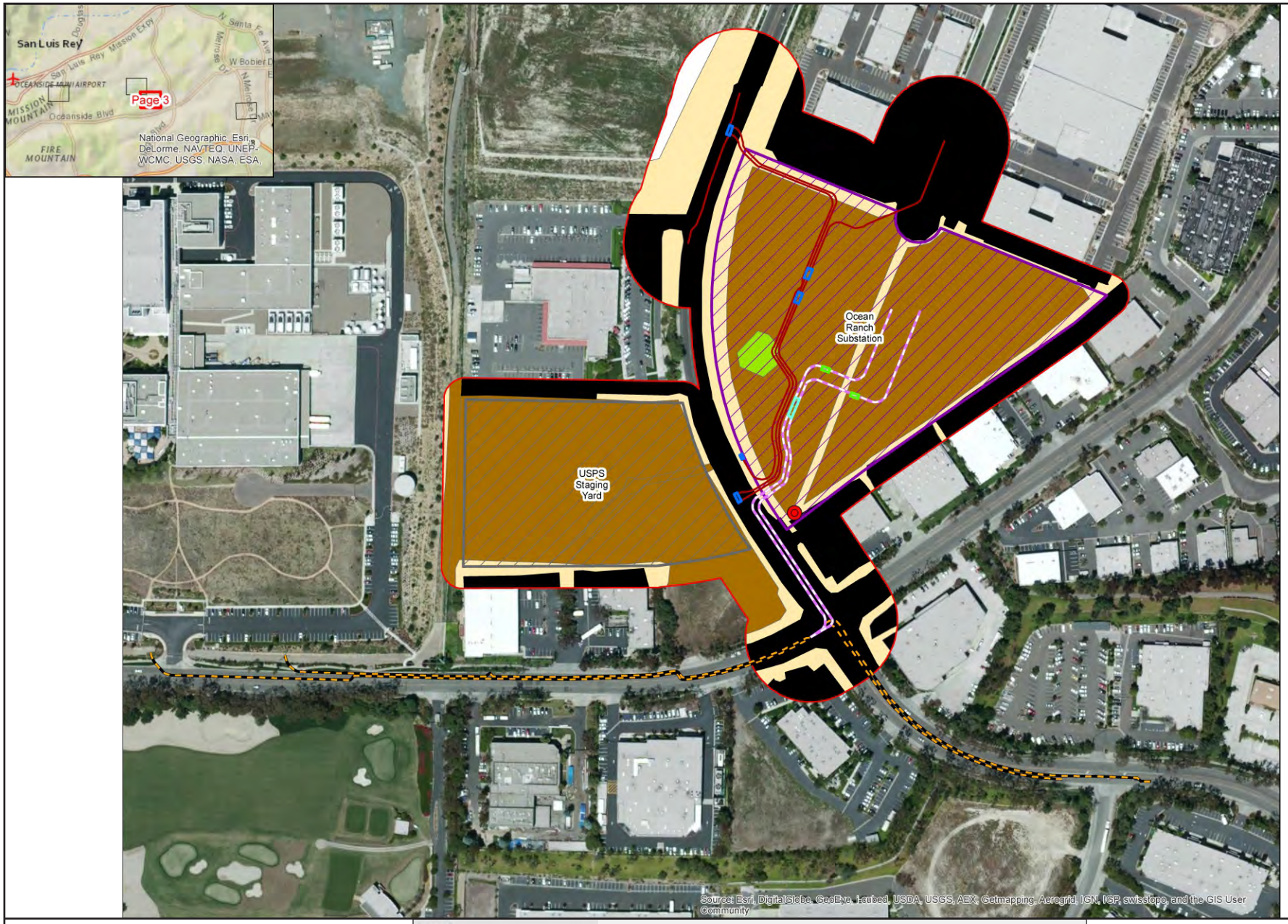
Figure 5.4-2a

Vegetation Communities

Source: Pangea, 2016.

Figure 5.4-2b

Vegetation Communities



Source: Pangea, 2016.

0 375 750 Feet

Legend

Monopole

Transmission

Existing Underground

Proposed Underground

Proposed Underground Distribution

Underground Transmission Structure

Underground Distribution Structure

Ocean Ranch Substation

Staging Yard

Stringing Site

Project Survey Area

Vegetation

Bare Ground

Pavement/Developed

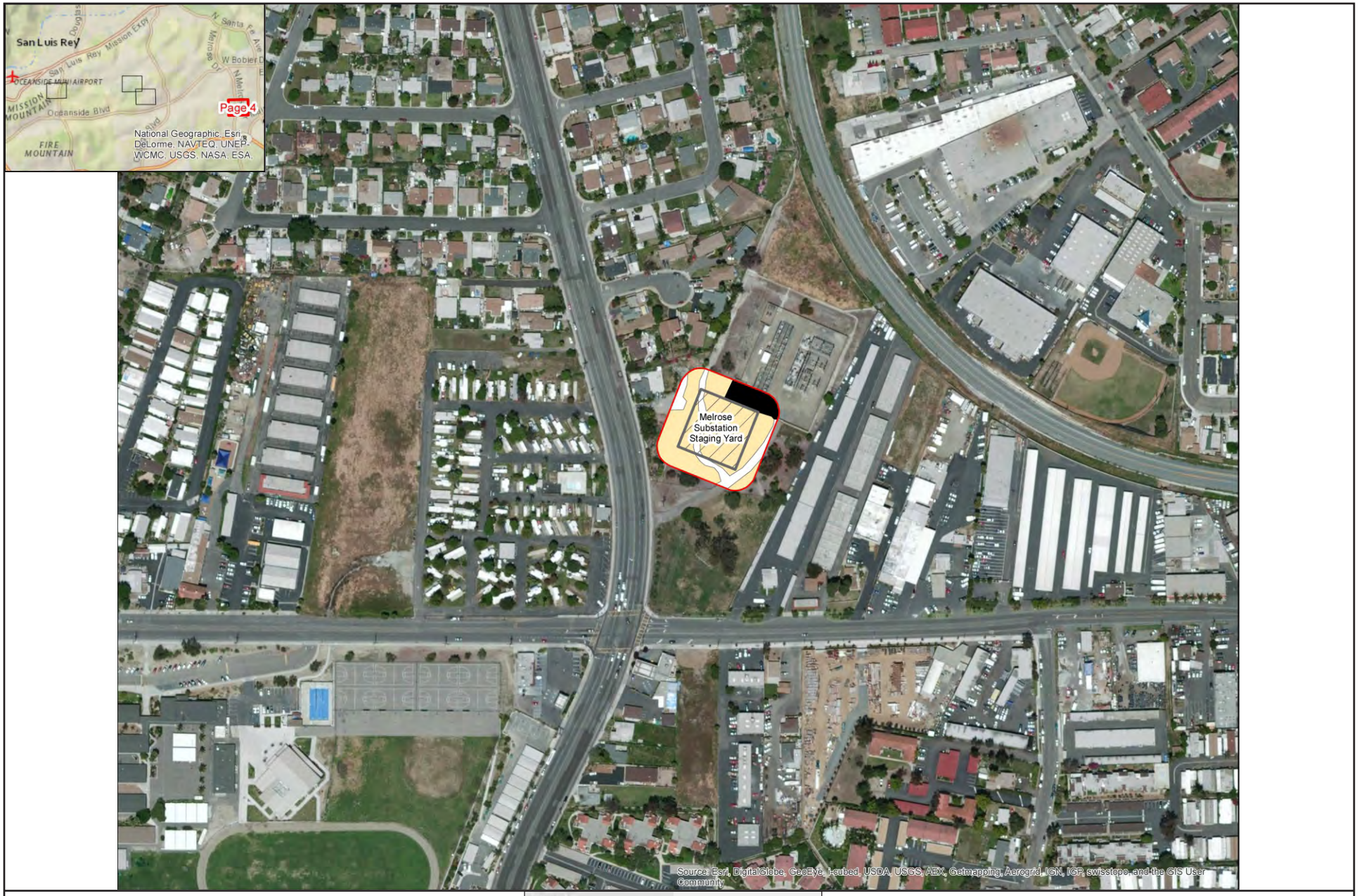
Disturbed Habitat

Southern Riparian Scrub (Disturbed)

Landscape/Ornamental

Figure 5.4-2c

Vegetation Communities



Source: Pangea, 2016.

0 375 750 Feet

Legend

Staging Yard

Project Survey Area

Vegetation

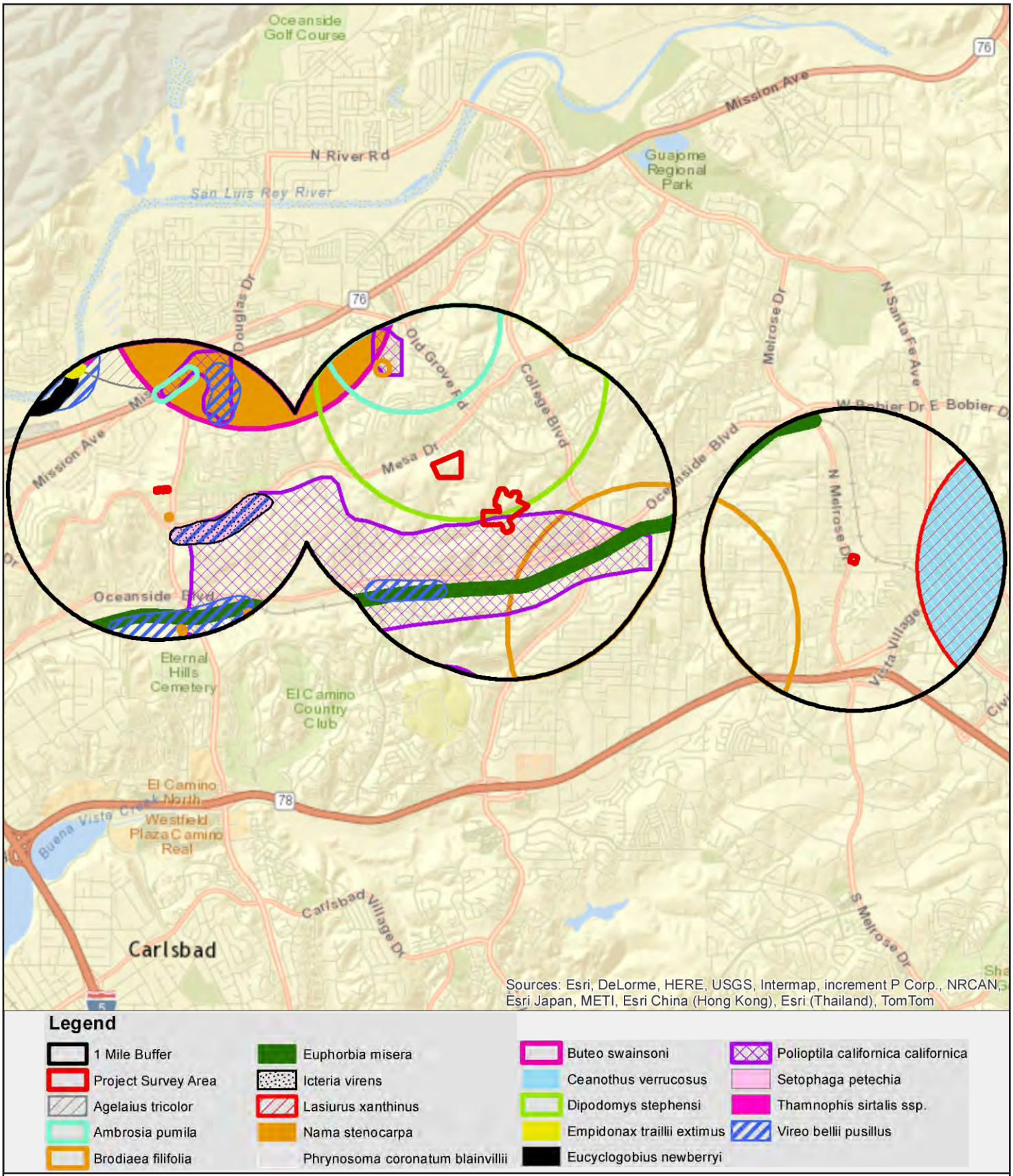
Bare Ground

Landscape/Ornamental

Pavement/Developed

Figure 5.4-2d

Vegetation Communities

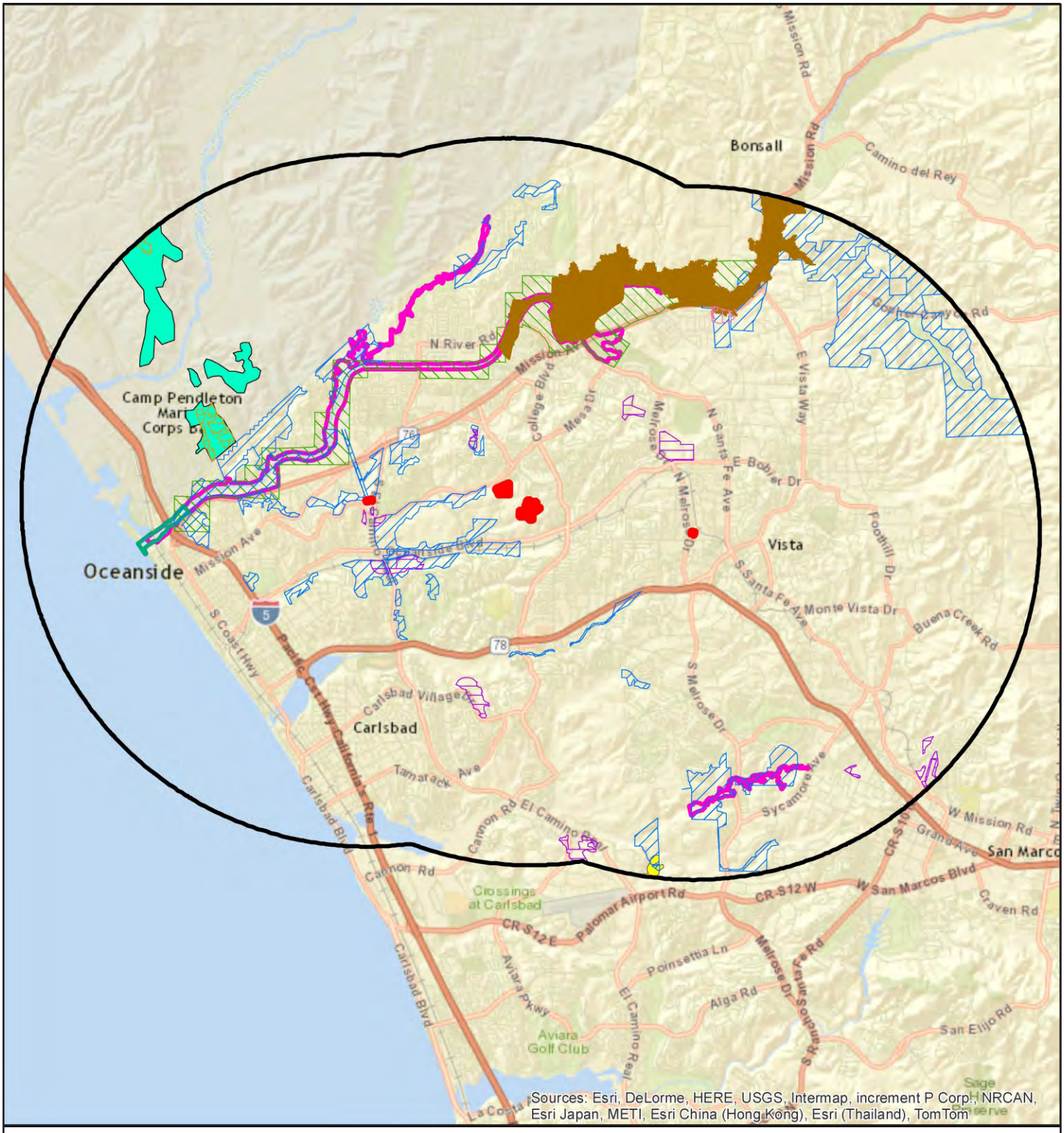


Source: Pangea, 2016.

0 0.7 1.4 Miles

Figure 5.4-3

CNDDB Sensitive Species within 1 Mile of the Project Survey Area



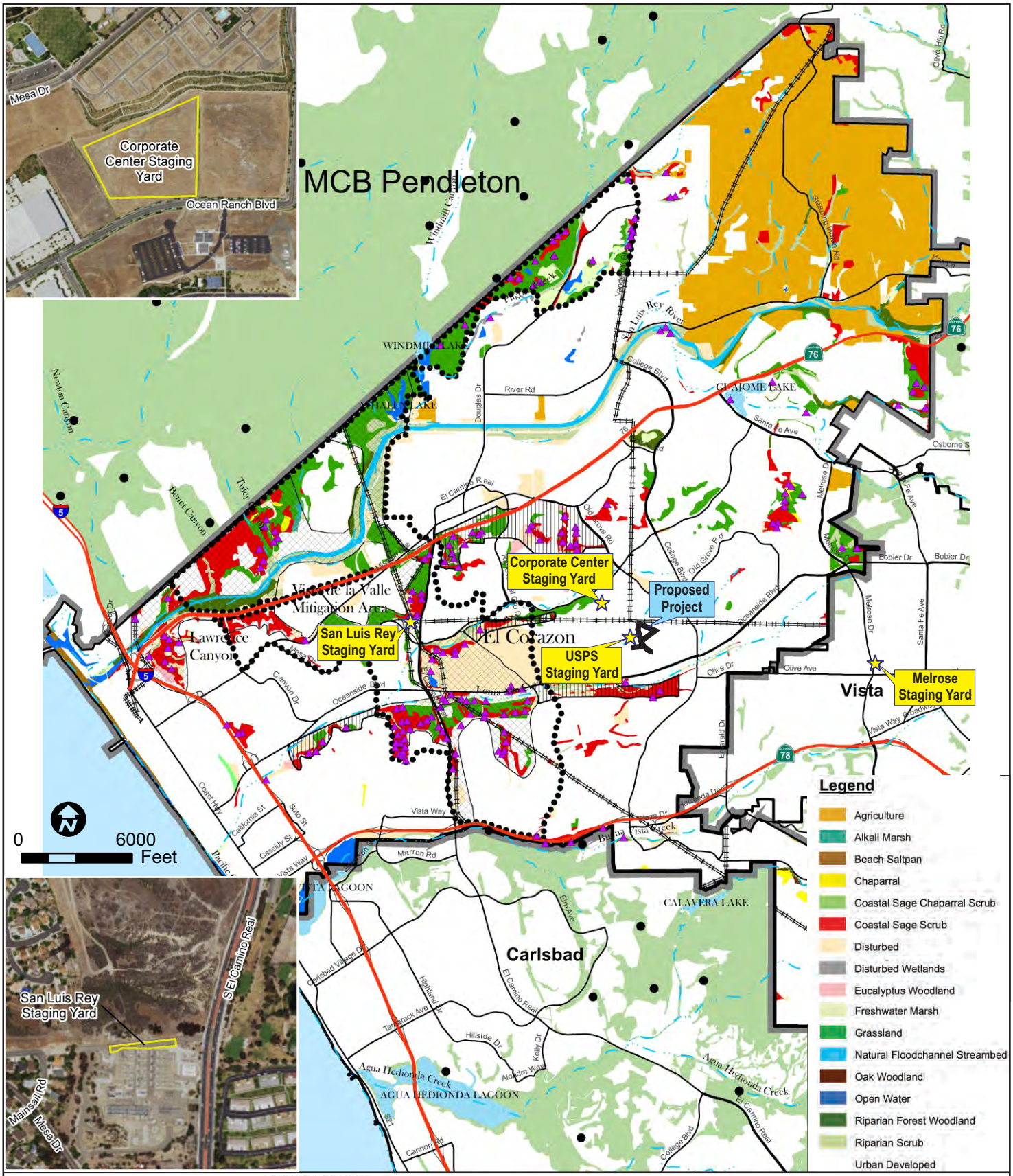
Source: Pangea, 2016.

- Project Survey Area
- 5-Mile-Buffer
- Arroyo (=Arroyo Southwestern) Toad
- Coastal California Gnatcatcher
- Cushenbury Oxytheca
- Least Bell's Vireo
- San Diego Ambrosia
- San Diego Fairy Shrimp
- San Diego Thornmint
- Southwestern Willow Flycatcher
- Spreading Navarretia
- Thread-leaved Brodiaea
- Tidewater Goby

0 1.5 3 Miles

Figure 5.4-4

Critical Habitat within 5 Miles of the Project Survey Area



Source: Oceanside, 2010.

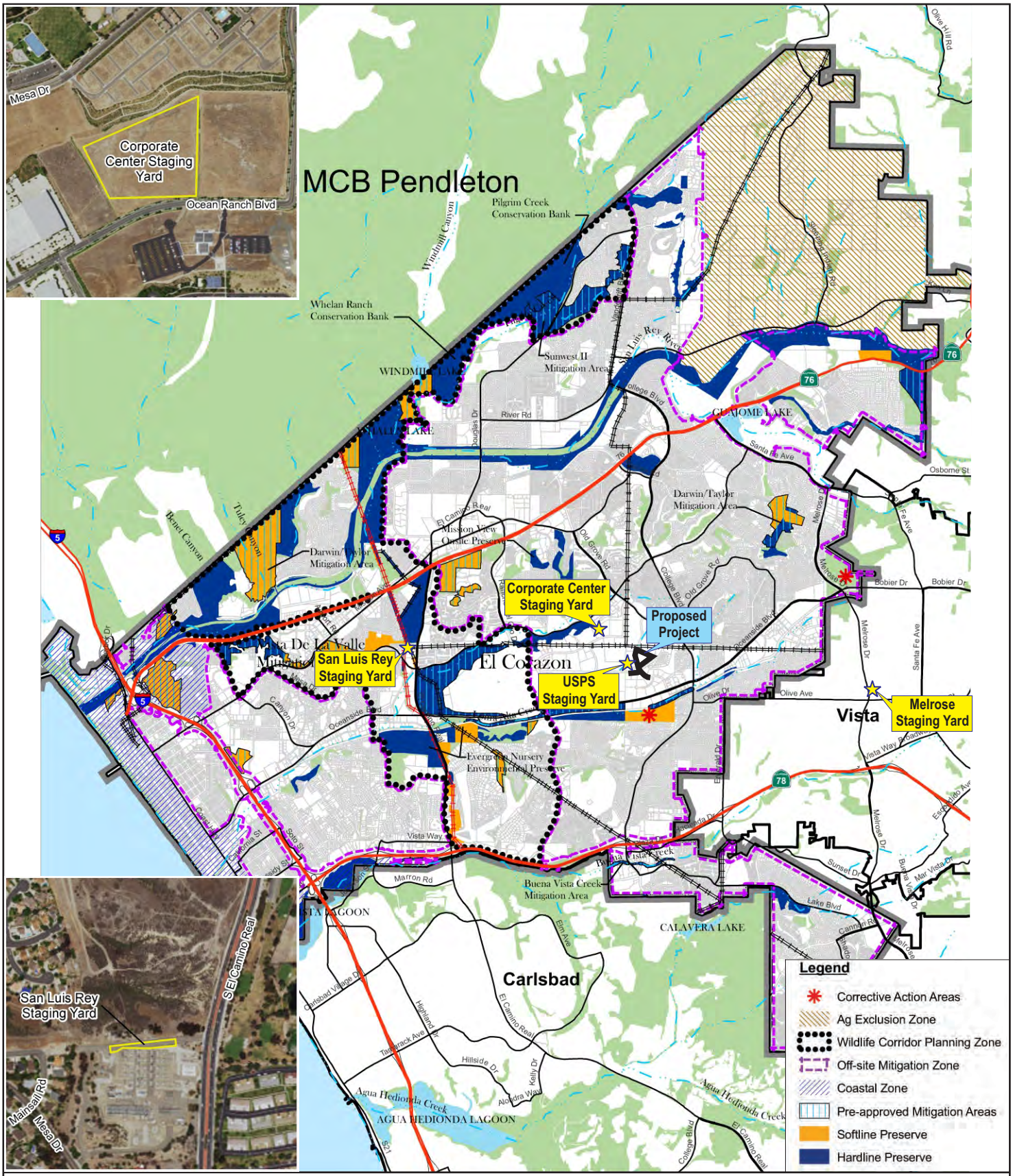
- Regional Cooridor
- Local Gnatcatcher Cooridor
- Gnatcatcher Points inside Oceanside SAP
- Wildlife Corridor Planning Zone

Base Map Features

- Gnatcatcher Points Outside Oceanside SAP
- Oceanside City Boundary
- Other City Boundaries
- SDG&E Transmission Cooridors
- Freeways
- Major Roads
- Natural Vegetation
- Lakes/Lagoons
- Streams

Figure 5.4-5

City of Oceanside Subarea Plan Gnatcatcher Corridor



Source: Oceanside, 2010.

Figure 5.4-6

City of Oceanside Subarea Plan Preserves

5.5 Cultural and Paleontological Resources

CULTURAL RESOURCES Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a. Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☒	☐	☐
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐
d. Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

Significance criteria established by CEQA Guidelines, Appendix G.

5.5.1 Cultural and Paleontological Resources Setting

Cultural resources reflect the history, diversity, and culture of the region and people who created them. They are unique in that they are often the only remaining evidence of activity that occurred in the past. Cultural resources can be natural or built, purposeful or accidental, physical or intangible. They encompass archaeological, traditional, and built environmental resources, including buildings, structures, objects, districts, and sites.

Paleontological resources, or fossils, are the evidence of once-living organisms preserved in the geologic record. They include both the fossilized remains of ancient plants and animals and their traces (e.g., track ways, imprints, burrows, etc.). In general, fossils are greater than 5,000 years old (middle Holocene) and are typically preserved in sedimentary rocks.

Cultural Resources Setting

Approach to Analysis of Cultural Resources and Previous Cultural Resources Studies

Information presented in this section was gathered from a review of the July 2016 report, "Volume II of II (Part A) Proponent's Environmental Assessment for the Ocean Ranch Substation Project," prepared by San Diego Gas & Electric Company (SDG&E). A cultural resources literature and records search was completed by Hector et al. (2015) at the California Historical Resources Information System's (CHRIS) South Coastal Information Center (SCIC) to identify any previously recorded cultural resources and existing survey reports in the Project study area and surrounding area. Cultural resources field surveys were conducted by NWB Environmental Services, Inc., in 2015 and 2016 (results are presented below).

The Proposed Project's effects on cultural resources were evaluated using the significance criteria set forth in Appendix G of the CEQA Guidelines. The conclusions are summarized in the impact summary table above and discussed in more detail below. There are no known sensitive cultural resources within the Proposed Project area. The incorporation of SDG&E's Standard Operating Procedures would minimize any potential impacts to presently unknown or unrecorded cultural resources.

Records Searches

The results of the CHRIS SCIC records search indicate that there are no known sites recorded within the Project study area (the project site plus 0.25 miles around the site) and that there are five (5) cultural resources recorded beyond 1,700 feet of the site boundary. These five resources represent prehistoric

groundstone, lithic, and shell midden deposits, two of which have been characterized as small camps or habitation areas (CA-SDI-1280, CA-SDI-6136, CA-SDI-8090, CA-SDI-10445, and CA-SDI-10446). The nearest known historic site is Mission San Luis Rey de Francia, located 2 miles northwest of the study area. It is a National Historical Landmark, is listed in the National Register of Historic Places, and is a California Historical Landmark.

Pedestrian Survey

NWB Environmental Services, Inc. completed two separate pedestrian surveys of the Ocean Ranch Sub-station site in November 2015 and March 2016 using closely spaced transects at intervals of no more than 15-meters. The survey included the Ocean Ranch Substation site, monopole location, staging yards, and an additional 50' buffer around these locations. All access roads were covered by a field survey, with an additional 20' buffer outside the road edge. In all, 39 acres were surveyed. Field methods included the inspection of animal burrows, road clearings, and cuts and slopes to examine any exposed stratigraphy. All mapping was recorded using a Trimble GPS unit.

The results of the survey indicate that no previously recorded or newly identified cultural resources are present on the ground surface in or adjacent to the Project study area. One cultural resource, CA-SDI-6136, was identified during a search of the CHRIS SCIC as being located adjacent to the substation; however, the survey crew was unable to relocate the resource and reported the site as likely to have been destroyed.

Native American Consultation

A Sacred Lands File search for the Project study area was received from the California Native American Heritage Commission (NAHC) on April 22, 2015. The Sacred Lands File search results prepared by the NAHC failed to indicate the presence of Native American cultural resources within the Project study area (Hector et al., 2016). Follow-up correspondence was sent on June 19, 2015 to all individuals and groups indicated by the NAHC as having affiliation with the Proposed Project area. These tribes included: La Jolla Band of Mission Indians, Pala Band of Mission Indians, Pauma Band of Luiseño Indians, Rincon Band of Luiseño Indians, San Luis Rey Band of Mission Indians, Soboba Band of Luiseño Indians, and the Temecula Band of Luiseño Indians (Pechanga).

Follow-up correspondence consisted of a letter describing the Proposed Project and a map indicating the Project's study area. Recipients were requested to reply with any information they could share about Native American resources that might be adversely affected by the Proposed Project. Four responses were received, including the Pala Band of Luiseño Indians (response on June 25, 2015), the Soboba Band of Luiseño Indians (response on June 29, 2015), the Rincon Band of Luiseño Indians (response on July 6, 2015), and the Temecula Band of Luiseño Indians (Pechanga) (response on July 27, 2015). All four responses stated that no resources were identified in the Project study area, although the project is located within tribal ancestral lands. The four tribes requested that a qualified Native American Monitor be present for any ground disturbing work.

Paleoenvironment

The Proposed Project is located in the San Luis Rey River Coastal Subbasin, which is characterized by a Mediterranean semiarid climate (Hector et al., 2015). Vegetation in the region consists of coastal sage scrub. Typical plants include buckwheat *(Eriogonum fasciculatum),* black *sage (Salvia mellifera),* white sage *(Salvia apiana),* sugar bush *(Rhus ovata),* squaw bush *(Rhus trilobata),* laurel sumac *(Rhus laurinia),* cattail *(Typha sp.),* spike-rush *(Eleocharis sp.),* bulrush *(Scripus sp.),* pickleweed *(Salicornia virginica),* salt grass *(Distichlis spicata),* willow *(Salix sp.),* cottonwood *(Populus fremontii),* and sycamore *(Platanus*

racemose) (Hector et al., 2015). The area is also home to a variety of mammals, birds, and reptiles, including coyote *(Canis lantrans),* desert wood rat *(Neotoma lepida),* California ground squirrel *(Spermophilus beecheyi),* desert cottontail *(Sylvilagus audubonii),* and many bats and mice (Hector et al., 2015).

Soils that underlie the Proposed Project area consist primarily of loose to medium dense fill, medium dense to very dense, or hard to very hard colluvium. At greater depths, very dense formational soils primarily of the Eocene-age Santiago Formation are found. The Proposed Project area consists of documented fill up to 75 feet deep overlying alluvial and colluvial deposits above native moderate to very highly cemented Santiago Formation materials.

Prehistory

Human occupation began in the Proposed Project area between 11,200 to 10,600 Before Present (BP); however, people may have lived in the region as far back as 15,000 BP. The Paleoindian occupation of the region is called the San Dieguito culture, which is characterized by large stone tools, eccentric stone artifacts, and groundstone. Paleoindians lived in highly mobile, small groups, primarily hunted large game animals, and processed limited amounts of plants and seeds.

The Archaic Period dates from 8,500 to 1,300 BP. Archaic people lived in mobile, small groups and primarily relied on marine resources including mollusks, fish, and plants, as well as fewer terrestrial game and plant species. Coastal Archaic sites are often referred to as the La Jolla Complex and are characterized by shell middens, stone tools, cobble tools, groundstone metates and manos, and discoidal stone artifacts. Inland Archaic sites are often referred to as the Pauma Complex, which are similar to the coastal sites except that they lack evidence of shellfish consumption and exhibit a reduced reliance on consumption of mammals as evidenced by the lower densities of animal bone found in middens. The practice of following the seasonal availability of food likely began during the Archaic Period.

The Late Prehistoric Period dates from 1,300 to 200 BP. Changes in the artifact assemblages from these types of sites include the use of bow and arrow technology and ceramics and an increase in the consumption of plant foods (e.g., acorns). People tended to live in large villages that housed multiple activities. Two different groups occupied the region during the Late Prehistoric. These included the Yuman-speaking Kumeyaay in the south, who developed into the Diegueño people during the ethnohistoric period, and the Tacik-speaking People in the north, including the Luiseño (*'Atáaxum*) and Juaneño (Acjachemen).

Ethnography

The ethnohistoric period in San Diego County begins at the time of European contact with Native Americans, often cited as having begun with the voyage of Juan Rodríguez Cabrillo in 1542 and encompassing much of the Spanish Period (1769-1821). The Luiseño occupied the Project area during the ethnohistoric period and may have displaced the Kumeyaay, who later occupied the southern region of the County. Missions were established in the region in the late 1700s, including Mission San Diego de Alcalá in 1769, Mission of San Juan Capistrano in 1776, and Mission San Luis Rey de Francia in 1798. At the time of contact, the Luiseño population may have ranged from 5,000 to as many as 10,000 individuals. To the south, the Kumeyaay population was at the same level or perhaps somewhat higher. Along with the introduction of European diseases, missionization greatly reduced their populations. The missions converted the Native Americans to Christianity; used the Native Americans as laborers; and introduced European diseases, agriculture, and animal husbandry to the Native Americans. Most villagers, however, continued to maintain many of their aboriginal customs while adopting the agricultural and animal husbandry practices learned from the Spanish.

Regional History

San Diego history can be divided into the Spanish Period (discussed above), Mexican Period (1821-1846), and American Period (1846-Present). Expansion of private land grants to inland areas increased during the 1820s after Mexico won independence from Spain, which also initiated a departure from the mission system. California was occupied by the United States during the Mexican-American War of 1846-1848. After the Treaty of Guadalupe-Hidalgo was signed in 1848, California was annexed to the United States and the U.S. government had to recognize legitimate land claims, including those of Mexicans. Waves of settlers arrived after the Gold Rush in 1849, which created tension between the settlers squatting on Mexican-owned land (Hector et al., 2015).

Much of the land in the region was used for ranching, but by the 1860s, many of the original landowners lost their land holdings through the Board of Land Commissioners, which was created by the California Land Claim Act of 1851. Settlers continued to flock to the area, facilitated by the Homestead Act of 1862, the Timber Culture Act of 1873, and the transcontinental railroad that reached California by 1885. The population of San Diego increased from 5,000 in 1885 to 40,000 in 1889. The growth in the 1890s was primarily focused in the coastal areas and adjacent inland valleys (Hector et al., 2015).

Regulatory Background

This section includes a description of the cultural resources regulatory framework.

Federal

No federal regulations related to cultural resources are applicable to the Proposed Project. Section 106 of the National Historic Preservation Act does not apply because no federal agency discretionary action is required for the Proposed Project, and no federal lands or monies are involved.

State

California Environmental Quality Act

CEQA requires that impacts to cultural resources be identified and, if impacts would be significant, that mitigation measures be implemented to reduce those impacts to the extent feasible (Public Resources Code (PRC) Section 21081). In the protection and management of the cultural environment, both the statute and the CEQA Guidelines (14 California Code of Regulations Section 15000 et seq.) provide definitions and standards for cultural resources management. Pursuant to Guideline 15064.5(a), the term "historical resource" includes:

A resource listed in, or determined to be eligible by the State Historical Resources Commission for listing in, the California Register of Historical Resources (CRHR). A resource included in a local register of historical resources…or identified as significant in a historical resource survey…shall be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant. Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be a historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the CRHR, including the following:

- It is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- It is associated with the lives of persons important in our past;
- It 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
- It has yielded, or may be likely to yield, information important in prehistory or history.

The fact that a resource is not listed in, or determined to be eligible for listing in the CRHR, not included in a local register of historical resources, or identified in a historical resources survey, does not preclude a lead agency from determining that the resource may be a historical resource.

As defined in PRC Section 21083.2(g), a "unique archaeological resource" is, an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- It contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information;
- It has a special and particular quality, such as being the oldest of its type or the best available example of its type; or
- It is directly associated with a scientifically recognized important prehistoric or historical event or person.

Section 15064.5(b)(1) of the CEQA Guidelines explains that effects on historical resources would be considered adverse if they involve physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of the resource would be materially impaired. Adverse effects on historical resources may result in a project having a significant effect on the environment. Section 15064(c)(3) requires that unique archaeological resources receive treatment under PRC Section 21083.2, which requires these resources to be preserved in place or left in an undisturbed state. If these treatments are not possible, then mitigation for significant effects is required, as outlined in PRC Section 21082.2(c).

The statutes and guidelines cited above specify how cultural resources are to be analyzed for projects subject to CEQA. Archival and field surveys must be conducted, and identified cultural resources must be inventoried and evaluated in prescribed ways.

California Register of Historical Resources (CRHR)

The CRHR is a public listing that was established by the California Office of Historic Preservation to encourage public recognition and protection of resources of architectural, historical, archeological, and cultural significance (Section 5024.1). Any resource eligible for listing in the CRHR must also be considered significant under CEQA. A historical resource may be listed in the CRHR if it meets one or more of the following criteria:

- It is associated with events that have made a significant contribution to the broad patterns of local or regional history or the cultural heritage of California or the United States;
- It is associated with the lives of persons important to local, California, or national history;
- It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master or possesses high artistic value; or

- It has yielded or has the potential to yield information that is important in the prehistory or history of the local area, California, or the nation.

Automatic listings include properties listed in the National Register of Historic Places (NRHP) or State Historical Landmarks from number 770 onward (PRC Section 5024.1(d)). In addition, Points of Historical Interest nominated since January 1998 are to be jointly listed as Points of Historical Interest and in the CRHR. Landmarks prior to number 770 and Points of Historical Interest may be listed through an action of the State Historical Resources Commission.

Resources listed in a local historic register or deemed significant in a historical resources survey, as provided under PRC Section 5024.1(g), are presumed to be historically or culturally significant unless the preponderance of evidence demonstrates that they are not (PRC Section 21084.1). A resource that is not listed on or determined to be ineligible for listing in the CRHR, not included in a local register of historical resources, or not deemed significant in a historical resources survey may, nonetheless, be historically significant.

State Regulations Concerning Human Remains

Broad provisions for the protection of Native American cultural resources are contained in the California Health and Safety Code, Division 7, Part 2, Chapter 5 (Sections 8010 through 8030), including the California Native American Graves Protection and Repatriation Act (Cal NAGPRA). Cal NAGPRA established a state policy to ensure that California Native American human remains and cultural items are treated with respect and dignity. Cal NAGPRA also provides the mechanism for disclosure and return of human remains and cultural items held by publicly funded agencies and museums in California. In addition, Cal NAGPRA outlines the process that California Native American tribes who are not recognized by the federal government may follow to file claims for human remains and cultural items held in agencies or museums.

Several provisions of the California PRC govern archaeological finds in terms of human remains or any other related object of archaeological or historical interest or value. Procedures are detailed under PRC Section 5097.9 through 5097.994 (Native American Historic Resource Protection Act) for actions to be taken whenever Native American remains are discovered. Under these provisions, if a county coroner determines that human remains found during excavation or disturbance of land are Native American, the coroner must contact the California Native American Heritage Commission (NAHC) within 24 hours (Health and Safety Code Section 7050.5(c)), and the NAHC must determine and notify the most likely descendant, who may make recommendations for removal and nondestructive analysis of the remains and for the removal of items associated with Native American burials or cremations within 24 hours (Section 5097.98).

Furthermore, Section 7050.5 of the California Health and Safety Code states that any person who knowingly mutilates or disinters, wantonly disturbs, or willfully removes any human remains in or from any location other than a dedicated cemetery without authority of law is guilty of a misdemeanor, except as provided in PRC Section 5097.99. Any person removing any human remains without authority of law or written permission of the person or persons having the right to control the remains under PRC Section 7100 has committed a public offense that is punishable by imprisonment (Health and Safety Code Section 7051).

Local

As provided in CPUC General Order 131-D, the CPUC has exclusive jurisdiction over the siting, design, and construction of the Proposed Project, preempting local discretionary authority over the location and construction of electrical utility facilities. Therefore, the Proposed Project is not subject to local discretionary land use regulations. Nonetheless, as part of the environmental review process, SDG&E considers relevant

local land use plans and policies that pertain to cultural resources. The City of Oceanside General Plan, Land Use Element, contains the following policies that are relevant to the Proposed Project:

Policy 3.2 C states that "cultural resources that must remain in-situ to preserve their significance shall be preserved intact and interpretive signage and protection shall be provided by project developers."

Policy 3.2 D states that "an archaeological survey report shall be prepared by a Society of Professional Archaeologists certified archaeologist for a project proposed for grading or development if any of the following conditions are met:

- The site is completely or largely in a natural state,
- There are recorded sites on nearby properties,
- The project site is near or overlooks a water body (creek, stream, lake, freshwater lagoon),
- The project site includes large boulders and/or oak trees, or
- The project site is located within a half-mile of Mission San Luis Rey.

Applicant Proposed Measures

There are no Applicant Proposed Measures (APMs) proposed related to cultural resources. However, SDG&E's Standard Operating Procedures include providing a project specific environmental and safety awareness program for project personnel that includes discussion of required procedures if cultural resources are encountered unexpectedly during project construction.

Paleontological Setting

Approach to Analysis of Paleontological Resources and Previous Paleontological Studies

Information presented in this section was gathered from a review of the July 2016 report, "Volume II of II (Part A) Proponent's Environmental Assessment for the Ocean Ranch Substation Project," prepared by SDG&E. The Proposed Project's effects on paleontological resources were evaluated using the significance criteria set forth in Appendix G of the CEQA Guidelines. The conclusions are summarized in the impact summary table above and discussed in more detail below.

There are 66 known sensitive paleontological resources within and surrounding the project area. In addition, the project area overlies the Santiago Formation, which is identified as highly sensitive for paleontological resources. Thus, ground disturbing work should be considered to have a high potential for encountering buried paleontological resources (Demere, 2016). The incorporation of SDG&E's Standard Operating Procedures and the Applicant's Proposed Measures (see below) will minimize any potential impacts to presently unknown or unrecorded paleontological resources.

Record Searches

A paleontological records search was conducted at the Department of Paleontology by the San Diego Natural History Museum for the Proposed Project (Demere, 2016). A total of 66 fossil collecting locations have been recorded within a half-mile radius of the Proposed Project area. Many of these fossils are considered significant as they represent multiple past environments. The majority of localities include fluvial, estuarine, and marine deposits of the Santiago Formation (Demere, 2016). These localities produced a wide variety of fossils, including fossilized stem and leaf impressions of terrestrial plants (e.g., freshwater algae and reeds), shell remains and impressions of marine invertebrates (e.g., segmented worms, barnacles, shrimp, crabs, ostracods, bryozoans, brachiopods, sea urchins, snails, clams, mussels, and oysters), mineralized remains of marine vertebrates (e.g., fish, rays, and sharks), and fossilized remains of terrestrial

vertebrates (e.g., amphibians, birds, oreodonts, camels, pigs, bats, arboreal gliding mammals, primitive carnivores, creodonts, insectivores, rabbits, marsupials, brontotheres, amynodonts, horses, tapirs, rhinos, primates, rodents, tortoises, softshell turtles, crocodilians, snakes, and lizards) (Demere, 2016). Terrestrial vertebrates (e.g., bison, horse, rodents, and reptiles) have also been recovered from a late Pleistocene-age stream terrace deposit and a late Oligocene-age Sespe/Vaqueros Formation (Demere, 2016).

Pedestrian Survey

A pedestrian survey to identify paleontological resources was not conducted; however, monitoring is recommended for all areas that may encounter previously undisturbed deposits of the Santiago Formation, including the following areas:

- Foundation excavations associated with installation of the 40-foot monopole in the southwestern portion of the substation site,
- Trenching activities for the underground power line duct bank within Avenida del Oro and Avenida de La Plata, and
- Any miscellaneous earthwork operations that will extend deep enough to encounter the Santiago Formation.

Notably, much of the proposed earthwork within the substation site (e.g., mass grading to create a building pad and trenching for underground power line duct banks) is anticipated to only impact the existing engineered artificial fill, which has zero paleontological sensitivity. In addition, work in staging yards is unlikely to require significant earthwork, and thus will not cause a significant impact to the Santiago Formation.

Paleontological History

San Diego County is located along the Pacific Rim, an area characterized by island arcs with subduction zones forming mountain ranges, deep oceanic trenches, and active volcanoes and causing earthquakes. During the Mesozoic Era, subduction of the ancient oceanic plate under the continental plate created an archipelago of volcanic islands in the San Diego area. The heat caused by the subduction produced massive volumes of magma that either erupted at the surface forming volcanic rocks or congealed deep in the Earth's crust to form plutonic rocks (e.g., granite). This resulted in the creation of the plutonic rocks now exposed in the mountainous central part of the County. Subsequent heating also metamorphosed the volcanic and sedimentary rocks of the arc as well as the older Paleozoic rocks, forming the foothills of the western part of the ranges. Continuing subduction of the oceanic plate under the continent caused uplifting and erosion that unroofed the deeply buried plutonic rocks to form a steep and rugged, mountainous coastline. Younger Mesozoic and Cenozoic sedimentary rocks have buried these older rocks west of the mountains, while a thick accumulation of Cenozoic sedimentary rocks, including layers of lava and ash, has filled the basins east of the mountains.

During the Cenozoic Era, a tectonic spreading center began to separate the southwestern part of North America, including San Diego County, from the rest of the continent. The spreading center formed the Gulf of California and the Salton Trough Region. The slow northwestward movement of San Diego County caused intermittent uplift with subsequent erosion, as well as down warping with subsequent deposition of thick accumulations of sediments. Recorded in these Cenozoic sedimentary rocks are conditions of higher rainfall and subtropical climates that supported coastal rain forests with exotic faunas and floras, periods of extreme aridity and volcanism, sea level fluctuations (oceanic inundations and retreats), a great Eocene river and delta, and the formation of new seaways.

In the project area, soils consist primarily of loose to medium dense fill, medium dense to very dense or hard to very hard colluvium. At greater depths, very dense formational soils primarily of the Eocene-age Santiago Formation are found. The Proposed Project area consists of documented fill overlying alluvial and colluvial deposits above native moderate to very highly cemented Santiago Formation materials. There are also numerous outcrops of non-marine Pleistocene deposits exposed near the Proposed Project area. The Santiago Formation is highly sensitive for the presence of paleontological resources.

Regulatory Setting

This section includes a description of the paleontological resources regulatory framework.

Federal

No federal regulations related to cultural or paleontological resources are applicable to the Proposed Project. The Paleontology Resources Preservation Act of 2009 does not apply to the Proposed Project because no federal agency discretionary action is required for the project, and no federal lands or monies are involved.

State

California Environmental Quality Act

Paleontological resources are limited, nonrenewable resources of scientific, cultural, and educational value that are protected under CEQA. CEQA Appendix G, Part V inquires whether a project will destroy a unique paleontological resource. PRC Section 5097.5 protects paleontological resources located on public lands from the knowing and willful excavation, removal, destruction, injury, or defacement without a permit from the agency with jurisdiction over the land. Section 5097 further outlines the preservation and protection of these resources.

Local

As provided in CPUC General Order 131-D, the CPUC has exclusive jurisdiction over the siting, design, and construction of the Proposed Project, preempting local discretionary authority over the location and construction of electrical utility facilities. Therefore, the Proposed Project is not subject to local discretionary land use regulations. Nonetheless, as part of the environmental review process, SDG&E considers relevant local land use plans and policies that pertain to cultural resources. The City of Oceanside General Plan, Land Use Element, contains the following policies that are relevant to the Proposed Project:

Policy 3.23 A states that "paleontological survey reports shall be prepared by a qualified paleontologist approved by the City for all Proposed Projects that are located in the area designated as having a high potential for fossils on the City's natural resource management database system" (City of Oceanside, 2002).

Applicant Proposed Measures

The following APM will be implemented as part of the Proposed Project to reduce any potential impacts to paleontological resources to a less than significant level.

APM CUL-1: *Paleontological Resource Monitoring Program.* A paleontological resource monitoring program will be implemented during construction. The program will include construction monitoring, fossil salvage, laboratory preparation of salvaged specimens, curation of prepared specimens, and storage of curated specimens. A qualified paleontologist will be onsite to monitor all ground disturbing activities

(e.g., grading and excavation) within native sediments, until the monitor determines monitoring activities are not necessary. The monitor will inspect all fresh cut slopes and trenches, spoils piles, and graded pad surfaces for unearthed fossil remains. If any paleontological find is identified during monitoring, then the monitor will communicate with the general environmental monitor and the construction manager. Salvage may include techniques such as "pluck-and-run," hand quarrying, and bulk matrix sampling and screen-washing. The monitor will also collect stratigraphic data to define the nature of fossiliferous sedimentary rock units within the Proposed Project area, their geographic distributions, and their lithologic characteristics. Paleontological monitoring would not be required in locations where artificial imported fill materials occur for the full depth of the proposed ground disturbance.

5.5.2 Environmental Impacts and Mitigation Measures

a. Would the project cause a substantial adverse change in the significance of an historical resource as defined in §15064.5 [§15064.5 generally defines* historical resource *under CEQA]?

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED. There are no known historical resources identified within the Proposed Project area; however, previously unknown buried historical resources could be discovered and damaged, or destroyed, during ground disturbing work. Damage or destruction of a buried historical resource would constitute a significant impact absent mitigation.

Mitigation Measure. Implementation of Mitigation Measure C-1 would evaluate and protect unanticipated discoveries of historical resources, thereby reducing this impact to less than significant.

C-1 Management of Unanticipated Discoveries of Historical Resources or Unique Archaeological Resources. Unanticipated discovery protocols shall be communicated to project workers as part of the contractor education program. If previously unidentified cultural resources are identified during construction activities, construction work within 100 feet of the find shall be halted and directed away from the discovery until a Secretary of the Interior qualified archaeologist and tribal representative assesses the significance of the resource. The archaeologist, in consultation with the County, SHPO, any interested Tribes, and any other responsible public agency, shall make the necessary plans for recording and curating the find(s) and for the evaluation and mitigation of impacts if the finds are found to be eligible to the National Register of Historic Places or California Register of Historical Resources, or qualifies as a unique archaeological resource under CEQA Section 21083.2.

b. Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

LESS THAN SIGNIFICANT WITH MITIGATION MEASURES INCORPORATED. No unique archaeological resources have been identified in the Proposed Project area; however, previously unknown buried archaeological resources could be discovered and damaged, or destroyed, during ground disturbing work. Damage or destruction of a buried historical resource would constitute a significant impact absent mitigation.

Mitigation Measure. Implementation of Mitigation Measure C-1, described above, would evaluate and protect unanticipated discoveries of unique archaeological resources, thereby reducing this impact to less than significant.

c. Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED. There are 66 paleontological resources present within the Project study area and surrounding areas. Therefore, the potential to directly or indirectly destroy

unique paleontological resources is moderate to high. In accordance with SDG&E's Standard Operating Procedures (Section 4.12.1), the Applicant will implement an environmental and safety awareness program for project personnel that will include education about paleontological resources. The Applicant will also implement a paleontological resource monitoring program during construction. A qualified paleontology monitor will ensure that previously unidentified paleontological resources are preserved by methods outlined in the monitoring program if encountered during construction. Therefore, the impacts to unique paleontological resources will be less than significant with the incorporation of APM CUL-1.

Mitigation Measure. No additional mitigation is required. Implementation of APM CUL-1, described above, would evaluate and protect unanticipated discoveries of unique paleontological resources or unique geologic features, thereby reducing this impact to less than significant.

d. Would the project disturb any human remains, including those interred outside of formal cemeteries?

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED. There is no indication that human remains are present within the Proposed Project area. Background archival research failed to find any potential for human remains (e.g., existence of formal cemeteries). The nature of the proposed ground disturbance in areas of artificial fill and previously disturbed soils makes it unlikely that human remains would be unearthed during construction. However, it is possible that previously unknown human remains could be discovered and damaged or destroyed during ground disturbance, which would constitute a significant impact absent mitigation.

Mitigation Measure. Implementation of Mitigation Measure C-2**,** which requires evaluation, protection, and appropriate disposition of human remains, would reduce this impact to less than significant.

C-2 **Appropriate Treatment of Human Remains.** Upon discovery of human remains, all work within 100 feet of the discovery area must cease immediately, the area must be secured, and the following actions taken:

- The land manager/owner of the site is to be called and informed of the discovery.
- The San Diego County Coroner's Office is to be called. The Coroner has two working days to examine the remains after notification (Health and Safety Code Section 7050.5(b). The Coroner will determine if the remains are archaeological/historic or of modern origin, and if there are any criminal or jurisdictional questions. The Coroner will make recommendations concerning the treatment and disposition of the remains to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in Section 5097.98 of the Public Resources Code.
- If the Coroner believes the remains to be those of a Native American, he/she shall contact the NAHC by telephone within 24 hours. The NAHC will immediately notify the person it believes to be the most likely descendant (MLD) of the remains.
- The MLD has 48 hours to make recommendations to the land owner for treatment or disposition of the human remains. If the descendant does not make recommendations within 48 hours, the land owner shall re-inter the remains in an area of the property secure from further disturbance. If the land owner does not accept the descendant's recommendations, the owner or the descendant may request mediation by NAHC.

Per California Health and Safety Code, six or more human burials at one location constitutes a cemetery (Section 8100) and willful disturbance of human remains is a felony (Section 7052).

5.6 Geology and Soils

GEOLOGY AND SOILS Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
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.	☐	☐	☐	☒
ii) Strong seismic groundshaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☒	☐
b. Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c. Be located on geologic units 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?	☐	☐	☒	☐
d. Be located on expansive soil, as defined in Section 1803.5.3 of the California Building Code (2010), creating substantial risks to life or property?	☐	☐	☒	☐
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒

*Geology and Soils question (d) reflects the current 2013 California Building Code (CBC), effective January 1, 2014, which is based on the International Building Code (2009).
Significance criteria established by CEQA Guidelines, Appendix G.

5.6.1 Setting

This section describes geology, soils, and seismic conditions and analyzes environmental impacts related to geologic and seismic hazards that are expected to result from the implementation of the Proposed Project. The following discussion addresses existing environmental conditions in the affected area, identifies and analyzes environmental impacts, and recommends measures to reduce or avoid any adverse impacts anticipated from Project construction and operation. In addition, existing laws and regulations relevant to geologic and seismic hazards are described. In some cases, compliance with these existing laws and regulations would serve to reduce or avoid certain impacts that might otherwise occur with the implementation of the Project.

Baseline geologic, seismic, and soils information were collected from published and unpublished literature, GIS data, and online sources for the Proposed Project and the surrounding area. Data sources included the following: the Proponent's Environmental Assessment, geologic literature from the U.S. Geological Survey and California Geological Survey, and online reference materials (See Appendix A). The study area was defined as the locations of Proposed Project components and the areas immediately adjacent to the Proposed Project for most geologic and soils issue areas with the following exception: the study area related to seismically induced ground shaking includes significant regional active and potentially active faults within 50 miles of the proposed Project.

Regional Geologic Setting

The Proposed Project area is located along the western edge of the Peninsular Ranges geomorphic province of Southern California. The Peninsular Range geomorphic province is approximately 900 miles long, extending from the Transverse Ranges and the Los Angeles Basin southward to the southern tip of Baja California and varies in width from approximately 30 to 100 miles (Norris & Webb, 1976). In the project area, the Peninsular Ranges region can be divided into two geomorphic zones: mountains of the Peninsular Ranges to the east and the Coastal Plain to the west. The Proposed Project is located within the Coastal Plain area. The Coastal Plain area consists of a "layer cake" sequence of Tertiary to late Cretaceous marine and non-marine sedimentary rock units forming terraces and mesas primarily overlying Mesozoic granitic rocks. The terraces and mesas along the Coastal Plain were formed by fluctuations in relative elevations of the land and sea (uplift and sea level changes), which has resulted in the presence of ancient marine rocks preserved in locations up to 900 feet above mean sea level (MSL) and ancient river deposits in areas of as much as 1,200 feet above MSL.

Local Geology

Prior to development and grading, the project area consisted of a sloping, dissected terrace surface with two small drainages crossing the area: one approximately parallel to Avenida del Oro and the second approximately parallel to Avenida de La Plata. These two drainages merged near the southwest end of the proposed Project site. Original elevations, before grading of the site and surrounding area in the 1980s and in 2006–2007, ranged from about 275 feet to 400 feet above mean sea level (MSL). CGS geologic mapping shows that the proposed project area was entirely underlain by Santiago Formation prior to the grading and fill (Kennedy and Tan, 2007), as shown in Figure 5.6-1, a geologic map of the area. (Note: All figures referenced in the text are located at the end of this section.)

The geotechnical siting study (Kleinfelder, 2012) and project specific geotechnical study (Kleinfelder, 2015) conducted for the proposed Project indicate that the site is underlain by three geologic units: artificial fill, young colluvium, and Santiago Formation. These two studies are provided as Appendix E-1 and E-2, respectively. These units are summarized below:

- Artificial Fill – Two phases of fill occurred at the proposed Project site: in the early 1980s and in 2006-2007 (Kleinfelder, 2015). The early 1980s fill placement (Phase 1) occurred along the western side of the site for construction of Avenida del Oro and along the southeast side of the site during construction of the adjacent subdivision on Avenida de La Plata (Kleinfelder, 2015). The 2006-2007 grading (Phase 2) consisted of filling in the remaining drainage in the area and creating level building pads. Topographic maps and boring data indicate that up to 83 feet of fill has been placed on the project site (Kleinfelder, 2015). The Phase 2 engineered fill was reported as compacted to a minimum of 90 percent relative compaction and to a minimum of 95 percent relative compaction in the upper 50 feet (Kleinfelder, 2015). Kleinfelder' s review of the Phase 2 reports and test data indicates that the Phase 1 fill was overexcavated and recompacted within the bottom area of the site drainage basin and that other areas of the Phase 1 fill, occurring primarily below the western and southeastern side of the property, were not reworked during the second phase of earthwork. The fill materials at the site encountered in the borings and trenches from the two Kleinfelder studies (2012, 2015) were reported to consist of loose to dense, light gray to gray and tan to dark brown clayey sand; hard to very hard olive gray to dark gray sandy clay to clay; and medium dense to dense, olive brown to light gray silty sand. The fill appears to have been derived from local sources.
- Young colluvial deposits – A thin layer of young colluvial deposits, ranging from 3.5 to 11.5 feet thick, underlies the artificial fill in the northeast portion of the proposed substation site (Kleinfelder, 2015). It

appears that the colluvial deposits were removed from the remainder of the site during the Phase 2 over excavation work. The young colluvial deposits encountered in the Kleinfelder borings consist of hard, dark gray to black fat clay and clay with sand.

- Santiago Formation – Cretaceous aged Santiago Formation underlies the fill and colluvium at the Proposed Project site and consists primarily of interbedded fine to coarse, light gray to brownish yellow, massively bedded sandstone, clayey siltstone, and claystone. Santiago Formation sandstones typically vary from very highly cemented with thin concretionary beds to moderately cemented and friable and the siltstones are typically massive to locally thinly bedded, and moderately well-cemented. The Kleinfelder borings and test pits (2012; 2015) encountered Santiago Formation at depths ranging from 2 to 83 feet below ground surface (bgs). The sandstone encountered by the exploration for this project consisted of weathered sandstone and claystone that excavated as medium dense to very dense, light olive gray to brownish yellow sand with silt to silty sand and clayey sand and hard to very hard, grayish brown to gray clay with sand to sandy clay.

Soils

Soils within the Proposed Project area reflect the underlying rock type, the extent of weathering of the rock, the degree of slope, and the degree of human modification. The Proposed Project is located in a developed urban and industrial area covered by extensive areas of concrete, asphalt, and artificial fill. The geotechnical siting study and geotechnical investigation by Kleinfelder (2012; 2015) indicate that the project area has been highly modified and is covered by a layer of fill of varying depths.

Expansive soils are characterized by their ability to undergo significant volume change (shrink and swell) due to variation in soil moisture content. Changes in soil moisture could result from a number of factors, including rainfall, landscape irrigation, utility leakage, and/or perched groundwater. Expansive soils are typically very fine grained with a high to very high percentage of clay. Soils with moderate to high shrink-swell potential would be classified as expansive soils. The Kleinfelder geotechnical study (2015) reports that based on their review of the Phase 2 grading information and their field investigations that the fill soils encountered at the site are expected to have low to medium potential for expansive soils.

Potential soil erosion hazards vary depending on the use, conditions, and textures of the soils. The properties of soil that influence erosion by rainfall and runoff are those that affect the infiltration capacity of a soil, and those that affect the resistance of a soil to detachment and being carried away by falling or flowing water. Additionally, soils on steeper slopes would be more susceptible to erosion due to the effects of increased surface flow (runoff) on slopes where there is little time for water to infiltrate before runoff occurs. Soils containing high percentages of fine sands and silt and that are low in density, are generally the most erodible. With increasing clay and organic matter content of these soils, the potential for erosion decreases. Clays act as a binder to soil particles, thus reducing the potential for erosion. The artificial fill underlying the Proposed Project is variable in texture and contains various amounts of clay, silt, and sand. The surficial layers tend to be silty sand with the deeper layers consisting of clayey sand, sandy clay, and clay. The layers with higher percentages of sand at or near the surface may be subject to wind and water erosion.

Slope Stability

Important factors that affect the slope stability of an area include the steepness of the slope, the relative strength of the underlying rock material, and the thickness and cohesion of the overlying colluvium and alluvium. The steeper the slope and/or the less strong the rock, the more likely the area is susceptible to landslides. The steeper the slope and the thicker the colluvium, the more likely the area is susceptible to debris flows. Another indication of unstable slopes is the presence of old or recent landslides or debris

flows. Prior to regrading and fill of the area, the original hillslopes underlain by Santiago Formation were mapped with numerous landslides, including landslides mapped to the northwest and south of the substation site as shown in Figure 5.6-1 (Kennedy and Tan, 2005 & 2007). No previously mapped landslides underlay any project components.

The project area has undergone several episodes of grading and slope modifications and is now gently sloping with engineered terraces and flat and gently sloping roads. The majority of the Proposed Project is located on a gently sloping to flat graded terrace and the subtransmission lines would be installed within the graded terrace and within existing, flat to gently sloping graded roads. There is a small graded, engineered slope along the edge of the substation site transitioning down to the road. Hazards in respect to landsliding are considered low at the proposed site because of the gently sloping to relatively flat-lying, engineered surface conditions within and around the site. Static and seismic slope stability analyses conducted by Kleinfelder of the existing fill slopes indicate that the calculated factors of safety exceed the industry minimum (Kleinfelder, 2015).

Seismicity

The seismicity of the project area is dominated by the north-northwest trending onshore and offshore Continental Borderland faults and the San Andreas Fault zone system. Both systems are responding to strain produced by the relative motions of the Pacific and North American Tectonic Plates. Deformation and effects from this seismic strain and faulting in the San Diego area include mountain building, basin development, deformation of Quaternary marine terraces, widespread regional uplift, and the generation of earthquakes. The San Diego coast and surrounding offshore and inland areas contain faults of varying ages and activity. These faults can be classified as historically active, active, potentially active, or inactive, based on the following criteria (CGS, 1999):

- Faults that have generated earthquakes accompanied by surface rupture during historic time (approximately the last 200 years) and faults that exhibit aseismic fault creep are defined as Historically Active.
- Faults that show geologic evidence of movement within Holocene time (approximately the last 11,000 years) are defined as Active.
- Faults that show geologic evidence of movement during the Quaternary (approximately the last 1.6 million years) are defined as Potentially Active.
- Faults that show direct geologic evidence of inactivity during all of Quaternary time or longer are classified as Inactive.

Although it is difficult to quantify the probability that an earthquake will occur on a specific fault, this classification is based on the assumption that if a fault has moved during the Holocene epoch, it is likely to produce earthquakes in the future. Since periodic earthquakes accompanied by surface displacement can be expected to continue in the study area through the lifetime of the Proposed Project, the effects of strong groundshaking and fault rupture are of primary concern to the safe operation of the Proposed Project components. The Project area will be subject to ground shaking associated with earthquakes on both on- and offshore faults. Active faults of both the Continental Borderland offshore system and of the San Andreas fault system are predominantly strike-slip faults accommodating translational movement; however, some of the faults also have some dip-slip components. Figure 5.6-2 shows locations of active and potentially active faults (representing possible seismic sources) and earthquakes greater than magnitude 5.0 in the region surrounding the Proposed Project. Active and potentially active faults within 50 miles of the Project alignments that are significant potential seismic sources relative to the Proposed Project are presented in Table 5.6-1.

Table 5.6-1. Significant Active and Potentially Active Faults within 50 miles of the Proposed Project

Fault Name	Distance[1] (miles)	Location Relative to Project	Estimated Maximum Magnitude[2,3]
Rose Canyon–Newport-Inglewood fault zone (rupture of Newport-Inglewood alone or with Rose Canyon)	8.7	The Oceanside section of the Rose Canyon fault zone is located offshore to west of the proposed Project.	6.9–7.5
Elsinore fault zone (various rupture combinations of the Whittier, Glen Ivy, Julian, Temecula, and Coyote Mountain Segments)	18.8	The southern end of the Temecula section and the northern end of the Julian section of the Elsinore fault zone are about the same distance to the northeast of the proposed Project	7.1–7.8
Palos Verde–Coronado Bank fault zone (rupture of Coronado Bank alone or with the Palos Verde)	25.6	Coronado Bank fault zone is located offshore to the west of the proposed Project.	7.4–7.7
San Joaquin Hills Thrust	34.6	Located north of the proposed Project.	7.1
San Diego Trough fault zone	36.5	Located offshore to the west of the Proposed Project, fault it subparallel to the project so all components approximately the same distance from the fault zone	6.1–7.7 [4]
San Jacinto fault zone (various rupture combinations of Anza segment alone or with San Bernardino, San Jacinto Valley, Coyote Creek, Borrego Mountain, Clark, and Superstition Mountain.	42.3	The Anza segment is the closest segment to the proposed project and is located to the northeast.	6.7-7.8

1 - Fault distances obtained from the 2008 National Seismic Hazard Maps – Source Parameters website (USGS, 2016).
2 - Maximum Earthquake Magnitude – the maximum earthquake that appears capable of occurring under the presently known tectonic framework; magnitude listed is "Ellsworth-B" magnitude from USGS OF2007-1437(2007 WGCEP, 2007) unless otherwise noted.
3 - Range of Magnitude represents varying potential rupture scenarios with single or multiple segments rupturing in various combinations.
4 - Maximum potential magnitude is not well defined; potential range provided by the San Diego County Office of Emergency Services (San Diego County, 2016).

Fault Rupture. Fault rupture is the surface displacement that occurs when movement on a fault deep within the earth breaks through to the surface. Fault rupture and displacement almost always follows preexisting faults, which are zones of weakness; however, not all earthquakes result in surface rupture (e.g., earthquakes that occur on blind thrusts do not result in surface fault rupture). Rupture may occur suddenly during an earthquake or slowly in the form of fault creep. In addition to damage cause by ground shaking from an earthquake, fault rupture is damaging to buildings and other structures due to the differential displacement and deformation of the ground surface that occurs from the fault offset, leading to the damage or collapse of structures across this zone.

No mapped potentially active, active, or Alquist-Priolo zoned faults cross the Proposed Project (USGS and CGS, 2010). The closest mapped fault to the proposed Project is the Newport Inglewood-Rose Canyon fault zone located offshore approximately 8.7 miles to the west of the site. The closest Alquist-Priolo zoned fault is the Temecula section of the Elsinore fault zone, located approximately 19 miles northeast of the proposed Project (Kleinfelder, 2015).

Ground Shaking. An earthquake is classified by the amount of energy released, which traditionally has been quantified using the Richter scale. Recently, seismologists have begun using a Moment Magnitude (M) scale because it provides a more accurate measurement of the size of major and great earthquakes. For earthquakes of less than M 7.0, the Moment and Richter Magnitude scales are nearly identical. For earthquake magnitudes greater than M 7.0, readings on the Moment Magnitude scale are slightly greater than a corresponding Richter Magnitude. The San Diego region is an area of sparse seismicity and has not

experienced many large or significant earthquakes, with only 5 earthquakes of M6.0 or greater occurring within 50 miles of the project site since 1769. Figure 5.6-2 depicts this and other historic earthquakes within the project vicinity.

The intensity of the seismic shaking, or strong ground motion, during an earthquake is dependent on the distance between the Project area and the epicenter of the earthquake, the magnitude of the earthquake, and the geologic conditions underlying and surrounding the Project area. Earthquakes occurring on faults closest to the Project area would most likely generate the largest ground motion. The intensity of earthquake induced ground motions can be described using peak site accelerations, represented as a fraction of the acceleration of gravity (g). USGS National Seismic Hazard (NSH) Maps were used to estimate approximate peak ground accelerations (PGAs) in the Proposed Project area. The NSH Maps depict peak ground accelerations with a 2 percent probability of exceedance in 50 years, which corresponds to a return interval of 2,475 years for a maximum considered earthquake. The estimated approximate peak ground acceleration from large earthquakes for the Proposed Project ranges from approximately 0.3g to 0.4g for earthquake recurrence interval 2,475 years (USGS, 2014), which corresponds to minor to moderate ground shaking.

Liquefaction. Liquefaction is the phenomenon in which saturated granular sediments temporarily lose their shear strength during periods of earthquake-induced strong groundshaking. The susceptibility of a site to liquefaction is a function of the depth, density, and water content of the granular sediments and the magnitude and frequency of earthquakes in the surrounding region. Saturated, unconsolidated silts, sands, and silty sands within 50 feet of the ground surface are most susceptible to liquefaction. In order to determine the liquefaction susceptibility of a region, three major factors must be analyzed. These include: (a) the density and textural characteristics of the alluvial sediments; (b) the intensity and duration of groundshaking; and (c) the depth to groundwater. Liquefaction-related phenomena include lateral spreading, ground oscillation, flow failures, loss of bearing strength, subsidence, and buoyancy effects (Youd and Perkins, 1978). In addition, densification of the soil resulting in vertical settlement of the ground can also occur.

Based on the lack of groundwater encountered in the boring conducted by the geotechnical study at the site and the loose to dense and hard to very hard consistency of the engineered fill and underlying colluvial deposits, Kleinfelder concluded that the potential for liquefaction is low (Kleinfelder, 2015).

Seismic Slope Instability. The other form of seismically induced ground failure which may affect the Project area includes seismically induced landslides. Landslides triggered by earthquakes have been a significant cause of earthquake damage; in southern California, large earthquakes such as the 1971 San Fernando and 1994 Northridge earthquakes triggered landslides that were responsible for destroying or damaging numerous structures, blocking major transportation corridors, and damaging life-line infrastructure. Areas that are most susceptible to earthquake-induced landslides are steep slopes in poorly cemented or highly fractured rocks, areas underlain by loose, weak soils, and areas on or adjacent to existing landslide deposits. As noted above in the Slope Stability section, the proposed Project is located on and within previously graded and paved roadways and a previously graded, gently sloping terrace and a seismic slope stability analyses conducted by Kleinfelder of the existing fill slopes indicate that calculated factors of safety exceed the industry minimum (Kleinfelder, 2015).

Regulatory Background

This section includes a description of the geology and soils regulatory framework.

Federal

The Clean Water Act

The Clean Water Act establishes the basic structure for regulating discharges of pollutants into the Waters of the U.S. The Act authorized the Public Health Service to prepare comprehensive programs for eliminating or reducing the pollution of interstate waters and tributaries and improving the sanitary condition of surface and underground waters with the goal of improvements to and conservation of waters for public water supplies, propagation of fish and aquatic life, recreational purposes, and agricultural and industrial uses. The Proposed Project construction would disturb a surface area greater than one acre; therefore, SDG&E would be required to obtain a National Pollution Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction Activity under Clean Water Act regulations. Compliance with the NPDES would require that the applicant prepare and submit a Storm Water Pollution Prevention Plan (SWPPP).

The International Building Code (IBC)

The International Building Code (IBC) is published by the International Code Council (ICC). The scope of this code covers major aspects of the design and construction and structures and buildings, except for three-story one- and two-family dwellings and town homes. The International Building Code has replaced the Uniform Building Code as the basis for the California Building Code and contains provisions for structural engineering design. The 2015 IBC addresses the design and installation of structures and building systems through requirements that emphasize performance. The IBC includes codes governing structural as well as fire- and life-safety provisions covering seismic, wind, accessibility, egress, occupancy, and roofs.

The Institute of Electrical and Electronics Engineers (IEEE) 693 "Recommended Practices for Seismic Design of Substations"

The IEEE 693 "Recommended Practices for Seismic Design of Substations" was developed by the Substations Committee of the IEEE Power Engineering Society and approved by the American National Standards Institute and the IEEE-SA Standards Board. This document provides seismic design recommendations for substations and equipment consisting of seismic criteria, qualification methods and levels, structural capacities, performance requirements for equipment operation, installation methods, and documentation. This recommended practice emphasizes the qualification of electrical equipment. IEEE 693 is intended to establish standard methods of providing and validating the seismic withstand capability of electrical substation equipment. It provides detailed test and analysis methods for each type of major equipment or component found in electrical substations. This recommended practice is intended to assist the substation user or operator in providing substation equipment that will have a high probability of withstanding seismic events to predefined ground acceleration levels. It establishes standard methods of verifying seismic withstand capability, which gives the substation designer the ability to select equipment from various manufacturers, knowing that the seismic withstand rating of each manufacturer's equipment is an equivalent measure. Although most damaging seismic activity occurs in limited areas, many additional areas could experience an earthquake with forces capable of causing great damage. This recommended practice should be used in all areas that may experience earthquakes.

State

The California Building Code, Title 24, Part 2 (CBC, 2013)

The California Building Code, Title 24, Part 2 provides building codes and standards for design and construction of structures in California. The 2013 CBC is based on the 2012 International Building Code with the addition of more extensive structural seismic provisions. Chapter 16 of the CBC, contains definitions of seismic sources and the procedure used to calculate seismic forces on structures.

The Alquist-Priolo Earthquake Fault Zoning Act of 1972, Public Resources Code (PRC), sections 2621–2630 (formerly the Special Studies Zoning Act)

The Alquist-Priolo Earthquake Fault Zoning Act regulates development and construction of buildings intended for human occupancy to avoid the hazard of surface fault rupture. While this Act does not specifically regulate transmission and telecommunication lines; it does help define areas where fault rupture is most likely to occur. This Act groups faults into categories of active, potentially active, and inactive faults. Historic and Holocene age faults are considered active, Late Quaternary and Quaternary age faults are considered potentially active, and pre-Quaternary age faults are considered inactive. These classifications are qualified by the conditions that a fault must be shown to be "sufficiently active" and "well defined" by detailed site-specific geologic explorations in order to determine whether building setbacks should be established.

The Seismic Hazards Mapping Act (the Act) of 1990 (Public Resources Code, Chapter7.8, Division 2, sections 2690–2699)

The Act directs the California Department of Conservation, Division of Mines and Geology [now called California Geological Survey (CGS)] to delineate Seismic Hazard Zones. The purpose of the Act is to reduce the threat to public health and safety and to minimize the loss of life and property by identifying and mitigating seismic hazards. Cities, counties, and State agencies are directed to use seismic hazard zone maps developed by CGS in their land-use planning and permitting processes. The Act requires that site-specific geotechnical investigations be performed prior to permitting most urban development projects within seismic hazard zones.

California Public Utilities General Order 95 (GO 95) and General Order 128 (GO 128)

GO 95 and GO 128 contain State of California rules formulated to provide uniform requirements for overhead electrical line construction and underground electrical supply and communication systems, respectively, to insure adequate service and secure safety to persons engaged in the construction, maintenance, operation, or use of overhead electrical lines and underground electrical supply and communication systems and to the public. GO 95 and GO 128 are not intended as complete construction specifications, but are intended to embody requirements which are most important from the standpoint of safety and service. Construction shall be according to accepted good practices for the given local conditions in all particulars not specified in the rules. GO 95 applies to all overhead electrical supply and communication facilities which come within the jurisdiction of the California Public Utilities Commission and are located outside of buildings, including facilities that belong to non-electric utilities, as follows: Construction and Reconstruction of Lines, Maintenance of Lines, Lines Constructed Prior to This Order, Reconstruction or Alteration, Emergency Installation, and Third Party Nonconformance. GO 128 applies to: (a) all underground electrical supply systems used in connection with public utility service; when located in buildings, the vaults, conduit, pull boxes or other enclosures for such systems shall also meet the requirements of

any statutes, regulations or local ordinances applicable to such enclosures in buildings; and (b) all underground communication systems used in connection with public utility service located outside of buildings. GO 128 applies to the following activities related to underground electrical supply and communication systems: Construction and Reconstruction of Lines, Maintenance, Systems Constructed Prior to These Rules, Reconstruction or Alteration, and Third Party Nonconformance.

Local

As provided in CPUC General Order 131 D, the CPUC has exclusive jurisdiction over the siting, design, and construction of the Proposed Project, preempting local discretionary authority over the location and construction of electrical utility facilities. Therefore, the Proposed Project is not subject to local discretionary geological regulations. Nonetheless, as part of the environmental review process, consideration is given to relevant local plans and policies that pertain to geology and soils.

County of San Diego General Plan – Safety Element

The *Safety Element* of the County of San Diego General Plan addresses natural hazards and human activities that may pose a threat to public safety within the following topic areas: wildfires, geological and seismic hazards, flooding, hazardous materials, law enforcement, and airport hazards. As it relates to Geology and Soils, goals, policies, guidelines, and standards to reduce the potential effects of known seismic and other geologic hazards are included.

City of Oceanside General Plan – Environmental Resource Management Element

The *Environmental Resource Management Element* of the General Plan has basic objectives for natural resources, which include soils, erosion, and drainage. Objective 1 is to "consider appropriate engineering and land use planning techniques to mitigate rapid weathering of the rocks, soil erosion, and the siltation of the lagoons." The City will continue to enforce the Grading Ordinance (Ord. No. 73-46) to prevent the erosion of soils and hillsides.

City of Oceanside General Plan – Public Safety Element

The *Public Safety Element* of the Oceanside General Plan is a guide for introducing safety consideration into the planning process for reducing loss of life, injuries, and damage to properties. The *Public Safety Element* includes goals and policies to reduce risk from seismic and geologic hazards.

City of Oceanside

The City presently requires soil borings to be taken on all proposed building sites prior to the issuance of building permits. These borings are generally routine in nature and are used to identify water table levels and the presence of expansive soils, uncompacted fill, etc. The City also identifies several other geotechnical investigations that should be accomplished if a site has been identified as being particularly susceptible to certain geologic problems.

Applicant Proposed Measures

No Applicant Proposed Measures (APMs) related to the Geology and Soils issue areas have been identified by SDG&E.

5.6.2 Environmental Impacts and Mitigation Measures

a. Would the project 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.

NO IMPACT. Fault rupture is the surface displacement that occurs when movement on a fault within the earth breaks through to the surface. Fault rupture and displacement almost always follows preexisting faults, which are zones of weakness. No known active, potentially active, or Alquist-Priolo zoned faults cross the Proposed Project. Additionally, the closest mapped active fault is the Newport Inglewood-Rose Canyon fault zone located offshore about 9 miles to the west and the closest Alquist-Priolo zoned fault is the Temecula section of the Elsinore fault zone located approximately 19 miles northeast. Therefore, there is no potential for surface fault rupture at the Proposed Project site.

ii) Strong seismic ground shaking?

LESS THAN SIGNIFICANT. Although the Proposed Project is located in an area of southern California with sparse seismicity, there are several onshore and offshore regional and local faults that could cause minor to moderate ground shaking in the Project area. These faults and their distances from the proposed Project are listed in Table 3.6-1. Estimated peak ground acceleration (PGA) for a large earthquake is approximately 0.3-0.4 g (fraction of gravity) for a two percent in 50-year probability of exceedance for the Project area (USGS, 2016b), which corresponds to minor to moderate ground shaking. However, as standard operating procedure, SDG&E will design the Ocean Ranch Substation based on recommendations from the site specific geotechnical study, including the specification that the substation should be designed in accordance with American Society of Civil Engineers (ASCE) 113 Substation Structure Design Guide. Additionally, SDG&E would be required to comply with all appropriate and applicable codes and seismic standards and guidelines, including those presented in IEEE 693 (Recommended Practices for Seismic Design of Substations) and CPUC GO 128 for underground electrical supply and communication systems. Therefore, the potential for adverse effects (damage to Project components and/or injury or death) due to strong ground shaking would be reduced to a less than significant level.

iii) Seismic-related ground failure, including liquefaction?

LESS THAN SIGNIFICANT. Liquefaction is the phenomenon in which saturated granular sediments temporarily lose their shear strength during periods of earthquake-induced strong ground shaking. The susceptibility of a site to liquefaction is a function of the depth, density, and water content of the granular sediments, and the magnitude and frequency of earthquakes in the surrounding region. Saturated, unconsolidated silts, sands, and silty sands within 50 feet of the ground surface are most susceptible to liquefaction.

The geotechnical siting study (Kleinfelder, 2012) and project specific geotechnical study (Kleinfelder, 2015) did not encounter groundwater to the full depth of exploration of 91.5 feet bgs at the Proposed Project site. The geologic units encountered in the borings were primarily hard to very hard clay and clayey sand with medium dense to dense silty sand layers at or near the surface. Units expected to be encountered along by trenching for the underground lines include thin fill over the young colluvium and Santiago Formation units. These units are expected to have similar consistency and character to those encountered at the substation site. Based on the lack of groundwater to a depth of at least 91 feet below the substation site and the density and consistency of the underlying units, there is a low potential for liquefaction at the Proposed Project and, therefore, a less than significant impact.

iv) Landslides?

LESS THAN SIGNIFICANT. The slope stability of an area is influenced by the steepness of the slope, the relative strength of the underlying rock material, and the thickness and cohesion of the overlying colluvium and alluvium. The steeper the slope and/or the less strong the rock, the more likely the area is susceptible to landslides. The steeper the slope and the thicker the colluvium, the more likely the area is susceptible to debris flows. An indication of unstable slopes is the presence of old or recent landslides or debris flows. Although the underlying Santiago Formation is known to be landslide prone and landslides have been mapped in the project area, it is unlikely that the current engineered graded and filled slopes and terraces would experience slope failures. It is likely that during area development, any unstable slopes or landslide features were removed and or mitigated. Additionally, as part of the project, the site would be regraded based on final project grading plans and any slopes would be designed at stable inclinations. Therefore, impact from landslides at the Proposed Project site would be less than significant.

b. Would the project result in substantial soil erosion or the loss of topsoil?

LESS THAN SIGNIFICANT. Ground disturbance of excavation and grading will be required for construction of the Proposed Project and would expose and loosen soils. This could result in triggering or acceleration of soil erosion due to wind or rain. Since the Proposed Project would disturb an area greater than one acre, current regulations require that the proposed Project obtain a National Pollution Discharge Elimination System (NPDES) Permit, which in turn requires the Applicant to submit a SWPPP. As part of SDG&E's standard operating procedures, they will use SDG&E's Water Quality Construction BMP Manual and a project-specific SWPPP to develop and implement BMPs to minimize and control erosion. Compliance with the SWPPP and BMPs would reduce the potential for construction-triggered erosion to less than significant.

During project operation of the developed substation and underground lines, the potential for erosion is considered low due to the site drainage and surfacing improvements that will be in place. Operation and maintenance of the Proposed Project will not typically involve ground-disturbing activities or grading. If grading is required, SDG&E would implement the BMPs outlined in its Water Quality Construction BMP Manual. Therefore, operational impacts related to soil erosion would be less than significant.

c. Would the project be located on geologic units 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?

LESS THAN SIGNIFICANT. Potential impacts related to liquefaction, liquefaction-related phenomena, unstable slopes, and landslides are discussed in Section 5.6.1. Although the soils located at the proposed Ocean Ranch Substation site and the surrounding area have a low potential for liquefaction, there is still a potential for shaking related deformations, such as differential settlement, lateral spreading, subsidence, or collapse in the unlikely scenario that liquefaction does occur. However, SDG&E's standard operating procedure to consider and implement, as needed, the results and recommendations from the geotechnical investigations to reduce the potential for adverse effects address this concern. Thus, impacts from geologic instability would be less than significant.

d. Would the project 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?

LESS THAN SIGNIFICANT. Expansive soils are characterized by their ability to undergo significant volume change (shrink and swell) due to variations in soil moisture content. Changes in soil moisture could result

from a number of factors, including rainfall, landscape irrigation, utility leakage, and/or perched groundwater. Expansive soils are typically very fine grained with a high to very high percentage of clay. Fine grained clays and clay rich soils are located near the surface within the existing fill and colluvium at the Proposed Project site. Based on the geotechnical investigation, the fill soils at the substation site have a low to moderate potential for expansion (Kleinfelder, 2015). As described in Section 4 (Project Description), trenches and excavations for the duct banks and manholes will be backfilled with engineered backfill (a fluidized thermal backfill). Construction of the proposed Ocean Ranch Substation would require approximately 28,700 cubic yards of imported fill material and 10,100 cubic yards of exported material. Onsite material will be reused to the extent possible, as recommended by the project's Geotechnical Engineer. Kleinfelder (2015) presents the following recommendation:

> *Fill soils within the upper 3 feet below structural foundations should consist of granular material. In general, the onsite fill soils can be reused as materials for placement as compacted fill, provided they have a very low to low expansion index (expansion index of 50 or less), [and] are free of oversized rock, clay clods, organic materials, and deleterious debris.*

Implementation of the final geotechnical recommendations regarding fill characteristics and placement and the use of engineered fill at the substation and within the trenches would reduce potential impacts from expansive soils to less than significant.

e. Would the project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

NO IMPACT. The Proposed Project will not involve the installation of a septic tank or alternative wastewater disposal system. The substation will be unmanned during normal operation; therefore, no impacts will occur.

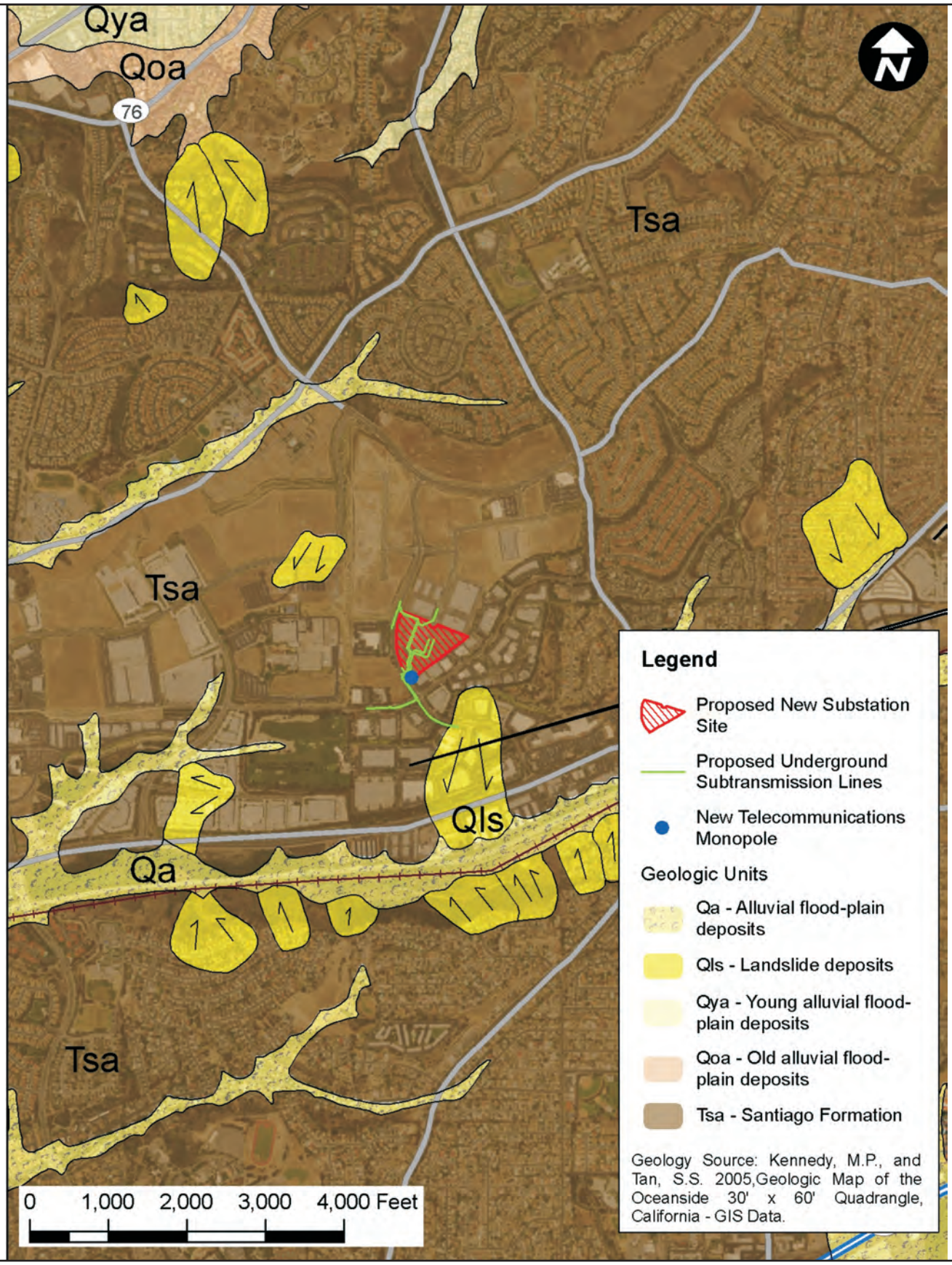


Figure 5.6-1

Geologic Map

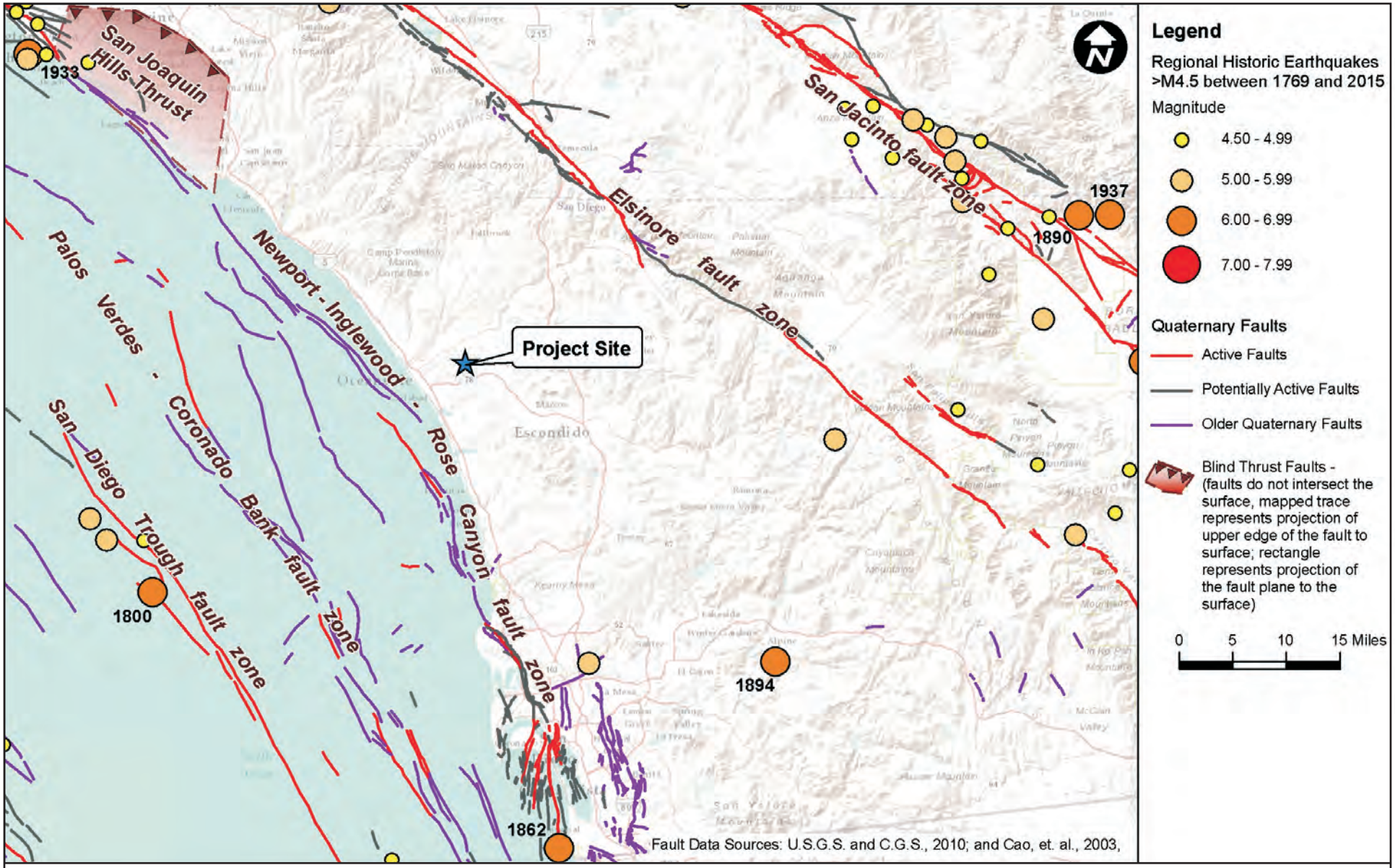


Figure 5.6-2

Regional Active Faults and Historic Earthquakes

5.7 Greenhouse Gas Emissions

GREENHOUSE GAS EMISSIONS Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b. Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

Significance criteria established by CEQA Guidelines, Appendix G

5.7.1 Setting

Globally, temperature, precipitation, sea level, ocean currents, wind patterns, and storm activity are all affected by the presence of greenhouse gas (GHG) pollutants in the atmosphere. In contrast to air quality, which is of regional or local concern, human-caused emissions of GHGs are linked to climate change on a global scale. GHGs allow ultraviolet radiation to penetrate the atmosphere and warm the Earth's surface and also prevent some infrared radiation emitted by the Earth from escaping back into space. Human activity contributes to emissions of six primary GHGs: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6).

The largest anthropogenic source of GHGs is fossil fuel combustion, which results primarily in CO_2 emissions. Other GHG emissions tracked by State inventories occur in much smaller quantities. However, the global warming potential of CH_4 is about 25 times that of CO_2 (CARB, 2014a). The use of sulfur hexafluoride (SF_6) in transformers and circuit breakers at power plants, switchyards, and substations also poses a concern, because this pollutant can slowly escape from the equipment and it has an extremely high global warming potential (one pound of SF_6 has the equivalent warming potential of approximately 22,800 pounds of CO_2). When quantifying GHG emissions, the different global warming potentials of GHG pollutants are usually taken into account by normalizing their rates to an equivalent CO_2 emission rate (identified as CO2e).

When California first formalized a strategy for achieving GHG reductions in 2008, the State produced approximately 487 million metric tons of CO_2 equivalent (MMTCO2e), an amount equal to about 537 million tons (CARB, 2014b).[3] In 2012, California's emissions were approximately 459 MMTCO2e (CARB, 2014b) or less than one percent of the 49,000 MMTCO2e emitted globally (IPCC, 2014). Table 5.7-1 shows that in-state electricity generation and electricity imports are approximately 20 percent of statewide GHG emissions in California.

Table 5.7-1. 2014 California Greenhouse Gas Emissions Inventory

Source Category	2014 (MMTCO2e/yr)	Percent of Total
Industrial	106.0	24
Transportation	163.4	37
Commercial	22.1	5
Residential	26.5	6
Agriculture	35.3	8
Electricity Generation (Imported and In-State)	88.3	20
Total Emissions	441.5	100

Source: CARB 2016.

Regulatory Background

This section includes a description of the greenhouse gas emissions regulatory framework.

[3] One metric ton (MT) equals 1,000 kilograms, which is 2,204.6 pounds or about 1.1 short tons.

Federal

U.S. EPA GHG Mandatory Reporting Program (40 CFR Part 98)

This rule requires mandatory reporting of GHG emissions for industrial facilities and power plants that emit more than 25,000 MTCO2e emissions per year. Currently, there are no federal regulations limiting GHG emissions from the Proposed Project.

State

California Global Warming Solutions Act of 2006 (AB 32)

The California Global Warming Solutions Act of 2006, Assembly Bill 32 (AB 32, Chapter 488, Statutes of 2006) requires that California's GHG emissions be reduced to 1990 levels by 2020. The reductions are occurring through an enforceable statewide cap on global warming emissions, fuel standards, and source-specific regulatory programs. AB 32 also directs the CARB to develop regulations and a mandatory reporting system to track and monitor global warming emissions levels. The initial CARB Climate Change Scoping Plan, approved December 2008, provides the framework for achieving California's goals.

In passing AB 32, the California Legislature found that:

> *Global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California. The potential adverse impacts of global warming include the exacerbation of air quality problems, a reduction in the quality and supply of water to the state from the Sierra snowpack, a rise in sea levels resulting in the displacement of thousands of coastal businesses and residences, damage to marine ecosystems and the natural environment, and an increase in the incidences of infectious diseases, asthma, and other human health-related problems.*

California Senate Bill 32 (SB 32)

The update to California Global Warming Solutions Act of 2006 made by Senate Bill 32 (SB 32) in 2016 requires that California's GHG emissions be reduced to 40 percent below 1990 levels by 2030. As the requirements set by AB 32 appear likely to be reached by 2020, California took the initiative to enact SB 32 and to formalize the GHG emissions reductions targets for 2030.

Renewable Portfolio Standard (RPS)

In April 2011, Senate Bill 2 of the 1st Extraordinary Session (SB X1-2) was signed into law. SB X1-2 applies a 33 percent RPS by December 31, 2020 to all retail sellers of electricity and establishes renewable energy standards for interim years before 2020. This codified the requirement to achieve 33 percent RPS statewide by the end of 2020, as specified in the initial AB 32 Scoping Plan (CARB, 2008). With the Clean Energy and Pollution Reduction Act of 2015 (SB 350), signed into law on October 7, 2015, California expanded the specific set of objectives to be achieved by 2030, with the following:

- To increase the Renewable Portfolio Standard (RPS) from 33 percent to 50 percent for the procurement of California's electricity from renewable sources; and
- To double the energy efficiency savings in electricity and natural gas end uses by retail customers.

The CPUC is taking steps to address climate change by implementing these RPS and energy efficiency targets through various planning proceedings. Additionally, the CPUC established requirements for

power supplies contracted by the utilities under the Electricity Greenhouse Gas Emission Standards Act[4] (SB 1368), which requires that generation and contracts be subject to a GHG Environmental Performance Standard of 1,100 pounds (or 0.5 metric tons) of CO_2 per megawatt-hour (MWh) of electricity produced. The Emissions Performance Standard applies to base load power from new power plants, new investments in existing power plants, and new or renewed contracts with terms of five years or longer, including contracts with power plants located outside of California.[5]

Achieving California's climate change goals requires careful coordination on the State's energy policies, meaning that CPUC and CARB are working closely to implement the recommendations in the Scoping Plan and the requirements of SB 350. Additionally, the Intergovernmental Panel on Climate Change (IPCC), an international scientific body, has established that one of its Key Mitigation Technologies and Practices for Energy Supply is improved energy supply and distribution efficiency.[6]

CARB SF_6 Regulations (17 CCR 95350)

In early 2010, CARB adopted a regulation for reducing SF_6 emissions from electric power system gas insulated switchgear (CARB, 2010b). The regulation requires owners of such switchgear to: (1) annually report their SF_6 emissions; (2) determine the emission rate relative to the SF_6 capacity of the switchgear; (3) provide a complete inventory of all gas insulated switchgear and their SF_6 capacities; (4) produce a SF_6 gas container inventory; and (5) keep all information current for CARB enforcement staff inspection and verification.

Mandatory Reporting of Greenhouse Gas Emissions (17 CCR 95100)

Mandatory reporting of GHG emissions applies to electric generating facilities with a nameplate capacity equal or greater than 1 MW capacity and GHG emissions exceeding 2,500 metric tons per year.

Local

As provided in CPUC General Order 131 D, the CPUC has exclusive jurisdiction over the siting, design, and construction of the Proposed Project, preempting local discretionary authority over the location and constructions of electrical utility facilities. Therefore, the Proposed Project is not subject to local discretionary greenhouse gas emissions regulations. Nonetheless, as part of the environmental review process, consideration is given to relevant local land use plans and policies that pertain to greenhouse gas emissions.

San Diego County Climate Action Plan

In July 2015, San Diego County Planning and Development Services initiated work on the County's Climate Action Plan (CAP). An EIR will be prepared and is scheduled for adoption in the Fall of 2017. The City of San Diego CAP was initiated pursuant to AB 32 with a goal for municipal operations and community-wide emissions reduction by approximately 15 percent from current levels by 2020. The City of Oceanside and SDAPCD have not adopted a CAP or GHG thresholds under CEQA.

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4 Public Utilities Code § 8340 et seq.

5 See Rule at http://www.cpuc.ca.gov/PUBLISHED/FINAL_DECISION/64072.htm

6 IPCC (Intergovernmental Panel on Climate Change). 2007. Working Group III contribution to the Intergovernmental Panel on Climate Change Fourth Assessment Report, Climate Change 2007: Mitigation of Climate Change. May.

Applicant Proposed Measures

There are no applicant proposed measures associated with greenhouse gas emissions.

5.7.2 Environmental Impacts and Mitigation Measures

a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

DURING CONSTRUCTION, LESS THAN SIGNIFICANT. Construction of the proposed substation, subtransmission lines, and other project facilities would result in GHG emissions from on-site construction equipment and off-site vehicles transporting workers and materials. Primary GHG emissions during construction are associated with CO_2 from the combustion of gasoline and diesel fuel in equipment and vehicles. CH_4 and N_2O are also emitted from fuel combustion but at rates of less than 1 percent of the mass of CO_2 combustion emissions. The other three primary GHGs (SF_6, HFCs, and PFCs) are not emitted during construction activities and are not included in construction emissions calculations.

Construction GHG emissions are based on the proposed quantities and types of equipment and activities required for the proposed project and are estimated using the California Air Pollution Officers Association's (CAPCOA) California Emissions Estimator Model (CalEEMod), version 2016.3.1. Based on the proposed duration and frequency of construction activities and equipment to be used, approximately 1,154 MTCO2e would be emitted over the entire construction phase of the proposed project (SDG&E 2016; response dated November 18, 2016). Construction-related emissions would be distributed over 20 months. These estimated levels would not exceed the threshold level of 25,000 metric tons per year for annual mandatory reporting of GHGs (40 CFR Part 98) or the threshold level of 2,500 metric tons per year for electric generating facilities over 1 MW in capacity (17 CCR 95100). Estimated emissions would also be below 10,000 metric tons per year, which is a threshold of significance recommended by the nearby South Coast Air Quality Management District[7] for industrial facilities. Because the project construction emissions of approximately 1,154 MTCO2e over the 20-month duration would be less than the threshold levels identified here, impacts resulting from direct or indirect construction-related GHG emissions would be less than significant.

DURING OPERATION AND MAINTENANCE, LESS THAN SIGNIFICANT. The operation and maintenance of the proposed substation, subtransmission lines, and other project facilities would result in a small, but unquantified amount of GHG emissions from mobile sources (CO_2, CH_4, and N_2O). SDG&E claims that operation and maintenance activities would not materially increase with the addition of the proposed facilities to SDG&E's system. Crews would conduct maintenance roughly six times per year, and one or two workers would visit the substation daily or weekly. The emissions of HFCs and PFCs are negligible during operation and maintenance of the proposed substation. Primary GHG emissions during operation would result from the use of SF_6 gas as an insulating agent within the new circuit breakers of the proposed substation, which could be released into the environment if there were any accidental leaks in the equipment. The new circuit breakers would be required to comply with CARB SF_6 Regulations (17 CCR 95350) and existing SDG&E SF_6 Mitigation Strategies (See Section 4. Project Description, Standard Operating Procedures).

The potential GHG emissions due to unanticipated SF_6 gas leakage would be 62.46 MTCO2e per year (SDG&E, 2016). These estimated levels along with the small, but unquantified amount of GHG emissions from mobile sources for operation and maintenance activities would be well below the threshold level

[7] For example, see: http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf?sfvrsn=2. March 2015.

of 2,500 metric tons per year for annual mandatory reporting of GHGs (17 CCR 95100). Because total project operation and maintenance emissions would be less than the threshold level identified here, impacts resulting from direct or indirect operation-related GHG emissions would be less than significant.

b Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?

LESS THAN SIGNIFICANT. Over the project life, GHG emissions from project operation and maintenance activities would occur at a rate well below the federal reporting threshold for stationary sources (25,000 MTCO2e/yr) and below the reporting threshold for electric generating facilities over 1 MW in capacity (2,500 MTCO2e/yr). The Proposed Project would improve the infrastructure used in distribution of California's energy supply, and would not affect California's ability to supply renewable energy. The Proposed Project would not affect SDG&E's ability to meet its RPS obligations. Similarly, the Proposed Project would not affect or conflict with any local goals or programs to achieve GHG reduction targets. SDG&E would comply with CARB SF_6 regulations to inventory, report, and minimize SF_6 leaks through the use of new technology. By complying with these requirements, the proposed project would not conflict with any applicable GHG management plan, policy, or regulation. Therefore, this impact would be less than significant.

5.8 Hazards and Hazardous Materials

HAZARDS AND HAZARDOUS MATERIALS **Would the project:**	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 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?	☐	☐	☐	☒
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?	☐	☐	☐	☒
g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☒	☐	☐
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?	☐	☐	☐	☒

Significance criteria established by CEQA Guidelines, Appendix G.

5.8.1 Setting

This section addresses issues related to environmental hazards and hazardous materials in the existing conditions. Environmental hazards include accidental spills of hazardous materials, the presence of existing subsurface contamination, the risk of wildfire, and aircraft safety. Hazardous materials include fuel, oil, and lubricants. If encountered, contaminated soil can pose a health and safety threat to workers or the public.

Land Use

The project site is a vacant, graded site that is part of a much larger industrial park. Industrial park grading and development begin with the U.S. Post Office due west of the site in the early 2000s; grading of the remaining areas north of Avenida de la Plata was completed in 2007 (SDG&E, 2016a). The properties in the area surrounding the project site are used for light industrial and commercial uses. Prior to the development of the business park the area was used for row crop farming, with a longer earlier history of dry farming (SDG&E, 2016a).

Hazardous Materials

During construction, hazardous materials such as cleaning solvents, paints, adhesives, vehicle fuels, oil, hydraulic fluid, and other vehicle and equipment maintenance fluids would be used and stored in construction staging yards. Spills and leaks of hazardous materials during construction activities could result in soil or groundwater contamination. As part of the Project Standard Operating Procedure (see Section 4.12.3), all hazardous materials would be stored, handled, and used in accordance with applicable regulations, worker training on hazardous material protocols, and best management practices (BMPs) detailed in: the Safety and Worker Environmental Awareness Program (SWEAP; SDG&E Water Quality Construction BMP Manual; Spill Prevention, Control, and Countermeasures Plan (SPCC); and the Stormwater Pollution Prevention Plan (SWPPP) prepared for the Proposed Project. No acutely hazardous materials would be stored or used at the Project sites during the construction or operation of the Proposed Ocean Ranch 69/12 kV Substation Project.

Environmental Contamination

Components of the Proposed Project where ground disturbance would occur would be susceptible to encountering environmental contamination if located near commercial or industrial sites with known contamination or adjacent to sites that store and use large quantities of hazardous materials. Ground disturbing activities for the Proposed Project include:

- Grading, trenching, and excavation for construction and installation of the new Ocean Ranch Substation facilities and equipment and the new telecommunication monopole.
- Trenching for installation of underground duct banks.

A Phase I Environmental Site Assessment (ESA) was conducted for the proposed Ocean Ranch Substation project (Geosyntec, 2015). The ESA identified four small quantity generators of hazardous waste located on Avenida de la Plata east of Avenida del Oro and one large quantity generator west of Avenida del Oro. No known hazardous waste sites or leaking underground storage tank sites are located near the project.

Schools

Two schools, La Petite Academy pre-school and Coastal Academy, are located 0.25 miles east of the Substation site at College Boulevard and Avenida de la Plata. There are no other schools within one-quarter mile of the Proposed Project.

Airports and Airstrips

The Proposed Project is located 3 miles southeast of the Oceanside Municipal Airport and 2.1 miles from the nearest airport safety zone (SDALUC, 2010). There are no private airstrips in the Project vicinity.

Wildland Fires

The Proposed Project is located in an urban environment with no risk of wildland fire considering the lack of vegetation at the proposed substation site and surrounding areas or along the public roadways. The Project area is not located in a Very High Fire Hazard Severity Zone (CALFIRE, 2009).

Electromagnetic Fields

Electric voltage and electric current from transmission lines create electromagnetic fields (EMF). Possible health effects associated with exposure to EMF have been the subject of scientific investigation since the 1970s, and there continues to be public concern about the health effects of EMF exposure. How-

ever, EMF is not addressed here as an environmental impact under CEQA. The CPUC has repeatedly recognized that EMF is not an environmental impact to be analyzed in the context of CEQA because (1) there is no agreement among scientists that EMF does create a potential health risk, and (2) there are no defined or adopted CEQA standards for defining health risks from EMF. See Section 4.15, where EMF is discussed in more depth.

Regulatory Background

Hazardous substances are defined by federal and State regulations that aim to protect public health and the environment. Hazardous materials have certain chemical, physical, or infectious properties that cause them to be considered hazardous. Hazardous substances are defined in the federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 101(14) and in the California Code of Regulations (CCR), Title 22, Chapter 11, Article 2, Section 66261, which provides the following definition:

> *A hazardous material is a substance or combination of substances which, because of its quantity, concentration, or physical, chemical, or infectious characteristics, may either (1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (2) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported or disposed of or otherwise managed.*

For this analysis, soil that is excavated from a site containing hazardous materials would be considered to be a hazardous waste if it exceeded specific CCR Title 22 criteria or criteria defined in CERCLA or other relevant federal regulations. Remediation (cleanup and safe removal/disposal) of hazardous wastes found at a site is required if excavation of these materials occurs; it may also be required if certain other activities occur. Even if soils or groundwater at a contaminated site do not have the characteristics required to be defined as hazardous wastes, remediation of the site may be required by regulatory agencies having jurisdictional authority. Cleanup requirements are determined on a case-by-case basis by the agency taking lead jurisdiction.

Federal

The federal Toxic Substances Control Act (1976) and the Resource Conservation and Recovery Act of 1976 (RCRA) established a program administered by the U.S. Environmental Protection Agency (EPA) for regulation of the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA was amended in 1984 by the Hazardous and Solid Waste Act (HSWA), which affirmed and extended the "cradle-to-grave" system of regulating hazardous wastes. The use of certain techniques for the disposal of some hazardous wastes was specifically prohibited by HSWA.

CERCLA, including the Superfund program, was enacted by Congress on December 11, 1980. This law provided broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. CERCLA established requirements concerning closed and abandoned hazardous waste sites, provided for liability of persons responsible for releases of hazardous waste at these sites, and established a trust fund to provide for cleanup when no responsible party could be identified. CERCLA also enabled the revision of the National Contingency Plan (NCP). The NCP provided the guidelines and procedures needed to respond to releases and threatened releases of hazardous substances, pollutants, and/or contaminants. The NCP also established the National Priorities List (NPL). CERCLA was amended by the Superfund Amendments and Reauthorization Act (SARA) on October 17, 1986.

State

California Environmental Protection Agency

The California Environmental Protection Agency (CalEPA) was created in 1991. It unified California's environmental authority in a single cabinet-level agency and brought under once agency the Air Resources Board (ARB), State Water Resources Control Board (SWRCB), Regional Water Quality Control Boards (RWQCBs), Integrated Waste Management Board (IWMB), Department of Toxic Substance Control (DTSC), Office of Environmental Health Hazard Assessment (OEHHA), and Department of Pesticide Regulation (DPR). These separate agencies were placed within the CalEPA "umbrella" for the protection of human health and the environment and to ensure the coordinated deployment of State resources. Their mission is to restore, protect, and enhance the environment to ensure public health, environmental quality, and economic vitality.

California Hazardous Waste Control Law

The California Hazardous Waste Control Law (HWCL) is administered by CalEPA to regulate hazardous wastes. While the HWCL is generally more stringent than RCRA, until the USEPA approves the California program, both the State and federal laws apply in California. The HWCL lists 791 chemicals and about 300 common materials that may be hazardous; establishes criteria for identifying, packaging and labeling hazardous wastes; prescribes management controls; establishes permit requirements for treatment, storage, disposal and transportation; and identifies some wastes that cannot be disposed of in landfills.

Department of Toxic Substance Control

DTSC is a department of CalEPA and is the primary agency in California that regulates hazardous waste, cleans-up existing contamination, and looks for ways to reduce the hazardous waste produced in California. DTSC regulates hazardous waste in California primarily under the authority of RCRA and the California Health and Safety Code. Other laws that affect hazardous waste are specific to handling, storage, transportation, disposal, treatment, reduction, cleanup, and emergency planning.

California Occupational Safety and Health Administration

The California Occupational Safety and Health Administration (Cal/OSHA) is the primary agency responsible for worker safety in the handling and use of chemicals in the workplace. Cal/OSHA standards are generally more stringent than federal regulations. Employers are required to monitor worker exposure to listed hazardous substances and notify workers of exposure (8 CCR Sections 337-340). The regulations specify requirements for employee training, availability of safety equipment, accident-prevention programs, and hazardous substance exposure warnings.

Local

As provided in CPUC General Order 131 D, the CPUC has exclusive jurisdiction over the siting, design, and construction of the Proposed Project, preempting local discretionary authority over the location and construction of electrical utility facilities. Therefore, the Proposed Project is not subject to local discretionary hazards and hazardous materials regulations. Nonetheless, as part of the environmental review process, consideration is given to relevant local plans and policies that pertain to hazards and hazardous wastes.

County of San Diego

The San Diego County Hazardous Materials Division (HMD) of the Department of Environmental Health is the Certified Unified Program Agency (CUPA) responsible for the implementation and regulation of the Aboveground Petroleum Storage Act (APSA) Program, California Accidental Release Prevention (CalARP) Program, Hazardous Materials Business Plan (HMBP) Program, Hazardous Materials Management and

Inventory Program, Hazardous Waste and Hazardous Waste Treatment Program, and Underground Storage Tank (UST) Program. The HMD regulates facilities that: handle or store hazardous materials; are part of the California Accidental Release Prevention Program (CalARP); generate or treat hazardous wastes, generate or treat medical wastes; store at least 1,320 gallons of above ground petroleum; and own or operate underground storage tanks. The HMD conducts routine inspections at facilities that are subject to the hazardous Materials Business Plan (HMBP) requirements. The HMBP is prepared by each facility and submitted to the California Environmental Reporting System (CERS).

City of Oceanside General Plan – Hazardous Waste Management Element

The *Hazardous Waste Management Element* of the City of Oceanside General Plan addresses the City's goal of preventing pollution and minimizing hazardous waste that cannot be re-used or recycled on site. The City provides methods by which this goal may be realized, including the reduction, elimination, secure containment, recycling, on-site treatment, and detoxification of hazardous materials and wastes, as well as the improvement of processes and practices that involve the use or production of hazardous materials and waste. Another goal is the prevention of pollution of the City's air, water, and soil by hazardous materials and hazardous waste to the greatest extent possible.

Applicant Proposed Measures

No hazardous material measures are proposed by the applicant for the Ocean Ranch Substation project. SDG&E has standards, plans, and procedures in place to address wildland fire and fire prevention. SDG&E's Electric Standard Practice 113.1 constitutes SDG&E's wildland fire prevention and fire safety standards for all activities, including construction activities. The SDG&E Fire Prevention Plan was prepared in compliance with CPUC Decision 12-01-032 (Fire Safety Order) and provides "a comprehensive inventory of the organizational and operational activities that SDG&E undertakes to address the risk of fire in the SDG&E service territory" (PEA, 2016, Chapter 4.8). As part of SDG&E's fire threat and risk mapping program, SDG&E uses a network of weather stations to monitor for high risk weather conditions, such as extreme winds (SDG&E, 2016a).

5.8.2 Environmental Impacts and Mitigation Measures

a. Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

LESS THAN SIGNIFICANT. Construction and operation of the Proposed Project will use hazardous materials that could cause soil and groundwater contamination as the result of accidental spills or leaks. Hazardous materials associated with construction include fuel, lubrication oil, hydraulic fluid, solvents, paints, and adhesives. These materials and transformer oil would also be used during project operation. Considering the lack of contaminated sites, especially leaking underground storage tanks, contaminated soil is not anticipated to be encountered during grading and excavation of the Substation site or along new 12 kV and 69 kV duct bank trenches and vault sites. Five commercial facilities located along Avenida de la Plata and Avenida del Oro are known small or large quantity generators of hazardous materials. However, each facility is without violation and contamination within the roadway where the duct bank excavations will occur is not anticipated.

SDG&E will implement the following standard operating procedures as related to hazardous materials that are listed and described in Section 4.12.3 under several categories: Hazardous Materials; Hazardous Materials and Waste Management Plan (HMWMP); Safety and Worker Environmental Awareness Program; SDG&E Water Quality Construction BMP Manual; and Spill Prevention, Control, and Countermeasures (SPCC) Plan.

- **Construction and Operation.** For both the construction and operation phases of the proposed Project, SDG&E will comply with all applicable state and federal regulations relating to the handling and use of hazardous materials.
- **Construction.** For the construction phase of the proposed Project, SDG&E will prepare a HMWMP that will outline procedures for proper storage, use, and transportation of hazardous materials (SDG&E, 2016a). The HMWMP will include information to reduce or avoid the use of potentially hazardous materials for the purposes of worker safety, protection from groundwater contamination, and proper disposal of hazardous materials. SDG&E will prepare a Safety and Worker Environmental Awareness Program for project personnel that will include training for relevant topics such as: general safety procedures, general environmental procedures, and hazardous materials protocols and BMPs. Additionally, SDG&E will implement BMPs per the SDG&E Water Quality Construction BMP Manual to reduce and/or eliminate potential water quality impacts during construction the Proposed Project.
- **Operation.** A SPCC Plan will be prepared for the new substation because of the volume of oil that would be transformers at the substation. A SPCC would be required if the completed substation were to have an aggregate aboveground oil storage capacity greater than 1,320 U.S. gallons or a completely buried storage capacity greater than 42,000 U.S. gallons.

Due to the lack of contaminated sites in the project vicinity, contaminated soil is not anticipated to be encountered during grading and excavation for the Proposed Project and, through the implementation of the standard procedures and plans, impacts related to the routine use, storage, or disposal of hazardous materials would be less than significant.

b. Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

LESS THAN SIGNIFICANT. Accidental spills of hazardous chemicals could occur during construction of the Proposed Project as discussed in Section 5.8.2(a). Additionally, leaks and spills of hazardous chemicals, including transformer oil contained in transformers or stored at the substation site, could occur during Project operation. Implementation of the SDG&E standard operating procedures discussed above would protect workers, the general public, and the environment in the event of accidental spills or releases of hazardous materials, thus resulting in less than significant impacts.

c. Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

LESS THAN SIGNIFICANT. Two schools are located within one-quarter mile of the proposed Project: Coastal Academy and La Petite Academy. No acutely hazardous material will be used for project construction or operation. With implementation of SDG&E's standard operating procedures, as discussed above, impacts related to any hazardous material spills or accidental releases during construction and/or maintenance of the Proposed Project would be less than significant.

d. Would the project be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

NO IMPACT. The proposed Ocean Ranch Substation site and 69 kV and 12 kV duct banks are not located on any known hazardous materials sites as identified on government agency listings.

e. For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 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?

NO IMPACT. The proposed Ocean Ranch Substation and 69 kV and 12 kV duct banks would not be located within an airport land use plan and would not result in a safety hazard for people residing or working in the project area.

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?

NO IMPACT. The proposed Ocean Ranch Substation and the associated 69 kV and 12 kV duct banks would not be located in the vicinity of a private airstrip and would not result in a safety hazard for people residing or working in the project area.

g. Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

LESS THAN SIGNIFICANT IMPACT WITH MITIGATION INCORPORATED. The construction and operation of the proposed Ocean Ranch Substation would occur within the site boundaries and would not affect emergency vehicles using the public rights-of-way (ROWs). However, construction of the 12 kV and 69 kV duct banks to and from the substation would occur in the public roadways. This work requires lane closures, possibly for several weeks, and may include temporary one-way traffic on some routes. SDG&E's Standard Operating Procedures (Section 4.12.3) would be implemented. As part of these Standard Operating Procedures, the Project would obtain the required City of Oceanside encroachment permits, coordinate with emergency service providers in the event of lane closures, and implement the required traffic control and safety measures. However, the Standard Operating Procedure is not sufficiently detailed with regard to traffic. Therefore, a mitigation measure (Mitigation Measure T-1, Construction Traffic Control Plan) has been identified that provides more specificity. With implementation of this measure the Project impacts would be less than significant impacts during construction. Operation and maintenance of the Proposed Project occasionally may require accessing vaults and temporarily closing lanes. Use of standard traffic control procedures, such as appropriate signage and traffic control devices, would result in less than significant impacts to the use of public roadways by emergency vehicles.

Mitigation Measure

T-1 Construction Traffic Control Plan (See Section 5.16.2 for complete text of measure.)

h. Would the project 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?

NO IMPACT. The Proposed Project is in an urban environment with no risk of wildland fire owing to the lack of extensive vegetation at the substation site or along the public roadways. The project is not located in a Very High Fire Severity Zone as determined by CAL FIRE. SDG&E's Electric Standard Practice 113.1 identifies risk-related activities, as well as measures (including tools and procedures), to address said risks for all activities, including construction activities. Therefore, there would be no impact related to wildland fire.

5.9 Hydrology and Water Quality

HYDROLOGY AND WATER QUALITY Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a. Violate Regional Water Quality Control Board water quality standards or waste discharge requirements?	☐	☐	☒	☐
b. Substantially deplete groundwater supplies or interfere substantially with groundwater discharge such that there would be a net deficit in the aquifer volume or a lowering of the local groundwater table level (i.e., 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)?	☐	☐	☒	☐
c. 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 or amount of surface runoff in a manner that would result in substantial erosion or siltation on or off site?	☐	☐	☒	☐
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 or amount of surface runoff in a manner that would result in flooding on or off site?	☐	☐	☒	☐
e. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☒	☐
f. Otherwise substantially degrade water quality?	☐	☐	☒	☐
g. Place housing within a 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or other hazard delineation map?	☐	☐	☐	☒
h. Place within 100-year flood hazard area structures that would impede or redirect flood flows?	☐	☐	☐	☒
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.	☐	☐	☐	☒
j. Cause inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

Significance criteria established by CEQA Guidelines, Appendix G.

5.9.1 Setting

Climate and Precipitation

The Proposed Project is within the City of Oceanside, California, which has a Mediterranean climate characterized by mild summers and winters. Average annual temperature at Oceanside Marina, approximately 6 miles west of the project, is 68 degrees Fahrenheit (°F), with an August average of 74 °F and a February average of 63 °F. Most precipitation falls in from October to April. Annual average precipitation at the Oceanside Marina is approximately 10.5 inches per year (WRCC, 2016).

Surface Waters

The Proposed Project is situated in the San Diego Basin, within the Carlsbad Hydrologic Unit (904) and the Loma Alta hydrologic subarea (904.1). The Loma Alta watershed is 9.8 square miles and extends

westward for approximately 7.25 miles to the Pacific Ocean (Carlsbad Watershed Management Area Responsible Agencies 2014, as cited in SDG&E, 2016). Ninety-seven percent of the watershed area is within the City of Oceanside and 3 percent is within the City of Vista (SDG&E, 2016).

The project site is located in an urban area and is not within the 100-year or 500-year floodplain. It is served by the municipal drainage system of the City of Oceanside. There is negligible drainage entering the project site from offsite and the only water features on the site are two desilting basins draining to the public storm drain system. Elevations in the Proposed Project area range from approximately 194 to 372 feet above mean sea level (SDG&E, 2016).

A drainage study (Fuscoe, 2015) determined that the site is divided into five separate drainage areas, as shown in Figure 5.9-1. (Note: All figures referenced in the text are located at the end of individual sections.) There are two mass-graded pads totaling 8.74 acres which drain to two temporary desilting basins. The desilting basins collect and convey onsite drainage through underground drain pipes to the public storm drain system located beneath Avenida del Oro, which runs parallel to the western border of the site. Discharge from each of the desilting basins flows through a series of structural stormwater treatment devices prior to leaving the site.

Small portions of the site, comprising the remaining three drainage areas totaling 1.01 acres, drain either to the south, where runoff is then collected by a concrete swale that is connected either to the public storm drain system in Avenida del Oro, directly into Avenida del Oro, or into the public storm drain system in the Rocky Point Drive cul-de-sac, from where it is conveyed to Avenida del Oro. Total 100-year discharge from the site is 11.8 cubic feet per second (cfs). All flow from the site is ultimately collected and conveyed in the existing storm drain system in Avenida del Oro.

The two staging yards are located in undeveloped parcels nearby the site, are not within a floodplain, and have no onsite watercourses or other water features. The proposed underground 69 kV powerline is within the rights of way of Avenida del Oro and Avenida de la Plata, which are served by underground storm drains.

All site drainage, including drainage from the staging yards, is conveyed by the municipal drainage system to Loma Alta Creek, located about 0.5 miles south of the project. Loma Alta Creek, the nearest watercourse to the substation site, drains to the Pacific Ocean about 5 miles west of the project.

Water Quality

Loma Alta Creek has sufficiently high levels of selenium and general toxicity to be classified by the State of California as not meeting water quality standards (RWQCB, 2016). In the channelized portions of Loma Alta Creek, high nutrient levels occur and there are extensive algal blooms (SDGE, 2016). Sedimentation may be an issue, due to the presence of erodible soils and extensive habitat disturbance in the watershed. Other pollutants of concern in this watershed include trace metals and pesticides (SDGE, 2016). Urban runoff has been identified as a key source of bacteria and nutrient pollution to Loma Alta Creek. High pollutant levels at the lagoon at Buccaneer Beach resulted in frequent beach closures, leading to the City of Oceanside constructing the Loma Alta Creek Ultraviolet Radiation Stormwater Treatment Facility to address this issue during dry weather flows (SDGE, 2016).

The California State Water Resources Control Board designates beneficial uses of surface waters in order to protect these uses against water quality degradation. Beneficial uses for Loma Alta Creek are described in the Water Quality Control Plan for the San Diego Basin (RWQCB, 2016). The listed beneficial uses are: noncontact recreation; wildlife habitat; and warm freshwater habitat. Loma Alta Creek drains

into a coastal estuary, Loma Alta Slough, which has beneficial uses of contact and noncontact recreation; estuarine, marine, and wildlife habitat; and rare, threatened, or endangered species.

Groundwater

According to the California Department of Water Resources Groundwater Bulletin 118 (DWR, 2003), there are no groundwater basins in the area of the project site. The nearest groundwater basin is the San Luis Rey Valley Groundwater Basin located along the San Luis Rey River about 2 miles north of the project. Although local groundwater at the site is possible, and is known to exist along Loma Alta Creek, geotechnical borings at the project site found no groundwater at a depth of 70 to 80 feet below the ground surface (Geosyntec, 2015).

Regulatory Background

This section includes a description of the hydrology and water quality regulatory framework.

Federal

Clean Water Act

The Clean Water Act (CWA; 33 U.S.C. Section 1251 et seq.), formerly the Federal Water Pollution Control Act of 1972, was enacted with the intent of restoring and maintaining the chemical, physical, and biological integrity of the waters of the United States. The CWA requires states to set standards to protect, maintain, and restore water quality through the regulation of point source and certain non-point source discharges to surface water. Those discharges are regulated by the National Pollutant Discharge Elimination System (NPDES) permit process (CWA Section 402). NPDES permitting authority is delegated to, and administeredby, California's nine Regional Water Quality Control Boards (RWQCBs). In addition, the State Water Resources Control Board (SWRCB) regulates the NPDES stormwater program. The Proposed Project is under the jurisdiction of the San Diego Regional Water Quality Control Board (RWQCB) and the SWRCB.

Projects that disturb one or more acres are required to obtain NPDES coverage under the California General Permit for Discharges of Storm Water Associated with Construction Activity. The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP describes Best Management Practices (BMPs) the discharger will use to protect stormwater runoff. The SWPPP must contain a visual monitoring program and a chemical monitoring program for "non-visible" pollutants to be implemented if there is a failure of BMPs.

Section 303(d) of the Clean Water Act requires states to establish Total Maximum Daily Load (TMDL) programs for streams, lakes and coastal waters that do not meet certain water quality standards. The California TMDL Program evaluates the condition of surface waters and sets limitations on the amount of pollution that the water can be exposed to without adversely affecting the beneficial uses of those waters. The RWQCBs make a list of waters that are not attaining standards, and develop total maximum daily loads to account for all sources of the pollutants that caused the water to be listed. TMDLs are established at the level necessary to implement the applicable water quality standards. When the TMDL is established as a standard, a program of implementation must be designed to implement the TMDL. TMDLs developed by RWQCBs are designed as Regional Basin Plan amendments and include implementation provisions. Loma Alta Creek is classified by the RWQCB as impaired for selenium and toxicity, and a TMDL is scheduled for completion in 2019 (SWRCB, 2016).

Clean Water Act Sections 404 and 401

Section 404 of the CWA authorizes the U.S. Army Corps of Engineers (USACE) to regulate the discharge of dredged or fill material to the waters of the U.S. and adjacent wetlands. Discharges to waters of the U.S. must be avoided where possible, and minimized and mitigated where avoidance is not possible. The USACE issues individual site-specific permits or general permits (i.e., Nationwide Permits or Regional General Permits) for such discharges.

Under Section 401 of the CWA, any applicant for a federal license or permit to conduct any activity that may result in any discharge into navigable waters must provide the licensing or permitting agency with a Water Quality Certification that the discharge will comply with the applicable CWA provisions or a waiver (33 U.S.C. Section 1341). If a federal permit is required, such as a USACE permit for dredge and fill discharges, the project proponent must also obtain a Water Quality Certification from the RWQCB.

Spill Prevention, Control, and Countermeasures Plan (SPCC)

A facility is covered by the SPCC rule (40 CFR, Part 112 – Oil Pollution Prevention) if it has an aggregate aboveground oil storage capacity greater than 1,320 gallons or a completely buried storage capacity greater than 42,000 gallons and there is a reasonable expectation of an oil discharge into or upon navigable waters of the U.S. Qualifying facilities must prepare an SPCC in accordance with 40 CFR, Part 112.

State

California Porter Cologne Water Quality Control Act

The Porter Cologne Water Quality Control Act of 1967, Water Code Section 13000 et seq., requires the SWRCB and the nine RWQCBs to adopt water quality criteria to protect State waters. These criteria include the identification of beneficial uses, narrative and numerical water quality standards, and implementation procedures. The criteria for the project area are contained in the Water Quality Control Plan (also referred to as a Basin Plan) for the San Diego RWQCB. Constraints in the water quality control plans relative to the Proposed Project relate primarily to the avoidance of altering the sediment discharge rate of surface waters, and the avoidance of introducing toxic pollutants to the water resource. A primary focus of water quality control plans is to protect designated beneficial uses of waters. In addition, anyone proposing to discharge waste that could affect the quality of the waters of the state must make a report of the waste discharge to the Regional Water Board or State Water Board as appropriate, in compliance with Porter-Cologne.

California Streambed Alteration Agreement

Section 1602of the California Fish and Game Code requires an entity to notify the California Department of Fish and Wildlife (CDFW) prior to commencing any activity that may substantially divert or obstruct the natural flow of any river, stream or lake; substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake; or, deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake. If the CDFW determines the alteration may adversely affect fish and wildlife resources, a Lake or Streambed Alteration Agreement would be prepared. The Agreement includes conditions necessary to protect those resources.

SWRCB Order 2014-0174-DWQ

SWRCB Order 2014-0174-DWQ applies to utility companies with short-term intermittent discharges from utility vaults and underground structures to waters of the United States that do not cause, do not have the reasonable potential to cause, or do not contribute to an in-stream excursion above any applicable state or federal water quality objectives/criteria. To obtain coverage under this Order, pollutant concentrations in the discharge must not cause, have a reasonable potential to cause, or contribute to an exceedance of any applicable criterion established by the U.S. Environmental Protection Agency pursuant to Clean Water Act (CWA) section 303. Pollutant concentrations in the discharge must not cause, have a reasonable potential to cause, or contribute to an exceedance of any water quality objective adopted by the State Water Board or Regional Water Quality Control Board (Regional Water Board), nor cause acute or chronic toxicity in the receiving water.

SWRCB Order WQ-2014-0090-DWQ

SWRCB Order WQ-2014-0090-DWQ covers general waste discharge requirements for recycled water use. It serves as a statewide General Order authorizing the use of recycled water by producers, distributors, and users for all Title 22 (recycled water) uses except groundwater recharge. The intent of the order is to streamline the permitting process and delegate the responsibility of administrating water recycling programs to an Administrator (which may be the applicant) to the fullest extent possible. The Administrator must ensure that the use of the water, which may be for construction purposes, meets certain requirements listed in the Order.

Local

As provided in CPUC General Order 131 D, the CPUC has exclusive jurisdiction over the siting, design, and construction of the Proposed Project, preempting local discretionary authority over the location and construction of electrical utility facilities. Therefore, the Proposed Project is not subject to local discretionary hydrology and water quality regulations. Nonetheless, as part of the environmental review process, consideration is given to relevant local plans and policies that pertain to hydrology and water quality.

San Diego RWQCB Municipal Stormwater Permit

San Diego RWQCB Municipal Permit Order No. R9-2013-0001, which covers the City of Oceanside, describes the conditions under which stormwater and non-stormwater discharges into and from municipal separate storm sewer systems (MS4s) are prohibited or limited. The goal is to protect the water quality and designated beneficial uses of waters of the state from adverse impacts caused or contributed to by MS4 discharges. This goal is accomplished through the implementation of water quality improvement strategies and runoff management programs that effectively prohibit non-stormwater discharges into MS4s, and reduce pollutants in stormwater discharges.

San Diego RWQCB Waiver 2

San Diego RWQCB Waiver 2 facilitates discharges to land of recycled water throughout the San Diego Region. To ensure compliance with surface and groundwater quality objectives, permittees must comply with both general and specific conditions of the waiver, which are intended to protect water quality.

County of San Diego Watershed Protection, Stormwater Management, and Discharge Control Ordinance

This ordinance addresses watershed protection, stormwater management, and discharge control for the purpose of protecting water quality and complying with State regulations. The ordinance prohibits non-stormwater discharges to the stormwater conveyance system and receiving waters unless authorized, and establishes requirements to: (1) prevent and reduce pollution to water resources; (2) develop project site design to reduce stormwater pollution and erosion; (3) manage stormwater flows from development projects to prevent erosion and to protect and enhance existing water-dependent habitats; (4) establish standards for the use of off-site facilities for stormwater management to supplement on-site practices at new development sites; and (5) establish notice procedures and standards for adjusting stormwater and non-stormwater management requirements.

County of San Diego and City of Oceanside General Plans

The General Plans for the County of San Diego and the City of Oceanside establish policies for water conservation, landscaping and irrigation, stormwater filtration, groundwater contamination, recycled water, floodplains, impervious surfaces, downslope protection, water quality, drainage, and reclaimed water.

City of Oceanside Standard Urban Stormwater Mitigation Plan

The City of Oceanside Standard Urban Stormwater Mitigation Plan establishes regulations for water quality and runoff protection within the City. The City has developed a Best Management Plan (BMP) Design Manual intended to facilitate the implementation of the requirements of the San Diego RWQCB Municipal Stormwater Permit.

Applicant Proposed Measures

The project description includes no applicant-proposed measures specific to hydrology and water quality. The project does have certain features that are intended to reduce impacts to hydrology and water quality. These are described in the project description or in SDG&E Standards, Plans, and Procedures, and are summarized below:

- Site drainage will be routed by an internal storm drain system to two onsite flow-through planter basins to provide hydromodification management of smaller, more frequent storm events, treatment of stormwater runoff, and peak flow attenuation from larger, less frequent events (such as the 100-year storm). These basins will be planted with locally appropriate grasses and rushes for water quality control.
- SDG&E will prepare a Spill Prevention, Control and Countermeasures Plan in accordance with CFR 40, Part 112 before petroleum products in threshold quantities are stored on-site.
- To the extent that recycled water is used, the Proposed Project will adhere to use restrictions and water quality monitoring and reporting regulations associated with use of tertiary-treated recycled water for construction uses (e.g., dust control, soil compaction, and concrete mixing) permitted under the SWRCB General Order or the San Diego RWQCB Waiver 2 and consistent with the state's anti-degradation policy.
- The Proposed Project plans to adhere to the City of Oceanside Emergency Drought Response Ordinance that may be in effect.
- SDG&E shall address potential impacts relating to the handling and use of hazardous materials through compliance with applicable state and federal regulations.

- SDG&E will prepare a project-specific Hazardous Materials and Waste Management Plan (HMWMP) for the construction phase of the Proposed Project to ensure compliance with all applicable federal, state, and local regulations. The HMWMP will reduce or avoid the use of potentially hazardous materials for the purposes of worker safety, protection from groundwater contamination, and proper disposal of hazardous materials. In addition, SDG&E will address potential impacts relating to the handling and use of hazardous materials through compliance with numerous state and federal regulations, including, but not limited to:
  - Federal OSHA regulations for worker safety in hazardous material remediation and hazardous waste operations (29 CFR Section 1910.120),
  - Federal OSHA regulations hazard communication for workers (29 CFR Section 1910.1200),
  - Federal OSHA regulations for toxic air contaminants for workers (29 CFR Section 1910.1000),
  - CalOSHA regulations for worker safety in hazardous material remediation and hazardous waste operations (8 California Code of Regulations 5192),
  - CalOSHA regulations for hazard communication for workers (8 California Code of Regulations 5194), and
  - Department of Toxic Substances Control regulations implementing Resource Conservation and Recovery Act of 1976 and the California HWCL (22 California Code of Regulations Division 4.5).
- SDGE's Water Quality Construction BMP Manual organizes and presents SDG&E's standard water quality protection procedures for various specific actions that routinely occur as part of SDG&E's ongoing construction, operations, and maintenance activities. The primary focus of most BMPs is the reduction and/or elimination of potential water quality impacts during construction of linear and substation projects. The BMP Manual will be used during construction (by way of preparation and implementation of the SWPPP), operation, and maintenance of the Proposed Project to ensure compliance with all relevant SDG&E and government-mandated regulatory water quality standards.
- Ground and soil disturbance will be minimized through the use of existing access routes, to the extent feasible.
- Once temporary surface disturbances are complete, areas that will not be subject to additional disturbance will be stabilized to control soil erosion. Disturbed areas must be stabilized per the project SWPPP.
- The SDG&E Construction Water Sourcing Investigation provides an overview of all potential water sources available within the SDG&E service territory and is used to determine the most appropriate source(s) of, and regulatory requirements for, water for project construction and operations phases.
- The substation will include containment to prevent any oil resulting from accidental leaks from the installed equipment from leaving the substation perimeter. The global oil containment system that is designed to contain 110 percent of the oil capacity of the installed equipment (which contains the largest amount of oil) will be installed inside the substation to collect any oil resulting from accidental equipment leaks.

5.9.2 Environmental Impacts and Mitigation Measures

The project will consist of a new 69/12 kilovolt (kV) low-profile substation on 9.66 acres of undeveloped land within the City of Oceanside. Project features consist of the substation, a 69 kV power line, a 12 kV distribution system, and a telecommunication system. With the exception of above-ground features on

the substation site, all permanent offsite project features will be underground beneath Avenida del Oro or Avenida de la Plata.

There will be staging areas of up to 17.5 acres on undeveloped parcels nearby. At present, two staging yards are identified. On parcel is west of the substation site, separated from the site by Avenida del Oro. The other is approximately 0.34 miles northwest of the substation site. According to the project description, the identified staging yards may not be available by the time the construction is set to begin. If previously identified staging yards are not available at the time of construction, several alternate locations within the general vicinity are potentially available. These sites possess similar characteristics (graded, disturbed habitat, industrial land uses), that would satisfy project needs. This analysis assumes the identified staging areas described above will be the staging areas used.

Project construction and operation would have the potential to introduce pollutants to local water bodies, and alter drainage patterns. This analysis of impacts is based on a review of the project in the context of existing surface water, groundwater, and water quality conditions based on aerial photographs, topographic maps, a review of the Proponent's Environmental Assessment (SDG&E, 2016), and other information from sources cited. Consideration is given to measures proposed by SDG&E in their project description and standard operating procedures to reduce water resources impacts, and to Federal, State and Local regulations intended to reduce impacts to water resources.

a. Would the project violate any water quality standards or waste discharge requirements?

LESS THAN SIGNIFICANT. Construction of the project would require excavation and grading within the existing SDG&E easements and substation property. Disturbance of soil during construction could result in soil erosion and lowered water quality through increased turbidity and sediment transport into the storm drain system and eventually to Loma Alta Creek, which is already considered impaired. Downstream beneficial uses could be adversely affected through violation of RWQCB water quality objectives for suspended solids, total dissolved solids, sediment and turbidity.

Accidental spills or disposal of harmful materials used during construction could wash into and pollute surface waters or local groundwater during rainfall events. Materials that could contaminate the construction area or spill or leak include lead-based paint flakes, diesel fuel, gasoline, lubrication oil, cement slurry, hydraulic fluid, anti-freeze, transmission fluid, lubricating grease, and other fluids. Treated wastewater may be used for dust control and other construction-related actions. Similar impacts could occur during operations in the form of spills from maintenance vehicles or equipment, oil from transformers or other potential contaminants such as paints, oils or solvents used by maintenance personnel in the normal course of operations. Downstream beneficial uses could be adversely affected through violation of RWQCB water quality objectives for toxicity and chemical constituents.

Although there are no watercourses or other water bodies (aside from the existing collection basins) within the proposed project and staging areas, drainage is directly to the municipal storm drain system which leads directly to Loma Alta Creek. No direct impact to jurisdictional waters is anticipated. No direct, on-site contamination of groundwater is anticipated due to the depth of groundwater.

SDG&E proposes several measures that would reduce construction-related impacts to water quality, as described in the Project Description and under Applicant-Proposed Measures (APMs) above. These include development of a HMWMP, adherence to SDG&E's Water Quality Construction BMP Manual, minimizing disturbance to ground, stabilization of disturbed areas, and adherence to use restrictions and water quality monitoring and reporting regulations associated with use of tertiary-treated recycled water. Wastewater generated by construction workers would be minimal and would be contained within the portable restrooms before being treated and properly disposed of by a licensed contractor.

Operations-related measures proposed by SDG&E to reduce water quality impacts include adherence to SDG&E's Water Quality Construction BMP Manual, global containment of oil spills within the substation, development of a Spill Prevention, Control and Countermeasures Plan, and routing site drainage through an internal storm drain system to onsite flow-through planter basins to provide hydromodification management and water-quality treatment of stormwater runoff.

Compliance with water quality regulations would add additional water quality protections. SDG&E will prepare a SWPPP in compliance with Section 402 of the CWA, and develop a SPCC in conformance with 40 CFR, Part 112. Development and adherence to a SWPPP in conformance with the California General Permit for Discharges of Storm Water Associated with Construction Activity, administered by the California State Water Resources Control Board and the Regional Water Quality Control Boards, would require best management practices to prevent and control erosion and siltation during construction, prevent, contain and mitigate accidental spills during construction, and address treatment and disposal of any groundwater encountered during construction to prevent violation of water quality objectives or damaging beneficial uses.

Compliance with Sections 401 and 404 of the Clean Water Act, as well as preparing a California Streambed Alteration Agreement may not be necessary due to the absence of watercourses on the site. According to the PEA (SDG&E, 2016), surveys conducted in October 2015 found no jurisdictional water features on the project area.

Because the existing regulations are intended to prevent damage to beneficial uses of waters and to prevent water quality degradation, and considering additional measures proposed by SDG&E to prevent contamination, it is concluded that the project will not project violate any water quality standards or waste discharge requirements.

b. Would the project substantially deplete 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 (i.e., 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)?

LESS THAN SIGNIFICANT. The project will not use groundwater. Water use during construction and operations will be from treated wastewater or other municipal source. There are no groundwater basins in the area and local groundwater is not expected to be found during construction. Should trenching expose groundwater, the amount extracted would be negligible and the SWPPP will include measures for groundwater protection and disposal of dewatering water in accordance with procedures outlined in the project description. The site is in an upland area not critical for groundwater recharge, and the relatively small area of the substation (less than 10 acres, most of which would not be paved) will offer little obstruction to the infiltration of groundwater, which will be mitigated by the proposed planter basins. Any local groundwater recharge in the area more probably occurs along Loma Alta Creek, which is nearly 0.5 miles from the substation site and from the nearest staging area. This impact is therefore considered to be less than significant.

c. Would the project 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?

LESS THAN SIGNIFICANT. The existing drainage pattern on the site will be altered internally by the removal of the existing collection basins and the construction of new planter basins with altered drainage paths to the basins, but this will have no adverse effect on overall drainage patterns. All site drainage currently

goes to the municipal storm drain system, as would the project drainage at the same locations (Figures 5.9-1 and 5.9-2). The staging areas will be left in their existing condition regarding drainage after construction is complete. All other project features are underground and within municipal streets. Drainage patterns there will not be altered.

Erosion and siltation would be addressed in the SWPPP and further minimized by limiting grading to the amount necessary, stabilizing disturbed areas (such as staging areas), and installing planter basins which serve as siltation control during operations.

As a result of the project features and measures described above, the effect of the minor drainage alterations within the site footprint is considered less than significant.

d. Would the project 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 or amount of surface runoff in a manner that would result in flooding on or off site?

LESS THAN SIGNIFICANT. As described above under item c, the existing drainage pattern within the site will be altered, but the discharge points will be essentially the same as in the existing conditions, and will drain into the same municipal drainage system. A drainage report prepared for the site found that the new impervious areas on the site could locally increase runoff from a 100-year discharge from 11.8 cubic feet per second (cfs) under existing conditions to 20.2 cfs under the proposed condition. This would be mitigated by sizing the proposed planter basins, which would function as detention basins, for flood attenuation so that the total peak flow from the site will be equal to or less than the existing condition peak flow of 11.8 cfs for the 100-Year event (Fuscoe, 2015). The existing drainage pattern of the site would not be altered at the property boundary, and the project will not increase runoff rates leaving the site. No increase in flooding is anticipated. Therefore, the impact would be less than significant.

e. Would the project create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems to provide substantial additional sources of polluted runoff?

LESS THAN SIGNIFICANT. As describe above under item d, the rate of runoff leaving the site would be controlled by the planter basins to the same level or below the existing condition. Therefore, site drainage is not expected to exceed the capacity of the existing storm drain system. There is a potential for additional sources of polluted runoff in the form of oil spills, spills of other materials during construction and operation, application of fertilizers and soil amendments, and contact of substation equipment with rain water. These would be controlled through the implementation of the SWPPP, global containment of oil spills within the site, other measures described above in item a and under Applicant Proposed Measures above, and compliance with existing water quality regulations regarding pollution control and clean-up. Fertilizers and soil amendments would be used according to the manufacturer's specifications and in quantities that minimize the potential to reach nearby waterways. Therefore, the additional sources of polluted runoff are considered to be insubstantial and less than significant.

f. Would the project otherwise substantially degrade water quality?

LESS THAN SIGNIFICANT. Except as described above in items a, c, and e, with the described measures to control water quality contamination, there is no additional potential to substantially degrade water quality. The impact would be less than significant.

g. Would the project 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?

NO IMPACT. The project is not within a 100-year floodplain, and the project does not involve the construction of new housing. Therefore, there will be no impact.

h. Would the project place within a 100-year floodplain structures that would impede or redirect flood flows?

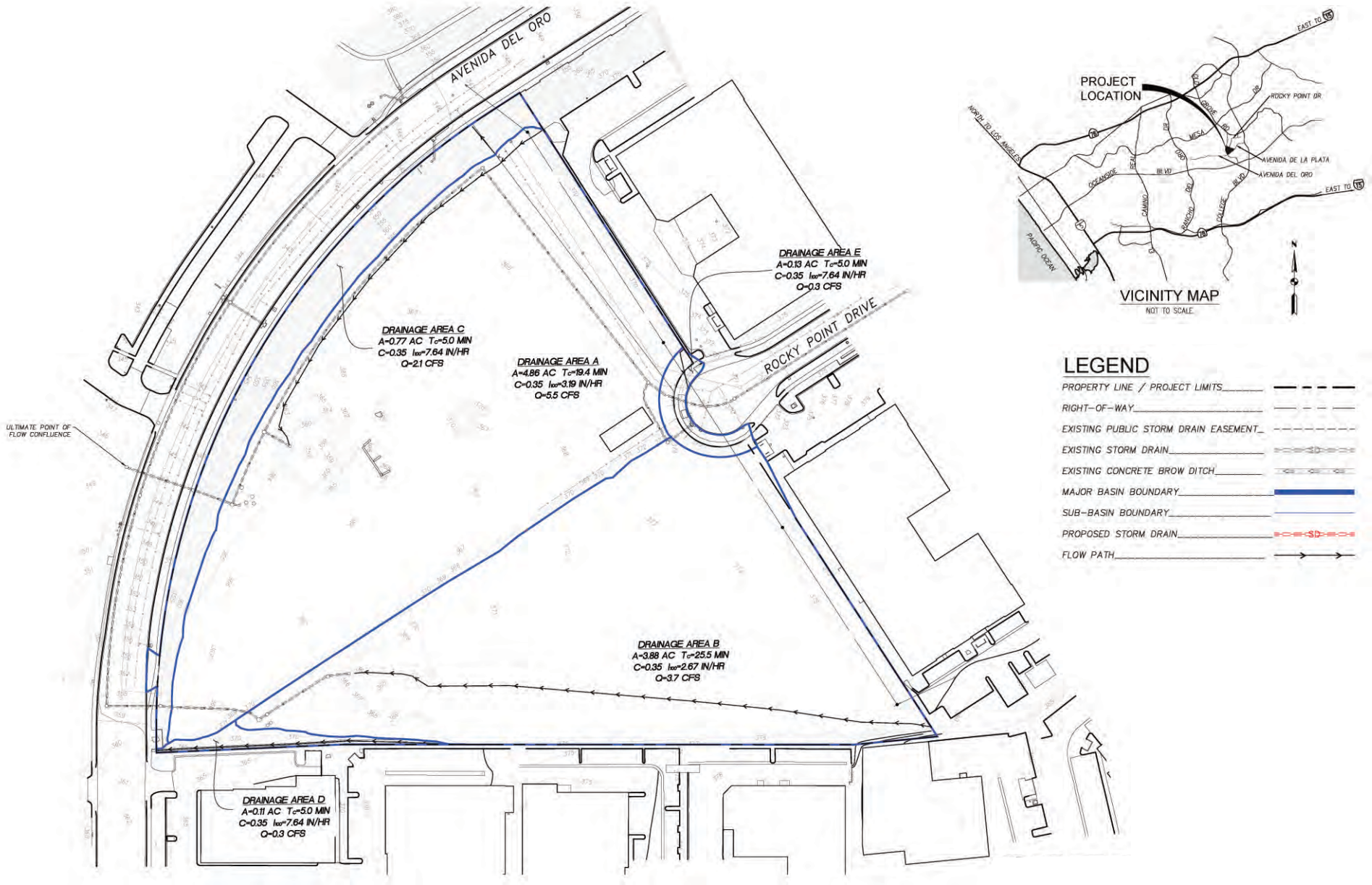
NO IMPACT. The project is not within the 100-year floodplain. Drainage entering and leaving the site will remain as in the existing condition and will not be altered except as otherwise described under items a, c, and e above. Therefore, there will be no impact.

i. Would the project 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?

NO IMPACT. The area is not within a floodplain, is approximately 160 feet above the level of the nearest stream (Loma Alta Creek), and is not protected by or downstream of a levee or dam. People visiting the site will be limited to operations and maintenance personnel. There would be no impact related to levee or dam failure. Therefore, there will be no impact.

j. Would the project cause inundation by seiche, tsunami, or mudflow?

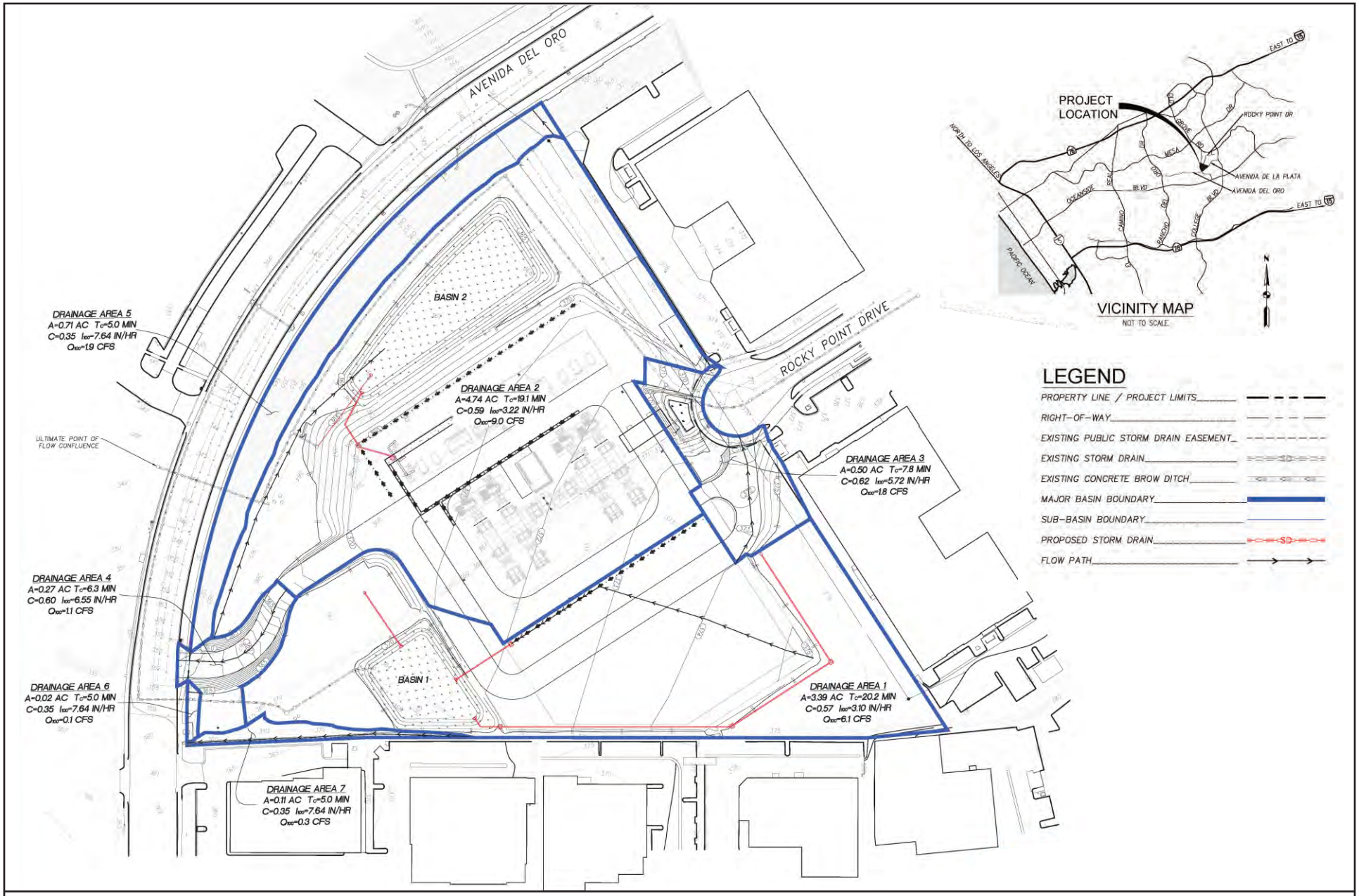
NO IMPACT. The project is 5 miles east of and 370 feet above the Pacific Ocean and therefore unlikely to be within reach of a tsunami. There are no waterbodies nearby that could create a seiche. The site is on a gently sloping grade surrounded by urban development that is unlikely to produce a mudflow. Therefore, there will be no impact.



Source: SDG&E, 2016a.

0 75 150 Feet

Figure 5.9-1
Pre-Development Drainage



Source: SDG&E, 2016a.

0 75 150 Feet

Figure 5.9-2
Post-Development Drainage

5.10 Land Use and Planning

LAND USE PLANNING **Would the project:**	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a. Physically divide an established community?	☐	☐	☐	☒
b. Conflict with any 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?	☐	☐	☐	☒
c. Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

Significance criteria established by CEQA Guidelines, Appendix G.

5.10.1 Setting

The proposed Ocean Ranch Substation site is located in the southeastern portion of the City of Oceanside in San Diego County within the Pacific Coast Business Park, which is part of the Rancho Del Oro Specific Plan area. The surrounding land uses in the area include light industrial and commercial (City of Oceanside Planning Department, 2009a). Currently the site is located on disturbed land, which consists of nonnative vegetation and soils characterized by physical disturbance. A portion of the site is a graded area covered with gravel. The existing land uses in the vicinity of the Proposed Project are mostly industrial and commercial, with some open, undeveloped land. North, east, and south of the proposed substation site are office buildings. West of the project site is a United States Postal Service facility and a FedEx Distribution Center that is under construction. Existing commercial and light industrial facilities and a small landscaped corridor separates the proposed substation from single-family residences in a residential development located approximately 0.25 miles to the east of the project site.

The current land use classification for the proposed Ocean Ranch Substation and all four staging yards is undeveloped, disturbed land. The temporary staging areas that may be temporarily used during substation construction occupy approximately 17.5 acres and include the:

- **Corporate Center Staging Yard:** Approximately 11.5 acres of disturbed habitat located north of Ocean Ranch Boulevard and south of Mesa Drive.
- **USPS Staging Yard:** Approximately 5 acres of undeveloped land, located south of the nearby USPS building and west of the Ocean Ranch Substation site. This area is composed of non-native grassland and disturbed non-native grassland.
- **San Luis Rey Staging Yard:** Approximately 0.5 acres of paved, fenced area with an existing access road located next to the existing San Luis Rey Substation.
- **Melrose Staging Yard:** Approximately 0.5 acres of paved, fenced area with an existing access road located next to the existing Melrose Substation and approximately 3 miles away from the proposed Ocean Ranch Substation.

Temporary work areas also include construction of a 69 kV underground power line loop-in that would require approximately 1.10 acres for approximately 1,500 linear feet of work space activities and a 12 kV underground distribution line that will require approximately 3.2 acres for approximately 4,650 linear feet of workspace.

The proposed Ocean Ranch Substation would be located on two land parcels owned by SDG&E: Assessor's Parcel Number 161-512-26, which is 5.6 acres, and Assessor's Parcel Number 161-512-27, which is 4.06 acres. Primary access to the site would be from the north via a cul-de-sac on Rocky Point Drive. SDG&E is requesting access rights from the City of Oceanside to establish secondary access via a new entry point from Avenida del Oro, near the intersection of Avenida del Oro and Avenida de la Plata.

Regulatory Background

This section includes a description of the land use and planning regulatory framework. There are no federal regulations associated with land use and planning that are relevant to the Proposed Project.

State

Natural Community and Conservation Planning Act

The Natural Community and Conservation Planning Act (California Fish and Wildlife Code Section 2800-2835) aims to reconcile wildlife and ecosystem conservation with land development and population growth. It allows for the creation of Natural Community and Conservation Plans (NCCPs) to protect state-listed species, usually in connection with the issuance of a Section 2081 take permit under the California Endangered Species Act (CESA) (SDG&E, 2016). Currently, there are 9 approved NCCPs and 14 NCCPs in the active planning phase. Cumulatively, these plans cover more than 9.5 million acres throughout California and will provide conservation for more than 500 special status plant and animal species (CDFW, 2016a).

Local

As provided in CPUC General Order 131 D, the CPUC has exclusive jurisdiction over the siting, design, and construction of the Proposed Project, preempting local discretionary authority over the location and construction of electrical utility facilities. Therefore, the Proposed Project is not subject to local discretionary land use regulations. Nonetheless, as part of the environmental review process, consideration is given to relevant local land use plans and policies.

San Diego Gas and Electric Subregional NCCP

The Proposed Project falls within the area in which SDG&E's utility operations are governed by SDG&E's Subregional NCCP, which extends from southern Orange County to the California-Mexico border (CDFW, 2016b). The NCCP prescribes 61 operational protocols that SDG&E routinely implements with every project to avoid and/or minimize impacts to sensitive ecological resources (SDG&E, 2016). The SDG&E Subregional NCCP addresses 110 plant and animal species and requires mitigation measures that include revegetation and the use of up to 240 acres of credits in land parcels purchased by SDG&E (CDFW, 2016b).

North County Multiple Habitat Conservation Program

The Multiple Habitat Conservation Program is a planning process that addresses plant and animal species in northwestern San Diego County, which includes the City of Oceanside. The goal of the program is to conserve approximately 19,000 acres of habitat (of which 8,800 acres are already in public ownership and contribute toward the habitat preserve system) to protect over 80 rare, threatened, or endangered species.

Subarea plans for the cities of Carlsbad, Encinitas, Escondido, Oceanside, San Marcos, and Vista are being prepared and must be adopted by each city council. Afterward, implementing agreements with the CDFW and the USFWS must be signed before incidental take permits can be issued.

The City of Oceanside is in the process of updating their Subarea Habitat Conservation Plan, the most recent version of which is their 2010 Subarea Plan, that will address how the City will conserve natural biotic communities and sensitive plant and wildlife species pursuant to the California Natural Community and Conservation Planning Act of 1991, the California Endangered Species Act, and the federal Endangered Species Act. If adopted, this could provide landowners with more regulatory certainty and it could aid in conserving the area's biodiversity.

City of Oceanside General Plan Land Use Element – Rancho Del Oro Specific Plan

The City of Oceanside General Plan provides a framework of policies, objectives, and land use designations to guide long-term development within Oceanside. The proposed Ocean Ranch Substation would be within the Rancho Del Oro Specific Plan area. The Rancho Del Oro Specific Plan is part of the Land Use Element of the General Plan and applies to approximately 1,940 acres of land in the center of Oceanside (San Diego Association of Governments, 2014, as referenced in SDG&E, 2016). The plan was prepared to create a high-quality and comprehensive planned community and it provides for phased mixed-use development with industrial and commercial uses and a variety of residential housing options. It also includes provisions for implementing circulation system and public utility improvements (SDG&E, 2016).

The 11.5-acre Corporate Center staging yard and the 5-acre U.S. Postal Service staging yard have general plan land designations of Light Industrial (LI). The 0.5-acre San Luis Rey staging yard has a general plan land designation of Civic Institutional (CI) (City of Oceanside Planning Department, 2009a) and the 0.5-acre Melrose staging yard has a general plan land designation of Industrial General (IG) (City of Vista, 2011).

Pacific Coast Business Park Industrial Master Development Plan

The proposed substation site is within the Pacific Coast Business Park Industrial Master Development Plan, which is a component of the Rancho Del Oro Specific Plan area and is part of the industrially designated area in the central portion of Oceanside encompassing 124.31 acres. Permitted uses include those allowed by the City of Oceanside regulations for the light industrial (LI) zone district. The Industrial Master Development Plan includes some regulations that are in addition to those found in the zoning ordinance, along with design and development standards for the Pacific Coast Business Park. Combined with the existing Light Industrial regulations, the standards serve to protect the property's value and compatibility with adjoining developments (City of Oceanside, 2005, as referenced in SDG&E, 2016).

Proposals for private development within the Pacific Coast Business Park are reviewed by the Pacific Coast Business Park Review Board and the City for compliance with the zoning ordinance and with design and development standards from the Industrial Master Development Plan. The following generally relate to the Proposed Project with respect to land use in the Pacific Coast Business Park (City of Oceanside, 2005):

Building and Site Regulations

- *Maximum structure height: 80 feet*
- *Maximum lot coverage: 75 percent*
- *Maximum floor area ratio: 1.0*

Parking

- *Adequate off-street parking shall be provided to accommodate all parking needs for the site. No on-street parking is allowed within Pacific Coast Business Park.*
- *Required off-street parking shall be provided on the site of the use served, on a contiguous site, or within 300 feet of the subject site.*
- *Parking provided in structures must be screened by architectural elements and/or landscaping.*

Walls and Fencing

- *Fencing and walls shall comply with Section 3040 of the City of Oceanside Zoning Ordinance. Materials used for all fencing and walls shall be of high quality as approved by the Pacific Coast Business Park board.*
- *Fencing and screening treatments must be designed as an integral part of the overall architectural and landscape design for a site.*
- *All fencing shall be constructed of durable materials and shall be maintained, at all times, in good repair.*

Utilities and Communication Devices

- *All electric, telephone, gas, and cable service lines to individual lots or sites shall be installed and maintained underground.*
- *Exterior onsite utilities, including but not limited to drainage systems, sewers, gas lines, water lines and electrical, telephone, and communications wires and equipment, shall be installed and maintained underground.*
- *Electrical equipment shall be mounted on the interior of a building wherever practical. When interior mounting is not practical, electrical equipment shall be screened with walls, berms or landscape materials. Where exterior mounting is required, locating electrical equipment along the side or rear of a building is desirable.*

In addition, Pacific Coast Business Park Design Guidelines articulate standards for proposed building, site, and landscape designs, including lighting and signage, planting scheme and plant types, and other architectural features such as entrances. The Design Guidelines are enforced by the Pacific Coast Business Park Covenants, Codes, and Restrictions. The Ranch Maintenance Association is responsible for maintaining the streetscapes within the Rancho Del Oro Specific Plan area. [SDG&E, 2016]

City of Oceanside Zoning Ordinance

The proposed Ocean Ranch Substation site is zoned as Planned Development District 1 (PD-1) (City of Oceanside Planning Department, 2009b). The purpose of the PD district is to (City of Oceanside, 1992):

- Establish a procedure for developing parcels of land with less or no rigidity, delays, or inequities;
- Ensure thorough and orderly planning and review procedures;
- Encourage variety and avoid monotony in large developments by allowing more freedom in design selection;
- Provide a mechanism whereby the City of Oceanside may authorize developments consistent with the General Plan without inviting speculative rezoning applications;
- Encourage allocation and improvement of common open space in residential areas;

- Encourage the preservation of serviceable existing structures of historic value or artistic merit; and
- Encourage the assembly of properties that might otherwise be developed in unrelated increments to the detriment of surrounding neighborhoods.

The 11.5-acre Corporate Center staging yard is zoned as LI, the 5-acre U.S. Postal Service staging yard is zoned as PD-1, and the 0.5-acre San Luis Rey staging yard is zoned as Public and Semipublic (PS) (City of Oceanside Planning Development, 2009b). The 0.5-acre Melrose staging yard is under the jurisdiction of the City of Vista and is zoned as Light Manufacturing (M-1) (City of Vista, 2015).

Applicant Proposed Measures

No Applicant Proposed Measures (APMs) regarding land use and planning are proposed. However, APMs applicable to Section 5.4, *Biological Resources*, are proposed by the applicant to avoid conflicts with applicable Habitat Conservation Plans or NCCPs.

5.10.2 Environmental Impacts and Mitigation Measures

a. Would the project physically divide an established community?

NO IMPACT. The project site is within the Rancho del Oro Master Plan approved by the City of Oceanside. Specifically, it is within the Pacific Coast Business Park. The project site is surrounded by light industrial and commercials land uses, a Post Office, and vacant parcels planned for additional light industrial and commercial development. There are no residences in the immediate vicinity. The main roadways in the vicinity include Avenida del Oro and Avenida de la Plata. The project would not close any existing roads nor impede any pedestrian or bicycle routes. The proposed substation facility would be within the larger property and be surrounded by walls and security gates. It would not physically divide an established community.

b. Would the project conflict with any 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?

NO IMPACT. As a public utility project that is subject to the jurisdiction of the CPUC, the Proposed Project is exempt from local regulation and discretionary permits. However, the CPUC takes into account the local land use plans, policies, and regulations when evaluating proposed projects. The proposed project would be located within a developed industrial area of Oceanside. Construction and operation of the proposed project would occur on land designated for light industrial development by the City of Oceanside's land use plan and the locations of the temporary staging areas all occur on zoned land that permits such uses. The proposed project does not conflict with any applicable land use plans, policy, or regulation.

c. Would the project conflict with any applicable habitat conservation plan or natural community conservation plan?

NO IMPACT. The SDG&E NCCP and the San Diego MHCP are the only conservation plans that apply to the Proposed Project. The Oceanside SAP is the City's implementing conservation plan under the MHCP.

The City of Oceanside SAP identifies areas within the City that are envisioned to provide natural community conservation or require special considerations for habitat modification due to preserve planning parameters from the SAP. The project is located in areas that are designated as Wildlife Corridor

Planning Zone and Off-site Mitigation Zone; see Figure 5.4-6. The proposed San Luis Rey Staging Yard is located within an area designated as a Wildlife Corridor Planning Zone within the City of Oceanside SAP. However, as discussed above, the Proposed Project would be located in an existing SDG&E transmission corridor on a paved area adjacent to the existing San Luis Rey Substation. The activities associated with the proposed staging yard would be consistent with activities that occur at the existing substation and the current use of this staging yard for operation and maintenance activities, and therefore, impacts to the wildlife corridor would not result.

Although the proposed underground portion of the power line (TL 6966), the proposed Ocean Ranch Substation, Corporate Center Staging Yard, and USPS Staging Yard would be located in an area designated as an Off-site Mitigation Zone, construction would be conducted within disturbed or developed lands or paved roads. The Oceanside SAP does not require mitigation for impacts to these land types. Therefore, the Proposed Project does not conflict with the SAP.

The Proposed Project would not use the take authority granted by the USFWS and the CDFW in the NCCP for impacts to covered species. Potential take of state species would be handled, as necessary, through consultation with the CDFW in accordance with applicable sections of the CESA. Although the SDG&E NCCP take authority would not be used for the Proposed Project, proposed construction activities would implement applicable avoidance and minimization measures specified in the NCCP Operational Protocols as standard operating procedures.

The Proposed Project would not conflict with the SDG&E NCCP or the Oceanside SAP, and no impact would occur.

5.11 Mineral Resources

MINERAL RESOURCES Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
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?	☐	☐	☐	☒
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?	☐	☐	☐	☒

Significance criteria established by CEQA Guidelines, Appendix G.

5.11.1 Setting

The Proposed Project components would not be in a classified mineral resource zone (MRZ) and there are no known important mineral resources or active mining operations in the immediate vicinity of the substation site (City of Oceanside, 2002a; City of Oceanside, 2002b). The substation site is located in a developed industrial area zoned for Limited Industrial uses and Planned Development.

Regulatory Background

This section includes a description of the mineral resources regulatory framework. There are no federal regulations associated with mineral resources that are relevant to the Proposed Project.

State

California Surface Mining and Reclamation Act of 1975 (SMARA)

SMARA requires that the State Geologist classify land into MRZs according to the known or inferred mineral potential of the land. The California Department of Conservation's Office of Mine Reclamation (OMR) and the State Mining and Geology Board (SMGB) are jointly charged with administration of the Acts requirements. The OMR provides technical assistance to lead agencies and operators, maintains a statewide database of mine locations and operational information, and is responsible for matters involving SMARA compliance. The SMGB promulgates regulations to clarify and interpret SMARA requirements in addition to serving as a policy and appeals board (DOC, 2016). The SMGB has the authority to further regulate the authority of the local agencies if it finds that the agencies are not in compliance with the provisions of SMARA.

Local

As provided in CPUC General Order 131 D, the CPUC has exclusive jurisdiction over the siting, design, and construction of the Proposed Project, preempting local discretionary authority over the location and construction of electrical utility facilities. Therefore, the Proposed Project is not subject to local discretionary mineral resources regulations. Nonetheless, as part of the environmental review process, consideration is given to relevant local plans and policies that pertain to mineral resources.

City of Oceanside General Plan – Environmental Resource Management Element

The main objective under this General Plan element is to protect existing mineral resources and regulate mineral extraction activities to minimize hazards and conflicts with other land uses as well as to preserve and enhance the appearance of the area (City of Oceanside 2002a as cited in SDG&E, 2016).

City of Oceanside General Plan – Land Use Element

The following policies included in the City of Oceanside General Plan Land Use Element generally relate to the Proposed Project with respect to mineral resources (City of Oceanside 2002b as cited in SDG&E, 2016):

> ***3.31 Mineral Resource Areas***
>
> *Minerals Resource Areas shall remain in effect until the resource has been depleted or no longer exists in sufficient quantity or quality to be of benefit to the City and/or the region.*
>
> ***3.313 Crystal Silica Policy***
>
> *The mining area of the Crystal Silica Company located northeast of the El Camino Real/Oceanside Boulevard intersection contains deposits of silica sand which shall be permitted to be mined under the provision of its permits and the Rancho del Oro Specific Plan and Development Agreement.*
>
> ***3.32 Land Use Compatibility Policies***
>
> - *When considering development proposals within urbanized sections of Mineral Resource Areas, the City shall balance the potential loss of the mineral deposit against the value of the development and consider the importance of the deposit to the regional market and not just its local significance.*
> - *Proposed developments within or adjacent to Mineral Resource Areas shall provide adequate buffering, building placement, and phasing plans to assure compatibility with existing mining operations.*
> - *Development within or adjacent to Mineral Resource Areas shall not be permitted if found to significantly interfere with the future or continued extraction of the resource.*

Applicant Proposed Measures

There are no APMs proposed with regard to Mineral Resources.

5.11.2 Environmental Impacts and Mitigation Measures

a. Would the project 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?

NO IMPACT. There are no known important mineral resources that would be impacted by the project. There are no designated Mineral Resource Zones in the project vicinity; therefore, the project would have no impact on mineral resources.

b. Would the project 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?

NO IMPACT. There are no known important mineral resources that would be impacted by the project. There are no designated Mineral Resource Zones in the project vicinity; therefore, the project would have no impact on any locally important mineral resource recovery sites.

5.12 Noise

NOISE **Would the project:**	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
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?	☐	☒	☐	☐
b. Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☒	☐	☐
c. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
d. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☒	☐	☐
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 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?	☐	☐	☐	☒
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?	☐	☐	☐	☒

Significance criteria established by CEQA Guidelines, Appendix G

5.12.1 Setting

Existing Conditions

Community Noise. To describe environmental noise and to assess project impacts on areas that are sensitive to community noise, a measurement scale that simulates human perception is used. The A-weighted scale of frequency sensitivity accounts for the sensitivity of the human ear, which is less sensitive to low frequencies, and correlates well with human perceptions of the annoying aspects of noise. The A-weighted decibel scale (dBA) is cited in most noise criteria. Decibels are logarithmic units that can be used to conveniently compare wide ranges of sound intensities.

Community noise levels can be highly variable from day to day as well as between day and night. For simplicity, sound levels are usually best represented by an equivalent level over a given time period (Leq) or by an average level occurring over a 24-hour day-night period (Ldn). The Leq, or equivalent sound level, is a single value (in dBA) for any desired duration, which includes all of the time-varying sound energy in the measurement period, usually one hour. The L50, is the median noise level that is exceeded fifty per cent of the time during any measuring interval. The Ldn, or day-night average sound level, is equal to the 24-hour A-weighted equivalent sound level with a 10-decibel penalty applied to nighttime sounds occurring between 10:00 p.m. and 7:00 a.m. Community Noise Equivalent Level (CNEL) is another metric that is the average equivalent A-weighted sound level during a 24-hour day, obtained after addition of five decibels to sound levels in the evening from 7:00 p.m. to 10:00 p.m. and after addition of 10 decibels to sound levels in the night from 10:00 p.m. to 7:00 a.m. To easily estimate the day-night level caused by any noise source emitting steadily and continuously over 24-hours, the Ldn is 6.4 dBA higher than the source's Leq. For example, if the expected continuous noise level from equipment is 50 dBA Leq for every hour, the day-night noise level would be 56.4 dBA Ldn.

Community noise levels are usually closely related to the intensity of human activity. Noise levels are generally considered low when below 45 dBA, moderate in the 45 to 60 dBA range, and high above 60 dBA. In wilderness areas, the Ldn noise levels can be below 35 dBA. In small towns or wooded and lightly used residential areas, the Ldn is more likely to be around 50 or 60 dBA. Levels around 75 dBA are more common in busy urban areas, and levels up to 85 dBA occur near major freeways and airports. Although people often accept the higher levels associated with very noisy urban residential and residential-commercial zones, they nevertheless are considered to be adverse to public health.

Surrounding land uses dictate what noise levels would be considered acceptable or unacceptable. Lower levels are expected in rural or suburban areas than what would be expected for commercial or industrial zones. Nighttime ambient levels in urban environments are about seven decibels lower than the corresponding daytime levels. In rural areas away from roads and other human activity, the day-to-night difference can be considerably less. Areas with full-time human occupation and residency are often considered incompatible with substantial nighttime noise because of the likelihood of disrupting sleep. Noise levels above 45 dBA at night can result in the onset of sleep interference. At 70 dBA, sleep interference effects become considerable (USEPA, 1974).

Noise Environment in the Project Area. Land uses in the vicinity of the proposed substation site are primarily light industrial, commercial, and civic. Baseline noise levels for commercial and urban areas are typically between 60 and 70 dBA or higher (Caltrans, 2009). Project-specific ambient noise levels were not measured for this analysis. However, noise levels for the 1995 conditions were modeled from data gathered by the City of Oceanside for the 1974 Noise Element, and although somewhat out-of-date and outside of the project area, levels were found to be typical for commercial areas at 65 dB for locations within 75 feet of Oceanside Boulevard (City of Oceanside, 1974). The ambient day and night noise sources near the proposed substation site are primarily due to traffic on adjacent roadways and from operations at some light-industrial facilities. At the nearest points, arterial streets Avenida del Oro and Avenida de la Plata are 30 feet and 220 feet from the project site boundary, respectively. The North County Transit District Sprinter line is another potential source of ambient noise located less than half a mile south of the project site. Table 5.12-1 shows typical sound levels of various environmental noises sources.

Table 5.12-1. Typical Sound Levels Measured in the Environment and Industry

Noise Source and Distance	A-Weighted Sound Level (dBA)	Subjective Impression
Civil defense siren (100 ft)	130	Pain threshold
Jet takeoff (200 ft)	120	
Rock music concert (50 ft)	110	
Pile driver (50 ft)	100	Very loud
Ambulance siren (100 ft)	90	
Diesel locomotive (25 ft)	85	Loud
Pneumatic drill (50 ft)	80	
Freeway (100 ft)	70	Moderately loud
Vacuum cleaner (10 ft)	60	
Light traffic (100 ft)	50	
Large transformer (200 ft)	40	Quiet
Soft whisper (5 ft)	30	Threshold of hearing

Noise-Sensitive Areas. The City of Oceanside Noise Element recommends protections for the following land uses as they are noise-sensitive: residential uses, schools, hospitals, and convalescent homes. The nearest single family residences are 1,200 feet east of the proposed substation site boundary. There are five educational facilities within 1320 feet of the proposed site, the Coastal Academy Elementary School,

SIATech North County Charter High School, Quantum Learning, The Classical Academy, and La Petite Preschool and Kindergarten. Approximately 950 feet southwest of the proposed site is the Titleist Performance Institute, a public golf training facility. Lastly, Kaiser Permanente Oceanside Medical Offices are approximately 1,500 feet to the northeast. These residences, schools, golf facility, and medical offices are all separated from the project site by existing commercial development and roadways.

Regulatory Background

The USEPA once published guidelines on recommended maximum noise levels to protect public health and welfare (USEPA, 1974); and the State of California maintains recommendations for local jurisdictions in the General Plan Guidelines published by the Governor's Office of Planning and Research (OPR, 2015).

The following summarizes the local requirements, because the environmental analysis in Section 5.12.2 (Environmental Impacts and Mitigation Measures) considers local requirements and applicable standards of other agencies when determining potential noise impacts under CEQA.

City of Oceanside General Plan, Noise Element

The Noise Element of the Oceanside General Plan identifies the following policies to protect residents from excessive noise in the City of Oceanside (City of Oceanside, 1974):

- Policy 1. Noise levels shall not be so loud as to cause danger to public health in all zones except manufacturing zones where noise levels may be greater.
- Policy 2. Noise shall be controlled at the source where possible.
- Policy 3. Noise shall be intercepted by barriers or dissipated by space where the source cannot be controlled.
- Policy 4. Noise shall be reduced from the structures by the use of soundproofing where other controls fail or are impractical.
- Policy 5. Noise levels shall be considered in the approval of any projects or activates, public or private, which requires a permit or other approval from the City.
- Policy 6. Noise levels shall be considered in any changes to the Land Use and Circulation Elements of the General Plant.
- Policy 7. Noise levels of City vehicles, construction equipment, and garbage trucks shall be reduced to acceptable levels.

The City of Oceanside General Plan, Noise Element (1974) also suggested controls related to construction noise recommending against operating construction equipment that causes noise at a level in excess of 85 dBA at 100 feet from the source or engaging in construction activities between 6:00 p.m. and 7:00 a.m. when such activities exceed the ambient noise level by 5 dBA. Additionally, construction equipment and impact tools that are especially noise-intensive should not be operated within 500 feet of residential areas between 8:00 p.m. and 7:00 a.m.

City of Oceanside Municipal Code

The City of Oceanside Municipal Code, Noise Ordinance (Chapter 38) limits noise generation for industrial land uses within planned development zones. At any point on or beyond the boundaries of the property, the one-hour average sound level may not exceed 70 dBA in the daytime (7:00 a.m. to 10:00 p.m.) and 65 dBA at night (10:00 p.m. to 7:00 a.m.). It is in violation to operate any pneumatic hammer, pile driver, excavator, crane, hoist, parking lot cleaning equipment or other appliance which generates loud or unusual noise from the hours of 10:00 p.m. to 7:00 a.m.

Applicant Proposed Measures

There are no applicant proposed measures related to noise.

5.12.2 Environmental Impacts and Mitigation Measures

a. Would the project result in 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?

DURING CONSTRUCTION, LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED. Construction of the proposed project would involve use of heavy-duty equipment at the proposed substation site and along the routes where underground electric lines would be installed. Equipment needed for substation construction would include dozers, rollers, loaders, compactors, boom trucks, haul trucks, a grader, backhoe, excavator, forklift, oil rig, pulling rig, work crews, and other equipment at or around the proposed site. Construction of the underground linear facilities would also include a concrete saw, crane, jackhammer, paver, vacuum truck, and other equipment. A generator would be required at the final phases of construction, which would run continuously for approximately 24-hours to fill the distribution banks with oil.

If significant or dense rock is encountered, then SDG&E may need to use explosives to blast the rock to create trenches. SDG&E does not specifically identify whether blasting would be used, or the potential force of explosives under consideration. The general purpose would be to remove hard rock in a manner that would involve less work and disturbance than rock-drilling, rock-breaking, or rock-hammering. To address this, SDG&E proposes to include a Standard Operating Procedure (see Section 4.12.3, Project Description), as follows: "In the event that rock blasting is used during construction, a noise and vibration calculation would be prepared and submitted to SDG&E for review before blasting at each site. The construction contractor would ensure compliance with all relevant local, state, and federal regulations relating to blasting activities, as well as SDG&E's blasting guidelines." SDG&E and the blasting contractor would need to secure approval for rock blasting through a review and permit from the City of Oceanside Fire Department. Although subject to additional review by the City Fire Department, blasting would predictably cause some intense impulse noise and groundborne vibration impacts.

All construction activities, including those for the proposed substation site and distribution line work and any staging areas, would create both intermittent and continuous noises. Intermittent noise would result from periodic, short-term equipment operation, such as cranes for positioning equipment or saw and excavator use during installation of the underground distribution lines. Continuous noise would result from steady equipment operation over longer periods, such as mixer or generator use. Aside from rock blasting, the maximum intermittent construction noise levels would range from 85 to 90 dBA at 50 feet from an active construction area with typical equipment (Caltrans, 2009). Sound from stationary sources naturally attenuates by 6 dBA with every doubling of distance from the source.

The nearest existing noise-sensitive receptor, Coastal Academy, is approximately 850 feet south and east of the substation site. Obstacles such as existing buildings and construction equipment in the path of the sound waves would attenuate noise to even lower levels. As well, once the site is graded, a 10-foot wall would be erected around the area where electrical equipment would be installed. Although noise from construction would attenuate with distance, activities for substation construction, heavy truck traffic, and construction of the underground linear facilities could result in intermittent peak noise levels of approximately 65 dBA for the nearest sensitive receptor, and levels of 75 to 80 dBA within 50 feet of the construction area. Existing ambient noise levels near traffic on area roadways is likely around 65 dBA during the daytime. Similarly, the City of Oceanside Noise Ordinance limits noise to a maximum of 70 dBA in the daytime (7:00 a.m. to 10:00 p.m.) and 65 dBA at night (10:00 p.m. to 7:00 a.m.). Because construction

activities would intermittently increase noise up to 10 dBA above limits set by the local noise ordinance, noticeable noise increases would occur temporarily during construction.

Construction would also cause noise offsite, primarily from commuting workers and from trucks needed to bring materials to the substation site. The peak noise levels associated with passing trucks and commuting worker vehicles would be approximately 70 to 75 dBA at 50 feet, and would be concentrated along Avenida del Oro and the Rocky Point Drive cul-de-sac. Construction traffic would intermittently increase noise approximately 5 dBA above limits set by the local noise ordinance; therefore, noticeable noise increases would occur temporarily during construction. Most construction would be during the day.

Noise from construction activities would be short-term and intermittent in nature and would vary from day to day depending on specific construction activities. To ensure that all construction activities, especially equipment and vehicle noise, comply with local ordinances and standards, Mitigation Measures N-1 and N-2 are recommended to reduce noise from construction activities and to avoid unnecessary noise from equipment, vehicles, and construction traffic. Implementation of Mitigation Measure N-1 would minimize construction noise by requiring mufflers to be in compliance with vendor specifications. Implementation of Mitigation Measure N-2 would ensure compliance with local ordinances by limiting construction noise to daytime hours. Implementation of Mitigation Measure N-3 would ensure that rock blasting, if needed, occurs with CPUC oversight and in a manner compliant with the City Fire Department requirements. By minimizing equipment noise levels and limiting the duration of their occurrence to daytime hours, construction noise associated with the proposed project would not exceed established noise standards. Because there would be no exposure of persons to or generation of noise levels in excess of standards established in the local noise ordinance, noise impacts during construction would be less than significant with mitigation incorporated.

Mitigation Measure for Construction Noise

N-1 **Minimize Construction Vehicle, Equipment, and Traffic Noise.** SDG&E shall maintain construction equipment and vehicle mufflers in accordance with equipment vendor specifications on all engines used in construction. Where feasible, construction traffic shall be routed to avoid noise-sensitive areas, such as residences, educational facilities, hospitals, convalescent homes, and parks.

N-2 **Limit Construction Noise to Daytime Hours.** SDG&E shall not operate any pneumatic hammer, pile driver, excavator, crane, hoist, or other equipment which generates loud or unusual noise from the hours of 10:00 p.m. to 7:00 a.m. Exceptions for work outside of these hours shall be allowed for project safety, to take advantage of the limited times when power lines can be taken out of service, to complete project work that must occur continuously without interruption, or as determined to be warranted by the CPUC. If nighttime work is needed because of clearance restrictions on power lines, SDG&E shall take appropriate measures to minimize disturbance to local residents, if any are within 500 feet of the work site, by informing them in advance of the work schedule and probable inconveniences.

N-3 **Secure City of Oceanside Explosive Permit for Blasting Activity.** In the event that blasting is required, SDG&E shall prepare and submit a plan for blasting that quantifies the resulting noise and vibration levels from the use of explosives. The plan shall in compliance with City of Oceanside procedures and requirements for all blasting activities and shall be submitted to the CPUC before blasting at each site.

DURING OPERATION, LESS THAN SIGNIFICANT. For long-term noise impacts associated with operation of the proposed project, refer to Section 5.12.2(c), below.

b. Would the project result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

LESS THAN SIGNIFICANT WITH MITIGATION. Vibration from routine construction equipment and activities might be perceptible to people in the immediate vicinity of construction activities. Tamping of ground surfaces, the passing of heavy trucks on uneven surfaces, and drilling would each create perceptible vibration in the immediate vicinity the activity. Rock blasting, if needed, would create perceptible vibration over a greater area and could result in vibration levels great enough to create physical damage of nearby structures. Depending on the blasting plan, this impact would be significant. The level of groundborne vibration that could reach sensitive receptors depends on the distance to the receptor, the equipment type that is creating vibration (e.g., the frequency being produced), and the soil conditions surrounding the construction site. Installing poles or conduit could cause vibration levels potentially resulting in temporary annoyance to people within 50 feet of construction equipment. Within 50 feet of the northeastern corner of the project site is a corporate business office, a manufacturing facility, and a warehouse. However, the temporary operation of routine construction equipment generating groundborne vibrations would be localized towards the center of the proposed substation site, more than 50 feet from the occupied buildings. Therefore, for activities other than rock blasting, it is not anticipated that vibration would be noticeable to the occupants of the buildings near the project area. Proposed construction activities would not expose people to excessive groundborne vibration; this impact would be less than significant. Mitigation Measure N-4 would address the potentially significant impact due to excessive groundborne vibration from rock blasting.

Mitigation Measure for Construction Noise

N-4 **Avoid Blasting Where Damage to Structures Could Occur.** Blasting shall be managed with a plan for each site. The plan shall include the blasting methods, surveys of existing structures and other built facilities, and distance calculations to estimate the area of effect of the blasting. The blasting plan shall identify and implement construction techniques available as an alternative to rock blasting for locations where damage to vulnerable structures could occur, where the distance depends on the force of the explosives under consideration. Rock anchoring or a mini-pile system shall be used if adjacent structures could be damaged as a result of blasting or any construction method used as an alternative to blasting. If any structure is inadvertently adversely affected by construction vibration from rock blasting, the structure shall be restored to conditions equivalent to those prior to blasting. SDG&E shall then fairly compensate the owner of any damaged structure for lost use of the property.

c. Would the project result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

LESS THAN SIGNIFICANT. The permanent noise sources that would occur with the project are limited to transformer operation at the substation and noise from crews conducting occasional routine inspection and maintenance of the substation. Maintenance would be rare for the underground subtransmission lines.

Substations usually generate steady noise from the process of power conversion, including the operation of transformers and auxiliary equipment needed to cool the transformer. Transformer noise contains pure-tone or “hum” components which is typically the most offensive characteristic of transformer noise. Auxiliary equipment includes cooling fans and pumps that operate depending on the internal temperature of the transformer oil. With all auxiliary cooling fans operating, the noise level from each of the four proposed transformers at full load would be approximately 61 dBA; SDG&E’s proposed transformer specification would require each unit to satisfy a maximum noise limit of 61 dB at the source (SDG&E 2016;

Response to Data Request No.1 dated October 21, 2016). Simultaneous operation of the four transformers in the ultimate configuration of the proposed substation would create a continuous noise level of approximately 67 dBA Leq for every hour of full load operation within the project site. At the property boundary, this noise level would not exceed the Oceanside Noise Ordinance maximum allowable noise level for industrial land uses of 65 dBA, which applies from 10:00 p.m. to 7:00 a.m.

The nearest sensitive receptor is approximately 850 feet from the proposed project site, and the nearest occupied building is approximately 200 feet north of the proposed location for the transformers. At 200 feet, the modeled noise level from the substation transformers would be approximately 41 dBA Leq and would not exceed approximately 48 dBA Ldn, which would be consistent with the surrounding land uses. The proposed low-profile substation design and 10-foot high masonry perimeter wall enclosing the substation would further minimize the potential increase in noise levels experienced off-site. The resulting noise level at the nearest sensitive receptor would be attenuated over distance to a level that would not be audible over the existing background conditions. As such, a substantial increase in ambient noise levels would not occur due to substation operation. This impact would be less than significant.

Routine inspection and maintenance of the proposed project would be accomplished through periodic visits to the substation site. Visits to the substation would not normally involve a large crew. Additional noise produced at the substation may occur during activation of circuit breakers. Because each of these noise sources would be infrequent and isolated, no substantial permanent noise increase would occur. This impact would be less than significant.

d. Would the project result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED. Noise impacts associated with construction equipment would mainly affect those receptors closest to the substation site and near construction of subtransmission and telecommunications routes. Existing noise-sensitive receptors near the substation site and linear facilities would potentially experience a temporary increase in noise during construction. Given the nearest sensitive receptor is approximately 850 feet south of the proposed substation site, there is sufficient distance between for the noise to attenuate between the source and receptor.

Baseline noise levels for commercial and urban areas are typically between 60 and 70 dBA or higher (Caltrans, 2009). Construction activity noise levels in and around of the project area could potentially reach 75 to 80 dBA, and construction traffic could potentially reach 70 to 75 dBA on the surrounding roadways. Therefore, noise during proposed construction activities would peak at 20 dBA above ambient levels, which is considered a substantial temporary increase in ambient noise levels and would constitute a significant impact absent mitigation. Implementation of Mitigation Measures N-1 and N-2 would minimize the temporary or periodic noise caused by construction equipment and traffic above levels existing without the project. With mitigation incorporated, this impact would be less than significant.

e. For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 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?

NO IMPACT. The proposed substation site would be located approximately 3 miles east and south of the Oceanside Municipal Airport (OPK). According to the Oceanside Municipal Airport Land Use Compatibility Plan Exhibit III-1, a portion of the proposed substation site lies within the airport influence area but approximately 3 miles southeast of the 60 dB CNEL contour for the projected noise generation from airport operations. The federal government operates an airfield at the Marine Corps Air Station Camp Pendleton (NXF), approximately 7 miles north and west of the proposed substation site with runways

oriented away from the project area. The proposed substation project would not introduce new residences to the area, and because the facility would be unstaffed it would not introduce new workplaces to the area. Therefore, the proposed project would not expose people residing or working in the project area to excessive airport-related noise levels. As such, there would be no impact.

f. For a project within the vicinity of a private air strip, would the project expose people residing or working in the project area to excessive noise levels?

NO IMPACT. No private air strip is near the proposed substation site. The proposed substation site would be located approximately 12 miles west of the private Blackinton air strip. The proposed substation project would not introduce new residences to the area, and because the facility would be unstaffed it would not introduce new workplaces to the area. Therefore, the construction and operation of the proposed project would not expose people residing or working in the project area to excessive noise levels near a private air strip. As such, there would be no impact.

5.13 Population and Housing

POPULATION AND HOUSING Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
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)?	☐	☐	☒	☐
b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c. Displace substantial numbers of people necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Significance criteria established by CEQA Guidelines, Appendix G.

5.13.1 Setting

The proposed substation site is within the 120-acre Pacific Coast Business Park, which is under development for commercial, office, and light industrial uses. The business park currently is a mix of recently built structures and vacant, graded building lots. The substation site consists of two vacant parcels totaling 9.66 acres. There are no residences at or in the immediate vicinity of the substation site.

Relative to the Proposed Project, the study area used for consideration of population and housing includes the City of Oceanside, in San Diego County. U.S. Census Bureau 2010 data for population, housing, and employment for the City of Oceanside and San Diego County are presented in Table 5.13 1.

Table 5.13-1. Year 2011 Existing Conditions – Population, Housing, and Employment: City of Oceanside and San Diego County

		Housing Units		Employment
Location	Population	Total Units	Vacancy Rate	Total Employed[1]
City of Oceanside	175,948	65,117	6.6%	79,400
San Diego County	3,288,612	1,193,395	5.6%	1,511,300

1 - Accounts for population greater than 16 years of age and in Labor Force
Source: California Department of Finance, 2016; California Employment Development Department, 2016.

The nearest residences to the proposed substation site are in single-family home subdivisions located approximately 0.3 miles east and 0.5 miles north of the site. Overall, Oceanside and its surrounding communities in northwest San Diego County are substantially built out. Substantial increases in population can be achieved only by development of higher density housing, either on vacant land or through redevelopment of existing land uses.

Regulatory Background

This section includes a description of the population and housing regulatory framework. There are no federal or state regulations associated with population and housing that are relevant to the Proposed Project.

Local

As provided in CPUC General Order 131 D, the CPUC has exclusive jurisdiction over the siting, design, and construction of the Proposed Project, preempting local discretionary authority over the location and construction of electrical utility facilities. Therefore, the Proposed Project is not subject to local discretionary population and housing regulations. Nonetheless, as part of the environmental review process, consideration is given to relevant local plans and policies that pertain to population and housing.

City of Oceanside General Plan, Housing Element

Following is a summary of the City of Oceanside's goals (City of Oceanside 2009 as cited in SDG&E, 2016):

- *Goal 1: Produce opportunities for decent and affordable housing for all of Oceanside's citizens.*
  - *Policy 1.1. Promote a high-quality urban environment with stable residential neighborhoods and healthy business districts.*
  - *Policy 1.2. Encourage and assist in neighborhood rehabilitation and beautification activities.*
  - *Policy 1.3. Promote a high rate of homeownership in Oceanside.*
  - *Policy 1.4. Advocate the rehabilitation of substandard residential properties by homeowners and landlords.*
  - *Policy 1.5. Continue to utilize the City's code enforcement program to bring substandard units into compliance with City codes and to improve overall housing quality and conditions in Oceanside.*
  - *Policy 1.6. Encourage higher density housing development along transit corridors and smart growth focus areas.*
- *Goal 2: Encourage the development of a variety of housing opportunities, with special emphasis on providing:*
  1. *A broad range of housing types, with varied levels of amenities and number of bedrooms.*
  2. *Sufficient rental stock for all segments of the community, including families with children.*
  3. *Housing that meets the special needs of the elderly and persons with disabilities.*
  4. *Housing that meets the needs of large families.*
  - *Policy 2.1. Designate land for a variety of residential densities sufficient to meet the housing needs for a variety of household sizes and income levels, with higher densities being focused in the vicinity of transit stops, smart growth focus areas, and in proximity to significant concentrations of employment opportunities.*
- *Goal 3: Protect, encourage, and provide housing opportunities for persons of low and moderate income.*
  - *Policy 3.1. Continue to utilize federal and state subsidies to the fullest extent in order to meet the needs of lower income residents.*
  - *Policy 3.2. Use the City's regulatory powers to promote affordable housing.*
- *Goal 4: Promote equal opportunity for all residents to reside in housing of their choice.*
  - *Policy 4.1. Prohibit discrimination in the sale or rental of housing with regard to race, ethnic background, religion, disability, income, sex, age, familial status, or household composition.*
  - *Policy 4.2. Assist in the enforcement of fair housing laws by receiving and investigating fair housing allegations, monitoring compliance with fair housing laws, and referring possible violations to enforcing agencies.*

Applicant Proposed Measures

There are no APMs proposed with regard to Population and Housing.

5.13.2 Environmental Impacts and Mitigation Measures

a. Would the project 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)?

LESS THAN SIGNIFICANT. The Proposed Project is in an urban area that is substantially developed. There would be no direct population growth induced by the project, as it would not provide new housing and would not require an expansion of the SDG&E workforce to service and maintain the substation. During its construction, the substation would provide short-term jobs for a small workforce. These jobs are not anticipated to result in workers relocating to the area. Some land in the project vicinity remains vacant and is zoned for commercial, light industrial, and other uses. The construction and operation of the new substation would facilitate future planned growth by ensuring reliable electricity to the area served by the substation. This would be an indirect effect of facilitating the development of these properties, which would provide employment opportunities to the regional workforce. While the development of these properties may induce some population growth, this has already been accounted for through the General Plan for the City of Oceanside. Therefore, the Proposed Project is considered to not induce substantial population growth, either directly or indirectly.

b. Would the project displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?

NO IMPACT. The site for the proposed substation is vacant. The Proposed Project would not displace any housing and therefore would not necessitate the construction of replacement housing. Therefore, no impacts would occur.

c. Would the project displace substantial numbers of people necessitating the construction of replacement housing elsewhere?

NO IMPACT. There is no existing housing on the proposed substation site and the Proposed Project would not displace any residents. Therefore, no replacement housing would be required as a result of implementing the Proposed Project and no impacts would occur.

5.14 Public Services

PUBLIC SERVICES Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental 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:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a) Fire protection?	☐	☐	☒	☐
b) Police protection?	☐	☐	☒	☐
c) Schools?	☐	☐	☐	☒
d) Parks?	☐	☐	☐	☒
e) Other public facilities?	☐	☐	☐	☒

Significance criteria established by CEQA Guidelines, Appendix G.

5.14.1 Setting

For the area where the Proposed Project would be located, fire and police services, as well as school districts, parks, recreational areas, and other public services, are provided by the City of Oceanside, special districts, and private entities.

Fire Protection

The Oceanside Fire Department has eight stations within the City of Oceanside. The nearest fire station to the Proposed Project site is Oceanside Fire Station 8, about 0.25 miles to the southeast of the project site. The Proposed Project site is not located in an area prone to natural fire hazards (City of Oceanside, 2002b).

Police Protection

The Oceanside Police Department is about 2.25 miles northwest from the project site and provides police protection to the project site and the surrounding area.

Schools

Four school districts serve Oceanside: Oceanside Unified School District, Vista Unified School District, Carlsbad Unified School District, and Bonsall/Fallbrook Unified School District (City of Oceanside, 2016b). In addition, there are charter schools operating in Oceanside. There are five schools/learning centers within a 0.25-mile radius of the project site:

- La Petite Academy, located on 4179 Avenida de la Plata;
- Coastal Academy, located on 4096 Calle Platino;
- SIATech North County Independent Study High School, located on 1938 Avenida del Oro;
- Quantum Learning, located on 1938 Avenida del Oro; and
- The Classical Academy, located on 4183 Avenida de la Plata.

Parks

There are 56 parks in Oceanside (City of Oceanside, 2016a). The parks nearest to the Proposed Project site include:

- Martin Luther King, Jr. Park, approximately 0.6 miles from the proposed site.
- Joseph Sepulveda Park, located approximately 0.6 miles south of the proposed site.
- Rancho Del Oro Park, located approximately 0.75 miles north of the proposed site.
- El Corazon Park, approximately 1.0 miles west from the proposed site.
- Palisades Park, located approximately 1.0 miles southwest of the proposed site.
- John Landes Park, located approximately 1.2 mile southeast of the proposed site.
- Bub Williamson is located about 1.2 miles southeast of proposed site and is in the City of Vista.

Hospitals

Three hospitals serve the City of Oceanside:

- Scripps Coastal Medical Center, about 1.6 miles northwest of the proposed site;
- Tri-City Medical Center, about 1.7 miles south from the proposed site; and
- Rady Children's Hospital, about 1.5 miles south of the proposed site.

Regulatory Background

This section includes a description of the public services regulatory framework. There are no federal regulations associated with public services that are relevant to the Proposed Project.

State

2010 Strategic Fire Plan for California

The 2010 Strategic Fire Plan for California was developed in coordination with the State Board of Forestry and Fire Protection and CAL FIRE to reduce and prevent the impacts of fire in California. Goal 6 of the Plan sets objectives to determine the level of suppression resources (staffing and equipment) needed to protect private and public state resources. Specific objectives include, but are not limited to, maintaining an initial attack policy which prioritizes life, property, and natural resources; determining suppression resources allocation criteria; analyzing appropriate staffing levels and equipment needs in relation to the current and future conditions; increasing the number of CAL FIRE crews for fighting wildfires and other emergency response activities; maintaining cooperative agreements with local, state, and federal partners; and implementing new technologies to improve firefighter safety, where available (State Board of Forestry and Fire Protection, 2010 as cited in SDG&E, 2016). The standards outlined are applicable to the fire protection agency serving the City of Oceanside.

Local

As provided in CPUC General Order 131 D, the CPUC has exclusive jurisdiction over the siting, design, and construction of the Proposed Project, preempting local discretionary authority over the location and construction of electrical utility facilities. Therefore, the Proposed Project is not subject to local discretionary public policy regulations. Nonetheless, as part of the environmental review process, consideration is given to relevant local plans and policies that pertain to public services.

City of Oceanside General Plan – Public Safety Element

The 2002 City of Oceanside General Plan, *Public Safety Element* contains the objectives and policies established by the City of Oceanside related to fire management and other emergency services. These policies generally relate to necessary equipment, response, and preventative measures for safety personnel.

City of Oceanside General Plan – Community Facilities Element

The 2002 General Plan, *Community Facilities Element* contains the goals and policies related to public facilities in the City Oceanside. The policies ensure that adequate public facilities and services are provided to serve existing and future residential, commercial, and industrial development throughout the City and that future facilities sites be closely coordinated with existing and planned facilities. The following policies generally relate to the Proposed Project with respect to community facilities in the City of Oceanside (City of Oceanside, 2002a):

- Policy 1.3. The City of Oceanside aims to provide 5 acres of developed "Community Parks," referring to neighborhood, community, and special use parks, per 1,000 local residents.
- Policy 1.5. The City of Oceanside aims to maintain a parks acquisition and improvement program that considers future growth needs.
- Policy 3.5. Close coordination shall be maintained between the location of future fire stations and planned improvements to the Circulation System, or transportation system, within the City of Oceanside in order to maintain appropriate response times to all areas of the community.

Applicant Proposed Measures

No applicant proposed measures are proposed for Public Services.

5.14.2 Environmental Impacts and Mitigation Measures

Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental 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?

LESS THAN SIGNIFICANT. Construction activity would be temporary and occur over the course of approximately 20 months. Construction activity would not be anticipated to require new or physically altered fire protection emergency services and fire risk would be not greater than at any other construction site. The Proposed Project area would continue to be adequately supported by the existing fire protection services. Once constructed, the substation would be unmanned and operated remotely. Following construction, operation of the substation could result in instances requiring fire protection services. The operation of the substation would not affect the ability of fire personnel to respond to fires. Fire risk would be comparable to that from other existing electrical infrastructure in the area, and this would not create the need for new or physically altered fire protection facilities. Therefore, construction of the Proposed Project would be expected to result in less than significant impacts related to fire protection services.

b) Police Protection?

LESS THAN SIGNIFICANT. Construction of the Proposed Project would not require police protection beyond routine patrols and response. An approximately 10-foot-tall masonry wall with gates would enclose the entire substation and barbed wire will be installed horizontally along the interior of the wall and gates so as not to be visible from the exterior of the substation. The majority of construction-related activities would be located away from major emergency access routes and not be expected to significantly interfere with emergency police. Where work would occur in roadways, implementation of approved traffic control procedures would ensure the emergency response is not impeded. Therefore, construction of the Proposed Project would result in less than significant impacts related to police protection.

c) Schools?

NO IMPACT. The planned substation would not increase the local population and, therefore, would not increase enrollment in schools. No new, altered, or expanded school facilities would be required as a result of constructing and operating the substation.

d) Parks?

NO IMPACT. The planned substation would not increase the local population and, therefore, would no increase the demand for parks and recreation facilities. Although some workers may use local and regional park facilities during project construction, increased use would be minimal and temporary and would not contribute substantially to the physical deterioration of existing facilities. No new, altered, or expanded parks or recreation facilities would be required as a result of constructing and operating the substation.

e) Other Public Facilities?

NO IMPACT. No public facilities have been identified that would need to be built, expanded, modified, or otherwise altered as a result of the construction and operation of the Proposed Project.

5.15 Recreation

RECREATION	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
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?	☐	☐	☐	☒

Significance criteria established by CEQA Guidelines, Appendix G.

5.15.1 Setting

There are 56 parks in Oceanside. The parks nearest to the Proposed Project site include (City of Oceanside, 2016):

- Martin Luther King, Jr. Park, approximately 0.6 miles from the proposed site. It is 17 acres and includes amenities such as barbecue grills, a baseball/softball field, a drinking fountain, a multipurpose field, a parking area, a picnic area, play equipment, a roller hockey field, and a soccer field.
- Joseph Sepulveda Park, located approximately 0.6 miles south of the proposed site. It is 3 acres and includes amenities such a picnic area.
- Rancho Del Oro Park, located approximately 0.75 miles north of the proposed site. It is 16 acres and includes amenities such as drinking fountains, a parking area, restrooms, a multipurpose field, and a tennis court.
- El Corazon Park, approximately 1.0 mile west from the proposed site. The SoCal Sports Complex is located in this park as well as the El Corazon Senior Center and the El Corazon Aquatic Center. Palisades Park, located approximately 1.0 mile southwest of the proposed site. It is 5 acres and includes amenities such a multipurpose field and play equipment.
- John Landes Park, located approximately 1.2 miles southeast of the proposed site. It is 10 acres and includes amenities such barbecue grills, a baseball field, drinking fountains, a multipurpose field, a parking area, a picnic area, play equipment, restrooms, softballs fields, a tennis court, a basketball court, and a volleyball court.
- Bub Williamson, located about 1.2 miles southeast of proposed site in the City of Vista. Following construction upgrades, the park will include amenities such as a dog park, restrooms, and a soccer arena (City of Vista, 2016).

Other recreational areas nearby include the Emerald Isle Golf Course, about 1.6 miles west from the Proposed Project site, and the San Luis Rey River Trail, a 7.2-mile-long bicycle and hiking trail north and west of the project site that heads west towards the ocean (City of Oceanside, 2016).

Regulatory Background

This section includes a description of the recreation regulatory framework. There are no federal or state regulations associated with recreation that are relevant to the Proposed Project.

Local

As provided in CPUC General Order 131 D, the CPUC has exclusive jurisdiction over the siting, design, and construction of the Proposed Project, preempting local discretionary authority over the location and constructions of electrical utility facilities. Therefore, the Proposed Project is not subject to local discretionary recreation regulations. Nonetheless, as part of the environmental review process, consideration is given to relevant local plans and policies that pertain to recreation.

City of Oceanside General Plan – Land Use Element

With respect to public recreation facilities, the *Land Use Element* of the Oceanside General Plan states that the City's objective is: "to enhance the well-being of City residents by providing opportunities for relaxation, rest, activity, and education through a well-balanced system of private and public park and recreational facilities distributed to serve the entire community" (City of Oceanside, 2002a as cited in SBG&E, 2016). The following policies generally relate to the Proposed Project:

- *Policy 2.74 A. Provide adequate parkland acreage in both location and size to meet the recreation needs of existing and future residents and to preserve natural resources within the City.*
- *Policy 2.74 E. Provide for the optimum functional and aesthetic integration of all recreational, environmental, cultural, and social elements into Oceanside parks.*
- *Policy 2.74 I. Emphasize trail linkage opportunities between community, county, and state open space systems and recreation facilities and throughout those private developments where deemed both suitable and appropriate.*
- *Policy 2.74 J. Foster cooperative use of existing land resources and recreational facilities between other public and quasi-public agencies.*

City of Oceanside General Plan – Community Facilities Element

A goal in the *Community Facilities Element* of the Oceanside General Plan is: "to enrich the quality of life for all residents of Oceanside by providing adequate and accessible public park and recreation facilities, by providing constructive leisure opportunities, and by providing recreational experiences and programs that contribute to the total health of the individual while meeting the overall needs and desires of the community" (City of Oceanside, 2002b as cited in SBG&E, 2016). The following policies generally relate to the Proposed Project (City of Oceanside, 2002):

- *Policy 1.3. states that the City of Oceanside aims to provide 5 acres of developed "Community Parks," referring to neighborhood, community, and special use parks, per 1,000 local residents.*
- *Policy 1.5. states that the City of Oceanside aims to maintain a parks acquisition and improvement program that considers future growth needs.*

City of Oceanside General Plan – Environmental Management Element

An objective within the *Environmental Resource Management Element* is to plan adequate recreation facilities. Areas containing unique vegetation and wildlife habitats receive a high priority in the planning of parks (City of Oceanside 2002c as cited in SBG&E, 2016). The following goal generally relates to the Proposed Project:

- *Encourage the preservation of significant visual open spaces when such preservation is in the best interest of the public health, safety, and welfare.*

City of Oceanside General Plan – Recreational Trails Element

The *Recreational Trails Element* outlines several goals and objectives for the City to maintain and improve access to recreational trails. The City aims to provide a safe and efficient system of bicycle, equestrian, and pedestrian trails throughout the City, to create a non-motorized connection to recreational and commuting destinations (City of Oceanside 2002d as cited in SBG&E, 2016).

Applicant Proposed Measures

There are no APMs proposed with regard to Recreation.

5.15.2 Environmental Impacts and Mitigation Measures

a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

NO IMPACT. The Proposed Project would not result in any residential or commercial development that would lead to increased use of existing parks or other recreational facilities. Construction of the Proposed Project would occur over approximately 20 months. The construction is anticipated to be undertaken by members of the existing regional workforce, and no increase in population is expected to result from workers migrating to the region. Although some workers may use nearby park facilities during project construction, increased use would be minimal and temporary and would not contribute substantially to the physical deterioration of existing facilities. The Proposed Project would not result in population growth except to the extent that it would facilitate providing reliable electrical power to areas where any growth has already been accounted for in the City of Oceanside's General Plan.

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?

NO IMPACT. The Proposed Project would not directly increase population. In addition, it would not include recreational facilities. The substation is intended to serve areas where the demand for electric power is expected to increase as a result of buildout of land uses already accounted for in the City of Oceanside General Plan and under local zoning and the approved Rancho del Oro Master Plan. Therefore, the Proposed Project would not require the construction or expansion of recreational facilities.

5.16 Transportation and Traffic

TRANSPORTATION AND TRAFFIC Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a. Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections)?	☐	☒	☐	☐
b. Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	☐	☐	☒	☐
c. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☒	☐	☐
e. Result in inadequate emergency access?	☐	☒	☐	☐
f. Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☒	☐	☐

Significance criteria established by CEQA Guidelines, Appendix G.

5.16.1 Setting

The Proposed Project would utilize local roadways for accessing work areas during construction. Roadways adjacent to the substation site would be temporarily disrupted during installation of underground transmission infrastructure. Baseline conditions of regional and local roadways likely used to access the Project site and work locations and those temporarily affected by Proposed Project construction activities are discussed below.

Highways

The following highways provide regional access to the Project site and staging areas, which are shown in Figure 4-1 (Project Regional Location):

- Interstate 5 (I-5) is a north-south regional arterial highway that provides regional access to the City of Oceanside. Within the City of Oceanside, I-5 is eight lanes (four lanes per direction), with year 2014 average daily traffic (ADT) volumes at Oceanside Boulevard (central portion of the city) of 191,000 vehicles per day (Caltrans, 2014). Year 2014 ADT volumes represent the most recently published data.
- Highway 76, or San Luis Rey Mission Expressway, is a four lane divided east-west highway that connects with I-5 in the City of Oceanside and extends northeast through the city. The Rancho Del Oro Drive exit would likely be used to access the Project area. At this exit, year 2014 ADT volumes on Highway 76 were 46,500 vehicles per day (Caltrans, 2014).
- Highway 78, or Ronald Reagan Parkway, is a six lane east-west highway that connects with I-5 in Oceanside near the City of Carlsbad and extends east to the City of Vista and Escondido, where it connects with Interstate 15. The College Boulevard exit would likely be used to access the Project area. At this exit, year 2014 ADT volumes on Highway 78 were 136,000 vehicles per day (Caltrans, 2014).

Local Roads

Local roadway classifications in the City of Oceanside are based on the intended function of the roadway in terms of travel speed, trip distance, and access to and from adjacent land uses. Local roadways within the city fall under the following primary designations:

- Arterial streets are intended to accommodate traffic moving at a relatively high speed over a long distance. Access to arterial streets (e.g., via driveways, on-street parking) is generally limited.
- Collector streets accommodate traffic moving over shorter distances and at lower speeds than arterials. The intended function of a collector street is to provide a linkage between local land uses and arterial streets.
- Local streets are designed to provide access to abutting properties and provide connection between neighborhood streets and the collect street network.

The city has established sub-classifications for both arterials and collectors based on the number of lanes, the type of adjacent land use, and design considerations. These include major, prime, and secondary arterial and collector streets.

Roadway and intersection operating conditions, and the adequacy of existing roadway systems to accommodate traffic, can be described in terms of level of service (LOS) ratings. LOS is expressed as A through F, with LOS A as the best operating conditions (characterized by free-flow traffic, low volumes, and little or no restrictions on maneuverability and LOS F being the worst operating conditions (stop-and-go traffic flow with high traffic densities and slow travel speeds).

Access Routes

Table 5.16-1 provides information on primarily local travel routes that would likely be used by Project-related vehicles to access the four construction staging yards and the Project site. These local roadways are shown in Figure 5.16-1 (at the end of this section). While the information provided in Table 5.16-1 is from 2012, it remains the most currently available ADT volume data for these roadways. As shown, these key local roadways operate at LOS B or better conditions with the exception of College Boulevard, which operates at LOS E.

Table 5.16-1. Existing Local Roadway Conditions

Street	Lanes	Classification	ADT Volume	LOS
Old Grove Road	4	Secondary Collector	11,600	A
Rancho del Oro Drive	4	Secondary Collector	12,400	A
Oceanside Boulevard	5	Major Arterial	29,900	B
Mesa Drive	4	Secondary Collector	13,300	B
College Boulevard	4	Secondary Collector	38,200	E
El Camino Real	5	Major Arterial	33,000	B

Source: City of Oceanside, 2012; SDG&E, 2016 Table 4.16-1

Access to the proposed Ocean Ranch Distribution Substation site would be primarily from the north via a cul-de-sac on Rocky Point Drive. Secondary access would be via a new entry point from Avenida del Oro, near the intersection of Avenida del Oro and Avenida de la Plata. At the Project site, these are both two lane local collector streets.

Roadways Disrupted by Project Construction

Construction of the Proposed Project would result in a temporary disruption to several local roadways adjacent to the Ocean Ranch Substation site. Trenching and vault work areas would be located within the following City of Oceanside collector streets:

- Avenida del Oro is a two-lane north-south street with a separate center lane for turning movements. The affected segment is both north and south of the intersection with Avenida de la Plata and approximately 1,000 feet in length. While ADT volumes along this roadway are unavailable, vehicles traveling along this segment likely include those associated with the U.S. Post Office and other businesses located within the immediate area, including a new Federal Express Ground facility.
- Avenida de la Plata is a two-lane east-west collector street. The affected segment is west of the intersection with Avenida del Oro and approximately 700 feet in length. While ADT volumes along this roadway are unavailable, they are considered low with this segment primarily serving the businesses located within the immediate area.
- Rocky Point Drive is a two lane north-south street, with a cul-de-sac termination at the southern end (where it meets the Project site). The affected segment is approximately 200 feet in length, from the cul-de-sac termination north to Windansea Street. While ADT volumes along this roadway are unavailable, they are considered low with this segment only serving the businesses located on the dead end part of the street.
- Windansea Street is a short two lane east-west street between Rocky Point Drive and Avenida del Oro. The affected segment approximately 100 feet in length, west of the intersection with Rocky Point Drive. While ADT volumes along this roadway are unavailable, they are considered low with this roadway primarily serving the businesses located within the immediate area.

Mass Transit

Bus Service

The North Country Transit District (NCTD) Breeze is a public bus system for the greater San Diego area, including the City of Oceanside. NCTD bus lines that operate in the city include routes 313, 315, 316, 317, 318, 323, and 325. No NCTD bus routes use Rocky Point Drive or Windansea Street. Routes 315 and 316 travel along Avenida del Oro and Avenida de la Plata near the Project site. The following provides specifics of these routes:

- Route 315 travels on Avenida de la Plata between College Road and Avenida del Oro. It then travels south on Avenida del Oro to Oceanside Boulevard (NCTD, 2016a). The following bus stops are located along the segments of Avenida del Oro affected by the Proposed Project:
  - East side of Avenida del Oro across from the U.S. Post Office.
  - East side of Avenida del Oro just north of intersection with Avenida de la Plata.
  - West side of Avenida del Oro just south of intersection with Avenida de la Plata.
- Route 316 travels on Avenida de la Plata between Corporate Center Drive and Avenida del Oro. It then travels north on Avenida del Oro to Mesa Drive (NCTD, 2016a). The following bus stops are located along the segments of Avenida de la Plata and Avenida del Oro affected by the Proposed Project:
  - East side of Avenida del Oro across from the U.S. Post Office.
  - East side of Avenida del Oro just north of intersection with Avenida de la Plata.
  - South side of Avenida de la Plata just west of intersection with Avenida del Oro.

Passenger Rail Service

The NCTD Coaster and Sprinter, Metrolink, and Amtrak Pacific Surfliner provide commuter rail service to San Diego County and beyond. The Sprinter is the closest transit railway to the Project vicinity, connecting Oceanside, Vista, San Marcos, and Escondido along the State Route 78 corridor. The Sprinter travels east and west immediately south of Oceanside Boulevard with stations at El Camino Real, Rancho Del Oro Drive, and College Boulevard in the project vicinity. The nearest Sprinter station is the College Boulevard Station at the south end of Avenida del Oro, approximately 0.5 miles southeast of the Project site (NCTD, 2016b).

Rail (Freight)

The LOSSAN Rail Corridor is the nearest railroad providing freight rail services. This north-south rail corridor stretches from San Luis Obispo to San Diego and is located west of I-5 through the City of Oceanside, approximately 4.4 miles west of the Project site (TransNet, 2016).

Bicycle

The City of Oceanside designates and maintains three types of bicycle facilities:

- Bike paths or trails (also known as Class I bikeways) operate within a right-of-way that is separated from vehicular traffic.
- Bike lanes (also known as Class II bikeways) are located within roadways, but are delineated by warning symbols and striping.
- Bike routes (also known as Class III bikeways) operate in the shoulder lane of roadways, but are not delineated by striping.

The City of Oceanside Bicycle Master Plan includes an inventory of existing bicycle facilities in the city (City of Oceanside, 2012 Appendix A). As indicated in the Bicycle Master Plan, bike lanes exist along Oceanside Boulevard, College Boulevard, Old Grove Road, Mesa Drive, Rancho Del Oro Drive, and El Camino Real. These roadways would likely serve Project-related trips. With respect to roadways affected by construction of the Proposed Project, Avenida del la Plata near the Project site accommodates a bike lane as does on Avenida del Oro (SDG&E, 2016 p. 4.16-5).

Air Transportation

Oceanside Municipal Airport (also known as the Bob Maxwell Memorial Field) is approximately 3 miles northwest of the Project site. This is a general aviation airport featuring one runway and fuel services. For the 12-month period ending February 28, 2015, the airport averaged 32 aircraft operations per day (AirNav, 2016a).

Marine Corps Base Camp Pendleton airfield (also known as Munn Field) is located approximately 6 miles north of the Project site. Camp Pendleton supports over 180 helicopters and a wide variety of Marine Corps units and visiting aircraft from other branches of the Armed Forces (SDG&E, 2016 p. 4.16-5). The facility contains one 6,000-foot runway, but average daily aircraft operational data is unavailable (AirNav, 2016b).

Regulatory Background

This section includes a description of the transportation and traffic regulatory framework.

Federal

14 CFR Part 77 – Safe, Efficient Use, and Preservation of the Navigable Airspace

Construction of a project could potentially impact aviation activities if a structure or equipment were positioned such that it would be a hazard to navigable airspace. The Federal Aviation Administration (FAA) has established reporting requirements if any construction includes equipment or structures more than 200 feet above ground level or results in an object penetrating an imaginary surface extending outward and upward at a ratio of 100 to 1 from a public or military airport runway out to a horizontal distance of 20,000 feet (approximately 3.78 miles) (FAA, 2016). For areas around heliports, this same requirement applies to any construction that is more than 200 feet above ground level or would penetrate an imaginary surface extending outward and upward at a ratio 25 to 1 from a public or military heliport out to a horizontal distance of 5,000 feet.

State

California Vehicle Code (CVC)

CVC includes regulations pertaining to licensing, size, weight, and load of vehicles operated on highways; safe operation of vehicles; and the transportation of hazardous materials.

California Government Code Sections 65352, 65404, 65940, and 65944,

Sections 65352, 65404, 65940, and 65944, amended by Senate Bill 1462, require local planning agencies to notify the military whenever a proposed development project or general plan amendment is located within 1,000 feet of a military installation, located within special use airspace, or is located beneath a low-level flight path.

Caltrans Guide for the Preparation of Traffic Impact Studies (TIS)

The TIS identifies the following criterion as a starting point in determining when a TIS is needed for a project (Caltrans, 2002):

1. Generates over 100 peak hour trips assigned to a State highway facility.
2. Generates 50 to 100 peak hour trips assigned to a State highway facility – and, affected State highway facilities are experiencing noticeable delay; approaching unstable traffic flow conditions (LOS C or D).
3. Generates 1 to 49 peak hour trips assigned to a State highway facility – and, affected State highway facilities are experiencing significant delay; unstable or forced traffic flow conditions (LOS E or F).

Applicable Caltrans highways include I-5, Highway 76, and Highway 78. As stated in Caltrans' *Guide for the Preparation of Traffic Impact Studies*, a TIS may be as simple as providing a traffic count to as complex as a microscopic simulation (Caltrans, 2002). (Because the Proposed Project results in negligible traffic after the temporary construction period, the need for a separate full TIS analysis is not warranted and was not prepared. The analysis provided in Section 5.16.2 compares construction and operational trips against the existing volumes and capacities of affected roadways. This level of analysis is considered consistent with the *Guide for the Preparation of Traffic Impact Studies*.)

Local

As provided in CPUC General Order 131 D, the CPUC has exclusive jurisdiction over the siting, design, and construction of the Proposed Project, preempting local discretionary authority over the location and constructions of electrical utility facilities. Therefore, the Proposed Project is not subject to local discretionary transportation and traffic regulations. Nonetheless, as part of the environmental review process, consideration is given to relevant local plans and policies that pertain to transportation and traffic.

City of Oceanside General Plan – Circulation Element

The *Circulation Element* provides goals, objectives, and policies to maintain and improve the city's transportation system and enhance travel choices for current and future residents, visitors, and workers. The following outlines objectives and policies identified in the Circulation Element that are applicable to the Proposed Project (City of Oceanside, 2012):

Objectives

- *Aim for an acceptable LOS D or better on all Circulation Element roadways on an average daily basis and at intersections during the a.m. and p.m. peak periods.*
- *Ensure that all streets within the city achieve the mobility goals and design standards as highlighted throughout the Circulation Element.*

Policies

- *If the location and traffic generation of a proposed development will result in congestion on major streets or failure to meet the LOS D threshold, or if it creates safety hazards, the proposed development shall be required to make necessary off-site improvements. Such improvements may be eligible for reimbursement from collected impact fees. In some cases, the development may have to wait until financing for required off-site improvements is available. In cases where development would result in unavoidable impacts, the appropriate findings of overriding consideration will be required to allow temporary undesirable levels of service.*

Applicant Proposed Measures

No traffic and transportation Applicant Proposed Measures (APMs) are proposed by SDG&E. However, the Project applicant proposes several *Standard Operating Procedures*, which involve various procedures and restrictions related to traffic and transportation (SDG&E, 2016 p.4.16-6). The implementation of these procedures is considered within the analysis provided below in Section 5.16.2.

5.16.2 Environmental Impacts and Mitigation Measures

a. Would the project cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections)?

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED. The following provides an analysis of potential impacts during both construction and operation/maintenance of the Proposed Project.

Construction

Trip Generation. As stated in Section 4, Project Description, it is anticipated that a maximum of 40 workers would be employed during construction of the Proposed Project. While the Project applicant has included

a Standard Operating Procedure of encouraging carpooling, this analysis assumes a worst-case scenario of individual commutes, resulting in a maximum of 80 temporary daily passenger vehicle trips. In addition to worker trips, construction would include truck trips associated with the import and export of fill material and the delivery of equipment and materials. An average of approximately 20 truck trips per day for an estimated 6 months would be required to complete the proposed substation grading and boundary wall installation (SDG&E, 2016 p. 4.16-10). In addition, approximately 5 additional trips per day are anticipated for the delivery of materials and equipment for the duration of construction, based on current design criteria. Truck trips are converted to a passenger car equivalent (PCE) at a factor of 1.5, resulting in 38 daily trips during construction. Therefore, this analysis assumed a worst-case temporary addition of 118 daily vehicle trips during the temporary construction period.

The addition of all 118 total daily trips to I-5 would result in a temporary increase of 0.06 percent over existing ADT volumes, a 0.24 percent increase over existing ADT volumes on Highway 76, and a 0.08 percent increase over existing ADT volumes on Highway 78. These temporary increases are considered negligible and would not significantly decrease capacity levels over existing conditions, resulting in a less-than-significant impact to the performance of the highway circulation system.

Table 5.16-2 compares the maximum number of construction vehicle trips (118 trips per day) to the number of trips needed to decrease baseline LOS for each local roadway segment to below the minimum performance standard of LOS D for the City of Oceanside. The addition of 118 trips per day to each roadway is considered worst-case as temporary daily traffic volumes would be spread out along the local roads shown in Table 5.16-2.

Table 5.16-2. Construction Traffic Volume Impacts on Local Roadways

			Construction Trips		
	Baseline Conditions		Traffic Volume Increase Triggering	Traffic Volume Increase Triggering	Temporary addition of 118 daily trips
Street	ADT Volume	LOS	LOS E	LOS F	Result in LOS E or F?
Old Grove Road	11,600	A	19,900	23,400	No
Rancho Del Oro Drive	12,400	A	19,100	22,600	No
Oceanside Boulevard	29,900	B	19,600	25,100	No
Mesa Drive	13,300	B	9,200	11,700	No
College Boulevard	38,200	E	-	800	No (LOS F)
El Camino Real	33,000	B	16,500	22,000	No

Source: City of Oceanside, 2012; SDG&E, 2016 Table 4.16-1

As shown in Table 5.16-2, the addition of 118 trips during the temporary construction period would be negligible compared to the traffic volumes necessary to result in unacceptable traffic conditions (LOS E or F). However, College Boulevard currently operates at LOS E under baseline conditions. Mitigation Measure T-1 is proposed to reduce potential impacts from project-related construction trip volumes by ensuring access routes avoid College Boulevard to the extent feasible. With the incorporation of this mitigation, construction would result in a less-than-significant impact to the performance of the local circulation system.

Roadway and Travel Lane Disruptions.

Construction of the Proposed Project would result in temporary disruptions to one or more travel lanes on several roadway segments near the proposed Ocean Ranch Substation site. Underground trenches, manhole, and handhole work areas would be located within segments of Avenida del Oro, Avenida de la

Plata, Rocky Point Drive, and Windansea Street. The construction of underground facilities would require one or more lanes of traffic be temporarily closed along the affected segments of these roadways. Also, construction to establish secondary access to the substation from Avenida del Oro may necessitate the temporary closure of a portion of the northbound lane on this roadway.

Disruption to these roadway segments would be short-term and localized. If feasible, at least one lane of travel through each construction area would remain open throughout the construction period to accommodate roadway users (including motorists, emergency vehicles, transit vehicles, bicyclists and pedestrians). While the Project applicant has included Standard Operating Procedures of obtaining necessary encroachment permits and incorporated standard traffic control procedures, Mitigation Measure T-1 is proposed to provide specificity regarding the requirements of a Construction Traffic Control Plan. The purpose of this plan would be to reduce potential impacts to the circulation system from the closure/ disruption to roadways and travel lanes. With the incorporation of this mitigation, construction would result in a less-than-significant impact to the performance of the local circulation system.

Mitigation Measures for Construction Impacts

T-1 **Construction Traffic Control Plan.** Prior to the start of construction, San Diego Gas & Electric (SDG&E) shall prepare and submit a Construction Traffic Control Plan for review and approval to the City of Oceanside for public roads and transportation facilities that would be directly affected by the construction activities and/or would require permits and approvals. SDG&E shall submit the Construction Traffic Control Plan to the California Public Utilities Commission (CPUC) prior to conducting activities covered in the traffic control permits. The Construction Traffic Control Plan shall include, but not be limited to:

- The locations and use of flaggers, warning signs, lights, barricades, delineators, cones, arrow boards, etc., according to standard guidelines outlined in the Manual on Uniform Traffic Control Devices, the Standard Specifications for Public Works Construction, and/or the California Joint Utility Traffic Control Manual.
- Additional methods to reduce temporary traffic delays and trips during peak travel hours (8:00-10:00 a.m. and 4:00-6:00 p.m.) to the maximum extent feasible.
- Typical access routes between all staging areas and the proposed Ocean Ranch Substation work areas. To the extent feasible, access routes should minimize travel on College Boulevard.
- Defining methods to coordinate with all agencies responsible for encroachment permits throughout construction to minimize cumulative lane disruption impacts should simultaneous construction projects affect shared segments/portions of the circulation system.
- Prior to the start of construction, provide (or identify the timing to provide) copies of all approved permits and agreements to the CPUC and methods to comply with all specified requirements.
- Plans to coordinate in advance with emergency service providers to avoid restricting the movements of emergency vehicles. Police departments and fire departments shall be notified in advance by SDG&E of the proposed locations, nature, timing, and duration of any roadway disruptions, and shall be advised of any access restrictions that could impact their effectiveness. At locations where roads will be blocked, provisions shall be ready at all times to accommodate emergency vehicles, such as immediately stopping work for emergency vehicle passage, providing short detours, and developing alternate routes in conjunction with the public agencies.

Documentation of the coordination with police and fire departments shall be provided to the CPUC prior to the start of construction.

- Plans to coordinate in advance with property owners, if any, that may have limited access to properties due to temporary lane closures. Provisions for ensuring secondary access should be provided.
- Plans to coordinate with North Country Transit District at least one month prior to construction to minimize the impacts associated with the interruption or delays of bus transit service to Routes 315 and 316. Documentation of this coordination shall be provided to the CPUC prior to the start of construction.

Operation and Maintenance

As discussed in Section 4, Project Description, typical maintenance activities involve both routine inspections and preventive maintenance to ensure service reliability, as well as emergency work to maintain or restore service continuity. Routine operations would require one or two workers in a light utility truck to visit the substation on a daily or weekly basis. During normal routine maintenance, approximately six round-trips per year by a two- to four-person crew would occur (SDG&E, 2016 p. 4-19). One annual major maintenance inspection is expected to result in a maximum of approximately 30 vehicle trips for up to 7 days (SDG&E, 2016 p. 4-19). This represents a conservative worst-case operational traffic volume. The temporary addition of all 30 trips to I-5, Highway 76, Highway 78, and the local roadways shown in Table 5.16-2 would result in a negligible increase over existing volumes. Therefore, maintenance traffic volumes would result in a less-than-significant impact to the performance of the circulation system and no mitigation is required.

b. Would the project cause, either individually or cumulatively, a level-of-service standard established by the county congestion management agency for designated roads or highways to be exceeded?

LESS THAN SIGNIFICANT. While I-5, Highway 76, and Highway 78 are part of San Diego Association of Governments (SANDAG) 2050 Regional Transportation Plan (RTP) system, no performance standards related to construction or operation of the Proposed Project were identified within the 2050 RTP (SANDAG, 2011). As discussed above in question a, the temporary addition of 118 daily trips during construction to I-5 would result in a temporary increase of 0.06 percent over existing ADT volumes, a 0.24 percent increase over existing ADT volumes on Highway 76, and a 0.08 percent increase over existing ADT volumes on Highway 78. These temporary increase are considered negligible. The worst-case temporary addition of 30 trips to I-5, Highway 76, and Highway 78 during the annual maximum one-week maintenance event would result in a negligible increase over existing ADT volumes. Therefore, construction and operation of the Project is not found to conflict with SANDAG's RTP and overall congestion management process. Less-than-significant impacts would occur.

c. Would the project result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?

NO IMPACT. The Project site was compared to the military flight paths and airspace designations of the California Military Land Use Compatibility Analysis (CMLUCA) database to determine whether the Proposed Project would be located within military special-use airspace or located beneath a military designated low-level flight path (CMLUCA, 2016). Based on the CMLUCA, the Proposed Project is not located within special-use military airspace or an area designated for low-level military flight paths and no action is required with respect to notifying the military about the Proposed Project (CMLUCA, 2016).

The Proposed Project does not include any objects over 200 feet in height and is located outside of the height notification boundary established by the FAA. Therefore, the Proposed Project would not involve the construction of any structures near any aviation facilities or of such a height that could pose a hazard to air navigation. No impact to air traffic would occur.

d. Would the project substantially increase hazards because of a design feature or incompatible uses?

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED. The Proposed Project does not include any new public roads or permanent changes to roadway features beyond construction of curb cuts to accommodate access driveways. Access to the proposed Ocean Ranch Substation site and construction staging yards would be from existing local roadways with good visibility. Construction of the Proposed Project would involve activities within and adjacent to public roadways, requiring temporary lane narrowing and in some instances temporary lane or roadway closures. To ensure temporary lane closures and construction activities do not result in increased hazards to the traffic circulation system, Mitigation Measure T-1 (Construction Traffic Control Plan) is proposed and would require review and approval of a Project-specific Construction Traffic Control Plan by the CPUC and the City of Oceanside. Mitigation Measure T-1 requires the Project applicant to obtain and adhere to all requirements of an Encroachment Permit from the city, and to prepare a Traffic Control Plan that provides for the safe and efficient movement of emergency vehicles, bicycles, pedestrians, and transit vehicles through or around construction zones while protecting the workers, equipment, and construction areas. While there may be a limited increase in hazards due to construction activities proximate to public roadways, construction would be temporary and with the incorporation of Mitigation Measure T-1, temporary impacts during construction would be less than significant.

Once operational, the Proposed Project would have no impact on the circulation system except during maintenance activities of underground facilities. These activities would be short-term in duration and would comply with standard traffic control procedures (SDG&E, 2015a p. 4.16-7). Therefore, maintenance of the Proposed Project would have a less-than-significant impact on roadway hazards.

Mitigation Measures

T-1 Construction Traffic Control Plan. (See full text above)

e. Would the project result in inadequate emergency access?

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED. Primary access to the substation site would be from Rocky Point Drive, a local road terminating in a cul-de-sac at the north side of the substation property. Two gates would be provided at this location. Secondary access would be from a private drive and gate at Avenida del Oro near the south end of the substation site. Internal to the substation would be a paved loop access road. The gates and road provide adequate access to the site for emergency services to enter and navigate the site, should that be necessary. The substation would not impair emergency access to other locations near the site.

During construction, some lane closures would be required on nearby roads. Disruption to roadway segments would be short-term and localized. If feasible, at least one lane of travel through each construction area would remain open throughout the construction period to accommodate roadway users (including emergency vehicles). To ensure temporary lane closures do not result in inadequate emergency vehicle movements or impede access to property, Mitigation Measure T-1 (Construction Traffic Control Plan) is proposed and would require review and approval of a Project-specific Construction Traffic Control Plan, which would include specific measures to address temporary closures/disruptions to travel lanes and

plans to coordinate in advance with emergency service providers. With the incorporation of Mitigation Measure T-1, temporary impacts during construction would be less than significant.

Once operational, the Proposed Project would have no impact on access or movement to emergency service providers, except during maintenance activities of underground facilities. These activities would be short-term in duration and would comply with standard traffic control procedures (SDG&E, 2015a, p. 4.16-7). Therefore, maintenance of the Proposed Project would have a less-than-significant impact to emergency vehicle access and movements.

Mitigation Measures

T-1 Construction Traffic Control Plan. (See full text above)

f. Would the project conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED. Temporary construction activities may intermittently reduce, disrupt, or temporarily eliminate access to an existing bike routes on Avenida del la Plata and Avenida del Oro near the Project site. Additionally, temporary lane closures could slow public transit bus movements along these two roadways. As discussed in Section 5.16.1, NCTD Routes 315 and 316 travel along Avenida del Oro and Avenida de la Plata adjacent to the Project site, with six bus stops in total located along segments of these roadways temporarily disrupted by construction. Finally, temporary construction activities could limit pedestrian movements when roadway disruptions are required.

To ensure temporary lane closures do not impact bicycle, public transit, or pedestrian movements, Mitigation Measure T-1 (Construction Traffic Control Plan), which requires review and approval of a Project-specific Construction Traffic Control Plan, is recommended. This plan requires coordination with and necessary permits be obtained from the City of Oceanside. This plan also requires the Project applicant to ensure proper detours or safe travel through construction areas for bicycles and pedestrians as well as vehicles. The plan also requires coordination with the NCTD at least one month prior to construction to minimize impacts associated with delays of bus transit service. Therefore, with the incorporation of Mitigation Measure T-1, construction of the Proposed Project would have a less-than-significant impact on transit, bicycle, and pedestrian circulation.

Once operational, the Proposed Project would have no impact on pedestrian, bicycle, and public transit movements, except during maintenance activities of underground facilities. These activities would be short-term in duration and would comply with standard traffic control procedures (SDG&E, 2015a, p. 4.16-7). Therefore, maintenance of the Proposed Project would have a less-than-significant impact to emergency vehicle access and movements.

Mitigation Measures

T-1 Construction Traffic Control Plan. (See full text above)

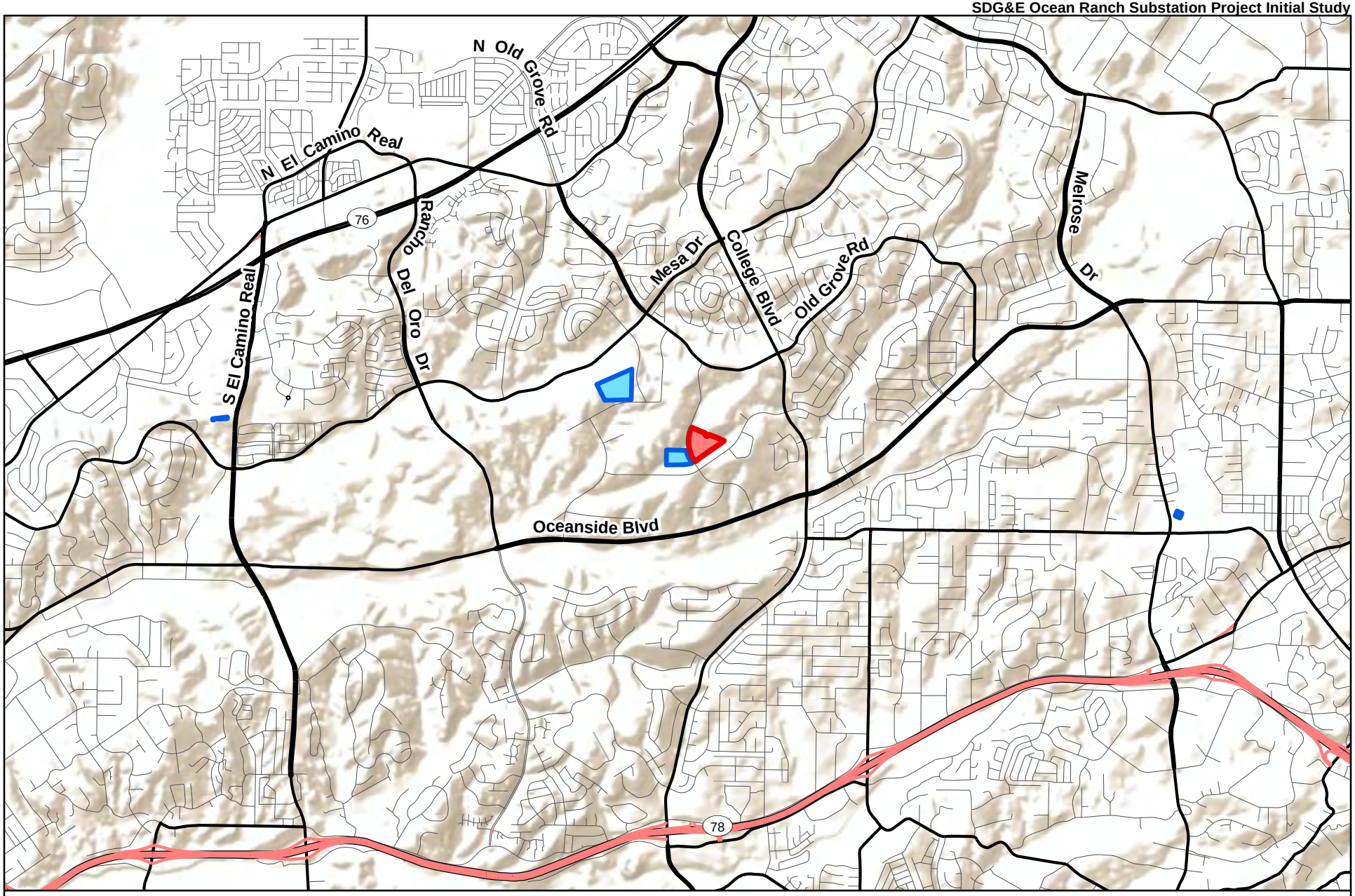


Figure 5.16-1

Local Roadways

5.17 Tribal Cultural Resources

TRIBAL CULTURAL RESOURCES

Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a. listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	☐	☒	☐	☐
b. a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☒	☐	☐

Significance criteria established by CEQA Guidelines, Appendix G.

5.17.1 Setting

Tribal Cultural Resources (TCRs) are a defined class of resources under Assembly Bill 52 (AB 52). TCRs include sites, features, places, cultural landscapes, and sacred places or objects that have cultural value or significance to a Tribe. To qualify as a TCR, the resource must either: (1) be listed on, or be eligible for listing on, the California Register of Historical Resources or other local historic register; or (2) constitute a resource that the lead agency, at its discretion and supported by substantial evidence, determines should be treated as a TCR (PRC § 21074). AB 52 also establishes that, "California Native American tribes traditionally and culturally affiliated with a geographic area may have expertise concerning their tribal cultural resources." Therefore, tribal representatives may be able to provide substantial evidence regarding the locations, types, and significance of TCRs located within their traditional and cultural affiliated geographic areas (AB 52 § 4; PRC § 21074(a)(2); PRC § 21080(e); PRC § 21080.3.1(a)). Thus, the identification and analysis of TCRs should involve consultation between the CEQA lead agency and interested tribal groups and/or tribal persons (AB 52 § 1(5); PRC § 21080.3.1(a)).

Approach to Analysis of Tribal Cultural Resources

Information presented in this section was gathered through AB 52 consultation between the CPUC and California Native American Tribes that have cultural affiliations with the Proposed Project area and that have requested to consult on the Proposed Project. Supplementary information was gathered from the cultural resources literature and records search, cultural resources field survey, ethnographic summary, and pre-AB 52 tribal outreach that is described in detail in Section 5.5.

The Proposed Project's effects on TCRs were evaluated using the significance criteria set forth in Appendix G of the CEQA Guidelines and with consideration to AB 52 and the Governor's Office of Planning and Research "Draft Technical Advisory: AB 52 and Tribal Cultural Resources in CEQA." The conclusions are summarized in the impact summary table above and discussed in more detail below.

There are no TCRs located within the Proposed Project area or within 0.25 miles of the Proposed Project area's boundary. Therefore, the analysis concludes that there will be no potential impacts to known TCRs. However, there is always the potential for impacts to cause an unexpected impact to buried TCRs that are

at present unknown and unrecorded; therefore, Mitigation Measure C-1 is recommended (see below for more details).

Background Research

A letter was sent to the Native American Heritage Commission (NAHC) on October 31, 2016, requesting an updated search of the Sacred Lands File and a current AB 52 Tribal Consultation List consisting of any tribal groups or persons who have expressed an interest in receiving notification about projects being undertaken or applications being reviewed by the CPUC. On November 10, 2016, the NAHC responded with a list of 24 tribal representatives identified as potentially having an interest in the CPUC's service area. The NAHC stated that a search of the Sacred Lands File revealed no known TCRs within the Proposed Project area and 0.25 miles surrounding the Proposed Project area's boundary.

Project Notification

AB 52 requires that within 14 days of the lead agency determining that a project application is complete, a formal notice and invitation to consult about the Proposed Project be sent to all tribal representatives who have requested in writing to be notified of projects that may have a significant effect on TCRs located within the Proposed Project area (PCR § 21080.3.1(d)).

On November 4, 2016, the CPUC mailed certified letters to representatives of nine (9) tribes that had previously submitted a written request to the CPUC to receive notification of proposed projects. These tribes included the Cabazon Band of Mission Indians, Colorado River Indian Tribes, Federated Indians of Graton Rancheria, Gabrieleño Band of Mission Indians – Kizh Nation, San Luis Rey Band of Mission Indians, San Manuel Band of Mission Indians, Temecula Band of Luiseño Mission Indians, Torres Martinez Desert Cahuilla Indians, and Twenty-nine Palms Band of Mission Indians. The letters included a brief description of the Proposed Project, information on how to contact the lead agency Project Manager, and an aerial map and an USGS topographic quadrangle showing the project components and lay-down areas. The letters noted that requests for consultation needed to be received within 30 days of the date of receipt of the notification letter.

One response was received from tribal contacts who requested to consult on the Proposed Project.

AB 52 Native American Tribal Consultation

AB 52 states that once California Native American tribes have received the project notification letter, the tribe then has 30 days to submit a written request to consult (PCR § 21080.3.1(d)). Upon receiving a Tribe's written request to consult, the lead agency then has 30 days to begin tribal consultation. Consultation must include discussion of specific topics or concerns identified by tribes. Any information shared between the Tribes and the lead agency representatives is protected under confidentiality laws and not subject to public disclosure (GC § 6254(r); GC § 6254.10) and can be disclosed only with the written approval of the Tribes who shared the information (PCR § 21082.3(c)(1-2)).

Consultation as defined in AB 52 consists of the good faith effort to seek, discuss, and carefully consider the views of others. Consultation between the lead agency and a consulting Tribe concludes when either of the following occurs: (1) the parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists on a TCR; or (2) a consulting party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached (PCR § 21080.3.2(b)).

One tribe requested to consult on the Proposed Project. A teleconference meeting was held on January 5, 2016. The topics of conversation included a discussion of:

- Proposed project boundaries, construction areas, and staging areas;
- Location, age and depth of artificial fill;
- Depths of excavation into artificial fill and native soil;
- Presence or absence of TCRs
- Identification of tribal concerns about the proposed project, project area, or construction activities in relation to known cultural or tribal resources;
- Types of proposed mitigation measures;
- Plans for the treatment of human remains, if they should be encountered during construction activity;
- Establishing a tribal project review timeline; and
- Coordination of information exchanges in support of the tribe's review of the draft Tribal Cultural Resources chapter, and mitigation measures pertaining to cultural and tribal resources.

Zero TCRs were identified that may be impacted by the Proposed Project. Potential impacts include the inadvertent disturbance of presently unknown and unrecorded prehistoric cultural resources, or discovery of buried human remains during construction work.

In response to potential impacts identified during AB 52 consultation, Mitigation Measures C-1 and C-2 were developed to address these potential impacts as well as impacts to Cultural resources generally. These mitigation measures were circulated for tribal comment on January 10, 2017 and comments were received by CPUC on February 14, 2017. CPUC and the tribe were in agreement on the suggested revisions. This concluded the AB 52 consultation.

Regulatory Background

This section includes a description of the tribal cultural resources regulatory framework.

Federal

No federal regulations related to tribal cultural resources are applicable to the project. Section 106 of the National Historic Preservation Act does not apply because no federal agency discretionary action is required for the project, and no federal lands or monies are involved.

State

California Environmental Quality Act

CEQA requires that impacts to TCRs be identified and, if impacts will be significant, that mitigation measures be implemented to reduce those impacts to the extent feasible (PCR § 21081). In the protection and management of the cultural environment, both the statute and the CEQA Guidelines (14 California Code of Regulations Section 15000 et seq.) provide definitions and standards for management of TCRs.

The Public Resources Code section 21074 defines a Tribal Cultural Resource as "a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe." TCRs also include "non-unique archaeological resources" that may not be scientifically significant, but still hold sacred or cultural value to a consulting tribe.

A resource shall be considered significant if it is: (1) listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in PCR § 5020.1(k) (discussed in detail above); or (2) a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in of PCR § 5024.1(c). In applying these

criteria, the lead agency must consider the significance of the resource to a California Native American tribe.

A project may have substantial adverse change in the significance of a TCR if:

- The adverse change is identified through consultation with any California Native American tribe that requests consultation and is traditionally and culturally affiliated with the geographic area of a proposed project (PCR § 21084.2).
- The resource is listed, or eligible for listing, in the California Register of Historical Resources or in a local register of historical resources, and it is demolished as described in detail above (State CEQA Guidelines section 15064.5 (b)).

The fact that a TCR is not listed in, or determined to be ineligible for listing in, the CRHR, is not included in a local register of historical resources, or is not identified in a historical resources survey does not preclude a lead agency from determining that the resource may be a historical resource. (Please refer to Section 5.5 for a detailed discussion of the term "historical resource" pursuant to Guideline 15064.5(a)).

Section 15064.5(b)(1) of the CEQA Guidelines explains that effect on historical resources (or TCRs) would be considered adverse if it involves physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of the resource would be materially impaired. Adverse effects on historical resources may result in a project having a significant effect on the environment. Section 15064.5(c)(3) requires that TCRs receive treatment under PRC Section 21083.2, which requires that these resources be preserved in place or left in an undisturbed state. If these treatments are not possible, then mitigation for significant effects is required, as outlined in PRC Section 21082.2(c).

The statutes and guidelines cited above specify how TCRs are to be analyzed for projects subject to CEQA.

5.17.2 Environmental Impacts and Mitigation Measures

Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

(a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k)?

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED. There are no known TCRs that are listed in, or are known to be eligible for listing in, the California Register of Historical Resources or local register of historical resources within the Proposed Project or the 0.25-mile surrounding area. However, it is possible that previously unidentified TCRs that may be eligible for inclusion in the CRHR or local registers could be discovered and damaged, or destroyed, during ground disturbance, which would constitute a significant impact absent mitigation.

Mitigation Measures. Implementation of Mitigation Measures C-1 and C-2 would evaluate and protect unanticipated TCR discoveries, including historical and archaeological resources and human remains, thereby reducing this impact to less than significant.

C-1 **Management of Unanticipated Discoveries of Historical Resources or Unique Archaeological Resources.** Unanticipated discovery protocols shall be communicated to project workers as part of the contractor education program. If previously unidentified cultural resources are identified during construction activities, construction work within 100 feet of the find shall be halted and directed away from the discovery until a Secretary of the Interior qualified archaeologist and tribal representative assesses the significance of the resource. The archaeologist, in consultation with the County, SHPO, any interested Tribes, and any other responsible public agency, shall make the necessary plans for recording and curating the find(s) and for the evaluation and mitigation of impacts if the finds are found to be eligible to the National Register of Historic Places or California Register of Historical Resources, or qualifies as a unique archaeological resource under CEQA Section 21083.2.

C-2 **Appropriate Treatment of Human Remains.** Upon discovery of human remains, all work within 100 feet of the discovery area must cease immediately, the area must be secured, and the following actions taken:

- The land manager/owner of the site is to be called and informed of the discovery.
- The San Diego County Coroner's Office is to be called. The Coroner has two working days to examine the remains after notification (Health and Safety Code Section 7050.5(b). The Coroner will determine if the remains are archaeological/historic or of modern origin, and if there are any criminal or jurisdictional questions. The Coroner will make recommendations concerning the treatment and disposition of the remains to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in Section 5097.98 of the Public Resources Code.
- If the Coroner believes the remains to be those of a Native American, he/she shall contact the NAHC by telephone within 24 hours. The NAHC will immediately notify the person it believes to be the most likely descendant (MLD) of the remains.
- The MLD has 48 hours to make recommendations to the land owner for treatment or disposition of the human remains. If the descendant does not make recommendations within 48 hours, the land owner shall re-inter the remains in an area of the property secure from further disturbance. If the land owner does not accept the descendant's recommendations, the owner or the descendant may request mediation by NAHC.

Per California Health and Safety Code, six or more human burials at one location constitutes a cemetery (Section 8100) and willful disturbance of human remains is a felony (Section 7052).

(b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED. There are no known TCRs identified by the consulting tribes during AB 52 Native American consultation or that were determined by the lead agency to qualify as a historical resource within the Proposed Project or a 0.25-mile surrounding area. However, it is possible that previously unidentified TCRs could be discovered and damaged, or destroyed, during ground disturbance, which would constitute a significant impact absent mitigation.

Mitigation Measures. Implementation of Mitigation Measures C-1 and C-2 (described above) would evaluate and protect unanticipated TCR discoveries, thereby reducing this impact to less than significant.

5.18 Utilities and Service Systems

UTILITIES AND SERVICE SYSTEMS Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☒	☐
b. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐
c. Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐
d. Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☒	☐
e. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☒	☐
f. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☒	☐
g. Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

Significance criteria established by CEQA Guidelines, Appendix G.

5.18.1 Setting

Utility and services system facilities associated with electricity, domestic (potable) water, stormwater, solid waste, communications, and natural gas are provided and maintained by a variety of local purveyors, including cities, counties, special districts, water agencies, and private companies. Utilities such as domestic water, wastewater and stormwater sewers, and natural gas are usually transmitted via underground pipelines or conduits. Electrical and telecommunication services can be installed underground or overhead on utility poles. Table 5.18-1 lists utility providers in the Oceanside area.

Table 5.18-1. Utility Providers

Natural gas – SDG&E
Electricity – SDG&E
Water – San Diego County Water Authority and Mission Basin
Wastewater – San Luis Rey Wastewater Treatment Plant and the La Salina Wastewater Treatment Plant
Telephone – AT&T, Cox Communications, and Time Warner Cable
Solid Waste – Waste Management of North County

Source: City of Oceanside, 2016.

Utilities

The California Public Utilities Commission (CPUC) General Order 128, Rules for Construction of Underground Electric Supply and Communication Systems, specifies the construction materials, clearances and depths for the underground components of the proposed distribution system, and General Order 95,

Rules for Overhead Electric Line Construction Section 35, covers all aspects of design, construction, operation, and maintenance of electrical power lines and fire safety hazards. The Proposed Project facilities would be within SDG&E fee-owned property, franchise, or existing easements Existing utilities would be protected by clearances and depths that would meet requirements set forth through CPUC rules and through the City of Oceanside encroachment permit approval process.

Electricity and Gas

Electricity and gas in the City of Oceanside are provided by SDG&E.

Water Supply

The City of Oceanside has two direct sources of potable water: water purchased by San Diego County Water Authority (SDCWA) from the Metropolitan Water District (MWD) of Southern California and the Mission Groundwater Basin of Lower San Luis Rey River Valley (City of Oceanside, 2015a, as referenced in SDG&E, 2016).

SDCWA is a wholesale water agency that provides imported water to its 24 member agencies. The SDCWA, in turn, purchases the majority of its water from MWD, which is comprised of 26 cities and water agencies serving 18 million people across six counties. MWD imports water from two primary sources: the Colorado River via MWD's Colorado Aqueduct and northern California via the State Water Project. Water is delivered to southern California by way of MWD's approximately 242-mile-long aqueduct, which transports Colorado River water from Lake Havasu to MWD's service area. In addition, water from northern California is delivered to southern California through an approximately 444-mile-long aqueduct. The water is captured in reservoirs north of Sacramento and released through natural rivers and streams into the Sacramento–San Joaquin Delta. MWD then combines the Colorado River and State Water Project water at a facility in Riverside County. SDCWA supplies both treated and raw water imported to the City through five aqueduct connections. Treated water is delivered directly into the City's distribution system. Raw water is treated at the City's Robert A. Weese Filtration Plant, which can treat up to 25 million gallons of water per day, prior to delivery into the City's distribution system (City of Oceanside, 2010, as referenced in SDG&E, 2016).

In addition to water purchased from SDCWA, raw water is pumped from the Mission Groundwater Basin, which is then delivered to the Mission Basin Groundwater Purification Facility via City-operated well fields. The Mission Basin Groundwater Purification Facility supplies 15 percent of the City's water supply and can treat up to 6.4 million gallons per day of local brackish groundwater using a reverse osmosis treatment process to remove the salts contained within the groundwater in addition to a treatment to remove iron and magnesium (City of Oceanside, 2015a, as referenced in SDG&E, 2016). [SDG&E, 2016]

Wastewater/Sewerage

All stormwater flow from the substation site is ultimately collected and conveyed by the storm drain system in Avenida del Oro. The Proposed Project area, located between Rocky Point Drive and Avenida del Oro at the southwestern end of Rocky Point Drive, has been previously graded with two catch basins, one on each parcel, that connect to the municipal storm drain system. Elevations in the Proposed Project area range from approximately 194 to 372 feet above mean sea level (msl) (Google, Inc., 2015, as referenced in SDG&E, 2016). The proposed Ocean Ranch Substation also would have two drainage basins that discharge to the municipal storm drain system.

The City of Oceanside's Wastewater Division collects, treats, and disposes of all of the City's sewage at the San Luis Rey Wastewater Treatment Plant and the La Salina Wastewater Treatment Plant. All sewage

is treated to levels set by the Environmental Protection Agency (EPA). The San Luis Rey plant serves areas east of Interstate 5 and the La Salina plant treats sewage from areas west of Interstate 5, downtown, and along the coast. Both plants discharge treated effluent through the Oceanside Ocean Outfall. Flows from Fallbrook Public Utilities District and Marine Corps Base Camp Pendleton are also discharged through the Oceanside Ocean Outfall. Wastewater Division staff are responsible for operating and maintaining over 450 miles of pipelines, 34 sewer lift stations, and an industrial waste inspection program (City of Oceanside, 2015b, as referenced in SDG&E, 2016). [SDG&E, 2016]

Cable and Telephone

Telephone, wireless phone, video/cable, and internet services are available from AT&T for residents within the Proposed Project area. Cox Communications and Time Warner Cable also provide cable, broadband, and phone services (SDG&E, 2016).

Solid Waste

Waste Management of North County provides contract trash services to the residential, multifamily, and commercial customers within city limits. Non-recyclable solid waste in the City of Oceanside is transported to the Palomar Transfer Station and ultimately disposed of at the El Sobrante Landfill. The El Sobrante Landfill is located at 10910 Dawson Canyon Road in Corona, California. The El Sobrante Landfill had 145.5 million cubic yards of capacity as of April 2009 and is expected to reach capacity by the year 2045 (CalRecycle, 2016). Table 5.18 2 lists the total and remaining capacities of solid waste processors currently serving the City of Oceanside from the most recently measured date of April 6, 2009.

Table 5.18-2. Landfill Capacities

Landfill Name	Total Capacity (cu.yd.)	Remaining Capacity (cu.yd.)	Remaining Capacity (percent)	Maximum Throughput (tons/day)
El Sobrante Landfill	184,930,000	145,530,000	78.7	16,054

Source: CalRecycle, 2016.

Regulatory Background

This section includes a description of the utilities and public service systems regulatory framework.

Federal

Clean Water Act Section 402: National Pollutant Discharge Elimination System

Section 202 of the Clean Water Act (CWA) establishes the National Pollutant Discharge Elimination System (NPDES) permit program to regulate point source discharges of pollutants of Waters of the United States. Discharges or construction activities that disturb one or more acres, which includes the Proposed Project, are regulated under the NPDES stormwater program and are required to obtain coverage permit under a NPDES Construction General Permit. The Construction General Permit establishes limits and other requirements such as the implementation of the Stormwater Pollution Prevention Plan, which would further specify best management practices to avoid or eliminate pollution discharge into the nation's waters. The State Water Resources Control Board (SWRCB) issues both general and individual permits under this program. The SWRCB delegates much of its NPDES authority to nine regional water quality control boards. The Proposed Project's NPDES permits would be under jurisdiction of Region 9, the San Diego Regional Water Quality Control Board.

State

California Integrated Waste Management Act of 1989

Assembly Bill 939 codified the California Integrated Waste Management Act of 1989 in the Public Resources Code and established a hierarchy to help the California Integrated Waste Management Board (CIWMB) and local agencies implement three major priorities under the Integrated Waste Management Act: source reductions; recycling and composting; and environmentally safe transformation and land disposal. Waste diversion mandates are included under these priorities. The duties and responsibilities of the CIWMB have since been transferred to the California Department of Resources Recycling and Recovery (CalRecycle) after the abolishment of the CIWMB in 2010, but all other aspects of the Act remain unchanged.

The Act requires all local and county governments to adopt a waste reduction measure designed to manage and reduce the amount of solid waste sent to landfills. This Act established reduction goals of 25 percent by the year 1995 and 50 percent by the year 2000. Senate Bill 1016 (2007) streamlines the process of goal measurement related to Assembly Bill 939 by using a disposal-based indicator: the per capita disposal rate. The per capita disposal rate uses only two factors: the jurisdiction's population (employment can be considered in place of population in certain circumstances) and the jurisdiction's disposal as reported by disposal facilities. CalRecycle encourages reduction measures through the continued implementation of reduction measures, legislation, infrastructure, and support of local requirements for new developments to include areas for waste disposal and recycling on-site.

California Code of Regulations (Title 27)

Title 27 (Environmental Protection) of the California Code of Regulations defines regulations and minimum standards for the treatment, storage, processing, and disposal of solid waste at disposal sites. The State Water Resources Control Board maintains and regulates compliance with Title 27 (Environmental Protection) of the California Code of Regulations by establishing waste and site classifications and waste management requirements for solid waste treatment, storage, or disposal in landfills, surface impoundments, waste piles, and land treatment units. The compliance of the Proposed Project would be enforced by the San Diego RWQCB Region 9 and the California Department of Resources Recycling and Recovery (CalRecycle) (formerly the California Integrated Waste Management Board). Compost facilities are regulated under CCR Title 14, Division 7, Chapter 3.1 Section 17850 through 17895, by CalRecycle (CalRecycle, 2012). Permit requests, Reports of Waste Discharge, and Reports and Disposal Site Information are submitted to the RWQCB and CalRecycle, and are used by the two agencies to review, permit, and monitor these facilities (County of San Diego, 2007).

Local

As provided in CPUC General Order 131 D, the CPUC has exclusive jurisdiction over the siting, design, and construction of the Proposed Project, preempting local discretionary authority over the location and constructions of electrical utility facilities. Therefore, the Proposed Project is not subject to local discretionary utilities and services systems regulations. Nonetheless, as part of the environmental review process, consideration is given to relevant local plans and policies that pertain to utilities and services systems.

City of Oceanside General Plan-Land Use Element

An objective for the City is to assure the long-term efficient economic and aesthetic provision of public utilities to the City and its residents and businesses. The City aims to provide sufficient buffering from utility corridors and surrounding land uses to protect public safety and welfare, and ensure the long-term use of utility corridors. The City also aims to assure the City's citizens are appropriately served with suffi-

cient energy in the long-term (City of Oceanside, 2002). The following policies generally relate to the Proposed Project with respect to utilities and service systems in the City of Oceanside (City of Oceanside, 2002):

Utility Corridor Policies

- Policy 2.721 A. The City shall require sufficient screening, fencing, noise attenuation, landscaping, open space setbacks, or other permanent mitigation or buffering measures between utility corridors and adjacent and surrounding land uses in order to minimize to the maximum extent possible negative impacts to adjacent surrounding uses from the particular utility corridor.
- Policy 2.721 B. The City shall encourage the coordination and combination of multiple utilities into one unified corridor or corridor network so that negative impacts associated with utility corridors can be more effectively and efficiently mitigated, overall corridor maintenance costs are decreased, less land is used in corridor right-of-ways, and the citizens of Oceanside will have a clearer understanding of the importance and scope of a utility corridor network.
- Policy 2.721 C. The City shall restrict any development, improvement, and/or use of a utility corridor to assure the long-term low cost maintenance of the utility or utility corridor.

Water Supply Policies

- Policy 2.722 A. The City of Oceanside, which buys water from the San Diego County Water Authority, is responsible for storage facilities and the distribution system.
- Policy 2.722 B. Water supply and distribution facilities shall be funded by assessment districts except in older portions of the City that already have service.
- Policy 2.722 C. New development in unserved areas shall be approved only where an assessment district is formed that will provide storage facilities and the distribution system prior to occupancy.
- Policy 2.722 D. The water supply and distribution system shall be designed for the logical service unit area to allow for development of the services unit area at the intensity proposed by the General Plan.

Sewage Collection and Treatment Policies

- Policy 2.723 A. The system should be designed for a logical service unit to allow for full development of the service area at the intensity proposed by the General Plan.

Energy Policies

- Policy 2.725 B. The City shall encourage the use of energy efficient design, structures, materials, and equipment in all land development or uses.
- Policy 2.725 C. The City shall encourage the use of long-term lower cost energy sources.
- Policy 2.725 D. The City shall require the undergrounding of energy transmission lines and distribution systems to new land developments or uses.

Communication Systems Policies

- Policy 2.726 A. The City shall encourage planning for the future communication system needs of individual land developments or uses.
- Policy 2.726 B. Communication facilities shall be required to conform visually with surrounding land uses and/or natural features.

- Policy 2.726 C. The City shall require the consolidation and joint-use of communication facilities and structures whenever possible.

Pacific Coast Business Park, Industrial Master Development Plan

The proposed Ocean Ranch Substation site is within the Pacific Coast Business Park, which is part of the industrially designated area in the central portion of the City of Oceanside encompassing 124.31 acres. The Pacific Coast Business Park is within the Rancho del Oro Specific Plan Area. This Plan provides updated regulations and design standards for the Pacific Coast Business Park property (City of Oceanside, 2005, as referenced in SDG&E, 2016). The following policies generally relate to the Proposed Project with respect to utilities and service systems in the City of Oceanside (City of Oceanside, 2005):

Utilities and Communication Devices

- *All electric, telephone, gas, and cable service lines to individual lots or sites shall be installed and maintained underground.*
- *Exterior onsite utilities, including but not limited to drainage systems, sewers, gas lines, water lines and electrical, telephone, and communications wires and equipment, shall be installed and maintained underground.*
- *Antennas and devices for transmission or reception of any type of signals shall be located so as to screen their view from public areas. All exposed devices require specific approval by the Pacific Coast Business Park Review Board.*
- *Electrical equipment shall be mounted on the interior of a building wherever practical. When interior mounting is not practical, electrical equipment shall be screened with walls, berms or landscape materials. Where exterior mounting is required, locating electrical equipment along the side or rear of a building is desirable.*
- *Private sewer components (manholes, clarifiers, etc.) shall not be located within project entry drives nor within landscape areas. The components should be located in the aisles of parking lots or service drives towards the rear of a site.*

Applicant Proposed Measures

There are no APMs proposed with regard to Utilities and Service Systems.

5.18.2 Environmental Impacts and Mitigation Measures

a. Would the project exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

LESS THAN SIGNIFICANT. The primary uses of water during construction will be for dust control, soil compaction, and cement mixing. Water used for dust control and soil compaction will be dispersed onsite and will either evaporate or be absorbed into the ground, while water used for cement mixing will become incorporated into the concrete mixture; therefore, no wastewater generation is anticipated. Operation and maintenance of the proposed project will also not generate wastewater since the substation will be unstaffed and will contain no sanitary facilities on site.

Dewatering during trenching for underground cable placement and during the construction of the project is possible, but not anticipated. In the event that dewatering is necessary, the water will be pumped out and treated and encountered groundwater will be tested to meet requirements set by the Regional Water

Quality Control Board (RWQCB). Further treatment of encountered groundwater will be performed if needed. The water will be discharged to land within the conditional allowable average limit, transported to a nearby sewer inlet, or disposed of at an approved SDG&E disposal site. The water would be treated on site and would not require treatment at a wastewater facility to meet RWQCB requirements. Thus, the proposed project will have less than significant impacts related to wastewater treatment requirements.

b. Would the project require, or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

LESS THAN SIGNIFICANT. The Proposed Project would generate minimal demand for water or wastewater treatment. Portable toilets would be provided for construction work crews and would be removed after construction is completed. These toilets will be maintained by a licensed sanitation contractor. The main uses of water on site during construction are for dust control, soil compaction, and cement mixing. Water used for dust control and soil compaction will be dispersed onsite and will either evaporate or be absorbed into the ground, while water used for cement mixing will become incorporated into the concrete mixture; therefore, no wastewater generation is anticipated. Upon completion of construction, the proposed project would not generate substantial demand for water or wastewater treatment because the substation would be an unstaffed, automated facility and would not have sanitation facilities located on site. The only demand for water would come from landscaping irrigation at the proposed substation, which would be supplied by the City of Oceanside and would result in a minor amount of water consumption. Existing wastewater and water treatment facilities are adequate to accommodate the demand generated by the Proposed Project. Thus, the project would have less than significant impact that would not increase the need for the construction or expansion of water or wastewater treatment facilities.

c. Would the project require, or result in the construction of, new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

LESS THAN SIGNIFICANT. Construction of the Proposed Project would include grading and removal of existing vegetation from the proposed Ocean Ranch Substation site. Construction of the proposed project could temporarily accelerate sedimentation and reduce surface water quality by disturbing the immediate area of the substation. Stormwater drainage features, along with the construction best management practices (BMPs), would manage project-related stormwater without using offsite facilities. SDG&E will implement a Storm Water Pollution Prevention Plan (SWPPP) and a Spill Prevention, Control, and Countermeasure (SPCC) and adhere to its Water Quality Construction BMP Manual, all of which will minimize soil erosion and reduce drainage impacts. The proposed project site would be re-graded to make one large pad that is suitable for the substation equipment. As a result, the existing temporary desilting basin on the west pad will be re-graded and flow-through planter basins will be constructed. Similarly, the desilting basin on the east pad will be modified to serve as a permanent flowthrough planter basin. Runoff from the north-eastern corner of the site outside the limits of development will be collected by a series of catch basins and directed into the east basin. Because no new or expanded stormwater drainage facilities would be required for the project, this impact would be less than significant.

d. Would the project have sufficient water supplies available to serve the Proposed Project from existing entitlements and resources, or would new or expanded entitlements be needed?

LESS THAN SIGNIFICANT. Water would be required during construction for dust control, soil compaction, and concrete mixing and portable toilets would be provided for crew members. Tertiary-treated recycled water will be used to the extent feasible. However, if tertiary-treated recycled water is not available in

the required quantities at the time of project construction, potable water will be obtained from local water purveyors. The amount of water needed for dust control during construction would be minimal in comparison to available municipal water supplies, and water use for construction would be temporary. Upon completion of construction, the proposed project would require water only for landscaping irrigation at the proposed substation, which would be supplied by the City of Oceanside. Therefore, the proposed project would not be expected to exceed the existing water supplies available to serve the proposed project, and this impact would be less than significant.

e. Would the project result in a determination by the wastewater treatment provider that serves or may serve the Proposed Project that it has adequate capacity to serve the Proposed Project's projected demand in addition to the provider's existing commitments?

LESS THAN SIGNIFICANT. The proposed project would not generate wastewater during construction, operation, or maintenance. As discussed in item a above, there may potentially be wastewater created during project construction in the event that dewatering is needed, which is not anticipated. In such an event, the water would be treated and tested on site and would not require treatment by a separate wastewater treatment provider or facility. Disposal of water would be at an approved SDG&E disposal site. The water will be discharged to land within the conditional allowable average limit, transported to a nearby sewer inlet, or disposed of at an approved SDG&E disposal site. Any water potentially entering the municipal sewage system via a sewer inlet would be collected by the City of Oceanside's Wastewater Division and treated and disposed of at the San Luis Rey Wastewater Treatment Plant or the La Salina Wastewater Treatment Plant. The existing wastewater facilities would adequately accommodate the minor demand caused by project construction while serving existing commitments. Therefore, this impact would be less than significant.

f. Would the project be served by a landfill with sufficient permitted capacity to accommodate the Proposed Project's solid waste disposal needs?

LESS THAN SIGNIFICANT. During construction, the Proposed Project will generate waste from refuse, spoils, trash, and packaging. Excess soil from the excavation of trenches may also be transported to a local recycling or appropriately permitted waste disposal facility if the soil is not re-used onsite or otherwise recycled. Construction-related solid waste would be transported to the Palomar Transfer Station. After consolidation, the waste would go to the El Sobrante Landfill in Corona. Minimal waste would be generated during the operation and maintenance of the substation, as it would be unstaffed with the exception of during routine monthly maintenance. The total solid waste generated by construction of the Proposed Project is anticipated to be minor compared to the capacity of existing landfills. Therefore, the impact of solid waste disposal on landfill capacity would be less than significant.

g. Would the project comply with federal, state, and local statutes and regulations related to solid waste?

NO IMPACT. The California Integrated Waste Management Act of 1989, which emphasizes resource conservation through the reduction, recycling, and reuse of solid waste guide solid waste management requires that localities conduct a Solid Waste Generation Study (SWGS) and develop a Source Reduction Recycling Element (SRRE). The proposed project would operate in accordance with these applicable Solid Waste Management Policy Plans by including recycling where feasible. As identified in item f above, the landfills serving the site would have sufficient capacity to accommodate project construction solid waste disposal needs, and project solid waste disposal would not require the need for new or expanded landfill facilities. Therefore, the proposed project would comply with federal, State, and local statutes and regulations related to solid waste disposal limits and landfill capacities. No impact would occur.

5.19 Corona and Induced Current Effects

5.19.1 Environmental Setting

Corona

Corona is one of the phenomena associated with all energized electrical devices, including high-voltage transmission lines. The localized electric field near a conductor can be sufficiently concentrated to ionize air close to the conductors. This can result in a partial discharge of electrical energy called a corona discharge, or corona. The corona effect is the physical manifestation of discharged electrical energy into very small amounts of sound, radio noise, heat, and chemical reactions with air components. It is a phenomenon associated with all energized electrical devices but is especially common with high-voltage power lines.

The amount of corona produced by a power line is a function of several factors, including: line voltage; conductor diameter; conductor locations in relation to each other; condition of conductors and hardware; and local weather conditions including power line elevation above sea level. Corona typically becomes a design concern for power lines that are overhead at 230 kV and higher (i.e., transmission lines on poles or towers). It is less noticeable for lines that are operated at lower voltages (i.e., subtransmission and distribution-sized lines). The electric field gradient is greatest at the conductor surface. Larger-diameter conductors have lower electric field gradients at the conductor surface and, therefore, lower corona noise than smaller-diameter conductors. The corona effect would not be a design concern for underground portions of power lines, regardless of voltage level, because the energized conductors are fully enclosed in a semi-conducting layer within insulated cables that serve to equalize the electrical gradient at the surface of the components.

Induced Currents

Electric currents can be induced in metallic objects located within the electric fields created by power lines. An electric current can flow when an object has an induced charge and a path to ground is present. The amount of induced current that can flow is important to evaluate from a safety perspective because of the potential for electrical shocks to people and the possibility of electric arcs that could form across small gaps between conductive surfaces. These arcs can have the secondary effect of igniting flammable materials in the vicinity of the arc. In addition, induced currents are evaluated for their potential to lead to corrosion of metallic objects from the discharge of the induced current to ground.

From a safety perspective, the National Electrical Safety Code (NESC) specifies that transmission lines be designed to limit short circuit current from vehicles or large objects near the line to no more than 5 milliampere (mA). The California Public Utilities Commission (CPUC) General Order 128, Rules for Construction of Underground Electric Supply and Communication Systems, specifies the construction materials, clearances and depths for the underground components of the proposed distribution system, and General Order 95, Rules for Overhead Electric Line Construction Section 35, covers all aspects of design, construction, operation, and maintenance of electrical power lines and fire safety hazards. The Public Utilities Code, CPUC General Orders, and the NESC also address shock hazards to the public by providing guidelines on minimum clearances to be maintained for practical safeguarding of persons during the installation, operation, or maintenance of overhead transmission lines and their associated equipment.

5.19.2 Environmental Impacts and Assessment

The CEQA Guidelines do not provide significance criteria for evaluating impacts from corona or induced current effects. Corona and induced current from high-voltage power lines can cause environmental impacts through:

- Audible noise
- Radio and television interference
- Computer interference
- Disturbance of cardiac pacemakers
- Ignition of flammable materials
- Corrosion of buried metallic objects

The Proposed Project involves construction and operation of the new Ocean Ranch Substation with 69 kV power lines, 12 kV distribution lines, and telecommunications systems. No audible corona noise would occur with the new and modified underground 69 kV power lines because no new lengths of overhead line would occur with the Proposed Project. Existing overhead circuits operating at 69 kV typically cause noise at or below levels comparable to ambient baseline noise levels. With no new overhead high-voltage lines, there would be no impact from audible noise from the corona effect.

Although corona can generate high frequency energy that may interfere with broadcast signals or electronic equipment, this is generally not a problem for transmission or lower voltage power lines. The Institute of Electrical and Electronic Engineers (IEEE) has published a design guide (IEEE, 1971) that is used to limit conductor surface gradients so as to avoid corona levels that would cause electronic interference. Corona or gap discharges related to high frequency radio and television interference impacts are dependent upon several factors, including the strength of broadcast signals, and are anticipated to be very localized if they occur. Individual sources of adverse radio/television interference impacts can be located and corrected on the power lines. Conversely, magnetic field interference with electronic equipment such as computer monitors can be corrected through the use of software, shielding or changes at the monitor location. As a result, impacts from corona, radio/television interference, and magnetic field interference would be less than significant.

Induced currents and voltages on conducting objects near the proposed power lines would not pose a threat in the environment if the conducting objects are properly grounded. Project construction and operation would meet or exceed General Order 95 and General Order 128 standards, and work would be done in accordance with SDG&E's existing underground inspection and maintenance program and safety practices. Likewise, induced currents would not significantly increase the risk of fuel ignition in the area.

The electric fields associated with high-voltage transmission lines may be of sufficient magnitude to impact operation of a few older model pacemakers resulting in them reverting to an asynchronous pacing (IEEE, 1979). Substantial adverse effects would not occur with prolonged asynchronous pacing; periods of operation in this mode are commonly induced by cardiologists to check pacemaker performance. However, the electric field from the Proposed Project's 69 kV facilities would be shielded by being placed underground, which would eliminate any above ground electric field so that it would not impact operation of older model pacemakers. No mitigation measures would be required or recommended.

5.20 Mandatory Findings of Significance

MANDATORY FINDINGS OF SIGNIFICANCE	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
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?	☐	☒	☐	☐
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 past projects, the effects of other current projects, and the effects of probable future projects.)	☐	☐	☒	☐
c. Does the project have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

Significance criteria established by CEQA Guidelines, Appendix G.

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?

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED. The Proposed Project would be located on a previously filled and graded site supporting sparse vegetation. As described in Section 5.4, Biological Resources, no habitat for special-status species have been identified in the project study area. The project is not expected to result in impacts to habitats that support sensitive species. However, some species, such as burrowing owl, may locate in disturbed sites and some proposed staging yard sites have vegetation that may be used by special-status species. Implementation of the Applicant Proposed Measures BIO-1 through BIO-4 and Mitigation Measures B-1 (Biological Monitoring and Reporting) and B-2 (Worker Training), described in Section 5.4.2, would reduce these potential impacts to less than significant levels.

Similarly, Section 5.5, Cultural Resources, shows that the project would have a less than significant impact to important examples of the major periods of California history or prehistory. As described in Section 5.5, Cultural Resources, the Proposed Project could have an adverse effect on previously undiscovered cultural resources. With implementation of Mitigation Measure C-1 (Management of Unanticipated Discoveries of Historical Resources or Unique Archaeological Resources) the project would not eliminate important examples of major periods of California history or prehistory.

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 past projects, effects of other current projects, and the effects of probable future projects.)

LESS THAN SIGNIFICANT. CEQA defines a cumulative impact as an effect that is created as a result of the combination of the proposed project together with other projects (past, present, or future) causing

related impacts. Cumulative impacts of a project need to be evaluated when the project's incremental effect is cumulatively considerable and, therefore, potentially significant.

A list of cumulative projects used for this analysis is provided in Table 5.20-1. The list includes projects in the vicinity of the project area in the City of Oceanside in San Diego County. The projects were reviewed to identify whether the proposed project could contribute to cumulatively significant impacts when evaluated in combination with other projects. The projects listed are located a mile or less from the proposed substation site. Current and/or probable projects near staging yards for the proposed project were not analyzed for cumulative effects due to the minimal impacts from the loading and unloading activities that would occur should these sites be used by SDG&E and the unlikely event that these sites are used at all.

Table 5.20-1. Planned and Current Projects in the Vicinity of the Proposed Project

Project Name	Address	Proximity to Substation Site (approx.)	Type of Development	Description	Size (approx.)	Status	Anticipated Construction Schedule
College Boulevard Improvement Project	Intersection of College Blvd. and Oceanside Blvd.	0.5 miles	Nonresidential	4-lane to a 6-lane expansion	—	P	Unknown
Inland Rail Trail Bikeway	Through the cities of Oceanside, Vista, San Marcos, and Escondido	0.25 miles	Nonresidential	Part of the bikeway will pass near the project site	21 miles	U	2015–2018
FedEx Distribution Center	1400 Block Avenida del Oro	0.03 miles	Nonresidential	Package distribution center	38 acres	U	2015–2017
Da Vita Dialysis Medical Building	4182 Oceanside Blvd.	0.41	Nonresidential	Medical office building	0.24 acres	U	2016–Unknown
Pacific Ridge	Northwest corner of College Blvd. and Old Grove Rd.	0.35	Residential	317 residential units	28 acres	U	2016–Unknown

Source: SDG&E 2016; City of Oceanside, 2016.
Status: P = The project is pending in the formal application review process; U = The project is under construction.

As discussed in preceding Sections 5.1 through 5.19, many of the potential impacts of the proposed project would occur during construction, with few lasting operational effects. Because the construction-related impacts of the project would be temporary and localized, they would only have the potential to combine with similar impacts of other projects if they occur at the same time and in close proximity to the proposed project site. The construction of the projects listed in Table 5.20-1 are likely to overlap with that of the proposed substation at some point during its construction. The cumulative temporary and localized impacts of the construction of the proposed project are considered by issue area below. In addition, long-term impacts from the proposed project have the potential to combine with impacts from the projects listed in Table 5.20-1. These impacts are also considered by issue area.

Aesthetics. With the incorporation of SDG&E's proposed Standard Operating Procedures for aesthetics (Section 5.1), such as the Conceptual Landscape Plan, perimeter wall, and visual screening of staging yards, construction and operation of the proposed project would not result in significant impacts to visual resources. The proposed substation would be screened from public views by project landscaping,

a perimeter wall, and existing vegetation. The perimeter wall would be designed to blend with the neighboring buildings and provide continuity with the existing landscape. Transmission and distribution lines associated with the project would be installed underground. The most visually prominent feature of the Proposed Project from offsite would be a monopole and microwave dish installed at the south end of the property. Given the nearby light industrial and commercial development, the project's appearance will generally be consistent with the existing setting. Additional lighting and glare from the proposed project combined with those from the projects listed in Table 5.20-1 would have the potential to impact aesthetics in the area. However, while the incremental change in visual conditions associated with the proposed project would contribute to a cumulative change in visual conditions, it represents only a relatively minor incremental change in cumulative conditions. Therefore, the project's visual effects are less than significant and are not considerable enough to represent a significant cumulative impact.

Agriculture and Forestry Resources. There is no agricultural activity at the site and it is not zoned for agricultural uses by the City of Oceanside, nor is there agricultural activity in the vicinity of the site. The Proposed Project site is not in an area designated as "good" or "fair" for farming and is zoned for Limited Industrial uses and Planned Development. In addition, the substation site is previously disturbed and graded. The project would not contribute to cumulative impacts to agriculture and forestry resources.

Air Quality. Air emissions would result from both construction and operation of the substation. Emissions during the construction phase would include criteria air pollutants that could contribute to existing or projected violations of the ambient air quality standards for ozone and PM10. Other pollutants resulting from construction activities are accounted for in emissions inventories for regional air quality maintenance plans and would not impede attainment or maintenance of ozone or carbon monoxide (CO) standards. Excavation, grading, and other construction-related activities could potentially expose sensitive receptors to construction-related emissions, including emissions of fugitive dust, DPM, and other toxic air contaminants, which would expose the receptors to increased health risk and hazards. These would occur only during construction. Compliance with San Diego Air Pollution Control District (SDAPCD) and implementation of SDG&E's Standard Operating Procedures discussed in Section 5.3, Air Quality, and Section 4.12.3 of the Project Description, would reduce air emissions of particulate matter from the project to a less-than-significant level and the proposed project would not have a significant cumulative impact during construction.

SDG&E states that operation and maintenance activities would not materially increase with the addition of the proposed facilities to SDG&E's system. Since the substation would be unmanned, there would be no vehicular emissions associated with regular commuting to and from the substation. The operation and maintenance emissions (e.g., limited vehicle use) would be less than the emissions during construction activities and also less than the significance thresholds. Concurrent construction of other projects in close proximity to the proposed project would result in increased local air quality impacts for the duration of simultaneous construction activities. However, simultaneous construction projects would also need to comply with SDAPCD rules and regulations regarding criteria pollutants. Any potential adverse cumulative air quality impacts would be short-term (lasting for the duration of construction) and would not be cumulatively considerable; therefore, the cumulative impact would be less than significant.

Biological Resources. The Proposed Project, including the substation site and staging yards, is within an urbanized area and adjacent to busy roadways. Due to the previous grading and site preparation activities that were conducted for the Pacific Coast Business Park, no habitat for special-status plant species remains on the proposed project site. Therefore, construction and operation and maintenance of the Proposed Project would have no impacts to special-status plants or their habitat. However, pockets of open space remain and may be used by wildlife for foraging and breeding habitat and dispersal routes.

These biological resources could be affected by noise, dust, ground disturbance, sedimentation, and potential spills of hazardous materials. Potential impacts from the proposed project would be less than significant with the implementation of APMs and Mitigation Measures B-1 and B-2 discussed in Section 5.4, Biological Resources. These measures include biological monitoring, reporting, and surveys. Due to the predominance of disturbed lands in the project area, the proposed project would not represent a significant contribution to cumulative impacts. Therefore, no contribution to cumulative impacts would occur. In addition, the Proposed Project, and those listed in Table 5.20-1, are located in the San Diego Multiple Habitat Conservation Program area. Each of these projects are therefore required to minimize any impacts to state and federally listed species and/or habitats through compliance with CEQA, the federal ESA, the CESA, and/or applicable local habitat conservation plans. Thus, any impacts to biological resources from these projects would be avoided and, as such, cumulatively considerable impacts to biological resources would be less than significant.

Cultural and Paleontological Resources. There are no known historical or unique archaeological resources identified within the Proposed Project area; however, previously unknown buried historical resources or human remains could be discovered and damaged, or destroyed, during ground disturbing work. Short-term construction activities and operation and maintenance activities would not significantly affect any unknown cultural resources or human remains with the implementation of Mitigation Measures C-1 and C-2, as discussed in Section 5.5, Cultural and Paleontological Resources. In addition, as part of SDG&E's Standard Operating Procedures, workers would receive training through an environmental and safety awareness program that includes education on paleontological resources. No cultural resources would be affected during project construction or during operation of the project, and no contribution to cumulative impacts would occur.

Geology and Soils. The project would not increase potential risks associated with seismic events or other geologic hazards. Short-term construction impacts to soils, including unstable soils, have the potential to occur; however, implementation of SDG&E's Standard Operating Procedures, Best Management Practices outlined in the SDG&E's Water Quality Construction BMP Manual, and final geotechnical recommendations would reduce the impacts to a less than significant level and the proposed project impacts are not considerable enough to represent a significant cumulative impact. Adherence to similar design and engineering standards, which are applicable to all of the projects listed in Table 5.20-1, ensure that their cumulative impacts to geology and soils would also be less than significant.

Greenhouse Gas Emissions. Greenhouse gas (GHG) emissions would result from the burning of fuel required to operate construction equipment and vehicle use during construction activities. Primary GHG emissions during construction are associated with CO_2 from the combustion of gasoline and diesel fuel in equipment and vehicles. CH_4 and N_2O are also emitted from fuel combustion but at rates of less than 1 percent of the mass of CO_2 combustion emissions. Construction-related emissions would be distributed over 20 months. These estimated levels would not exceed the threshold level of 25,000 metric tons per year for annual mandatory reporting of GHGs. Any potential adverse GHG impacts would be short-term and not cumulatively considerable; therefore, GHG emissions during construction would have a less than significant cumulative impact.

GHG emissions from operation and maintenance would be minimal, as the substation and power lines would be unmanned and would require only infrequent maintenance. Potential leaks due to the use of sulfur hexafluoride (SF_6) as an insulating agent within the circuit breakers at the substation during operation and maintenance will be monitored and reduced through SDG&E's incorporation of their Standard Operating Procedures and would comply with California Air Resources Board (CARB) requirements on use and reporting. The small amount of emissions created during construction and operation and main-

tenance would result in a relatively minor incremental change in cumulative conditions and would not significantly contribute to cumulative impacts.

Hazards and Hazardous Materials. The use of hazardous materials for the project would be minimal during construction and operation. Hazardous materials would be stored and used in compliance with applicable regulations. The project would not result in an increase in usage of hazardous materials. Impacts from routine use, transportation, disposal, and accidental spillage of hazardous materials would be reduced to a less than significant level with implementation of SDG&E's Standard Operating Procedures and Mitigation Measure T-1 discussed in Section 5.8, Hazards and Hazardous Materials; no contribution to cumulative impacts would occur.

Hydrology and Water Quality. The project would not substantially change existing drainage patterns at the site, which was previously filled and graded. The Proposed Project would require minimal water for dust control during construction and minimal use of water for irrigation of landscape vegetation during operation. The existing drainage pattern on the site would be altered internally by regrading and construction of new planter basins at the location of existing detention basins. There would be altered drainage paths to the new basins, but this would have no adverse effect on overall drainage patterns. Dewatering during trenching for underground cable placement and during the construction of the project is possible, but not anticipated. In the event that dewatering is necessary, the water would be pumped out and treated and encountered groundwater would be tested to meet requirements set by the Regional Water Quality Control Board (RWQCB). With the implementation of the measures discussed in Section 5.9, Hydrology and Water Quality, such as SDG&E's Water Quality Construction BMP Manual and their Storm Water Pollution Prevention Plan (SWPP), the construction and operation of the substation would not adversely impact hydrology or water quality in the project area or contribute to a significant cumulative impact.

Land Use. The Proposed Project is consistent with local zoning. Currently, the site is located on disturbed land, which consists of nonnative vegetation and soils characterized by physical disturbance. The current land use classification for the proposed Ocean Ranch Substation and all four staging yards is undeveloped, disturbed land. The surrounding land uses in the project area and adjacent areas include light industrial and commercial. In addition, the proposed project, as well as the projects listed in Table 5.20-1, are required to minimize any impacts to state and federally listed species and/or habitats through compliance with CEQA, the federal ESA, the CESA, and/or applicable local habitat conservation plans. The project would, therefore, not conflict with applicable land use policies and regulations and would not contribute to cumulative impacts to land use.

Mineral Resources. No commercial mineral resources are known to exist within the project area nor within the vicinity of the substation site. Therefore, the proposed project would not result in the loss of availability of a known mineral resource. The project would not contribute to potential cumulative impacts that may result in the loss of mineral resources.

Noise. The proposed project is not expected to contribute to a long-term cumulative impact on ambient noise levels in the project area. Noise from construction activities would be audible to nearby businesses, but most construction would be limited to daytime hours and would be short-term. Any required nighttime work would be of extremely short duration. Impacts from noise to nearby sensitive receptors (e.g., schools, residences) would be less than significant through compliance with applicable noise codes and the implementation of Mitigation Measures N-1 through N-4. It is assumed that the projects listed in Table 5.20-1 would also be constructed during daytime construction timeframes. Besides the FedEx Distribution Center, which is expected to be completed before construction of the proposed project is set to begin, none of the projects listed in Table 5.20-1 are located in the immediate

vicinity of the proposed project or have sufficiently varied construction schedules as to make combined construction noise unlikely. These projects are therefore not likely to combine with noise generated from the construction of the proposed project to create significant adverse effects since noise reduces rapidly with distance.

Operational noise levels of the substation would be within allowable limits. Routine inspection and maintenance of the proposed project would be accomplished through periodic visits to the substation site and would not normally involve a large crew. The project would result in a less than significant noise impact during construction and operations and will not contribute to a significant cumulative impact.

Population and Housing. The proposed project would not result in impacts to population and housing. During its construction, the substation would provide short-term jobs for a small workforce. Construction workers would be existing local SDG&E staff or contracted workers from the region. These jobs are not anticipated to result in workers relocating to the area. The project would not displace any existing housing or people. The proposed project, combined with those from the projects listed in Table 5.20-1, will have the potential to increase the population in the area due to increased job or housing opportunities. The Proposed Project itself can facilitate future planned growth by ensuring reliable electricity to the area served by the substation. While the development of these properties may induce some population growth, this has already been accounted for through the General Plan for the City of Oceanside. The substation is proposed to increase system reliability and to serve planned growth in the area. The incremental change in visual conditions associated with the proposed project represents only a relatively minor incremental change in cumulative conditions. Therefore, the project's population and housing impacts would be less than significant and are not considerable enough to represent a significant cumulative impact.

Public Services. The Proposed Project would not require the cessation or interruption of fire or police protection services, schools, access to public parks, or other public facilities; nor would it required the construction of new public service facilities. Following construction, operation of the substation could result in instances requiring fire protection or police protection services. The completion of the projects listed in Table 5.20-1, in particular the proposed the residential development, may have the potential to also increase the demand for public services and public facilities, including schools, parks, and fire and police protection. However, impacts from the proposed project on public services would be incremental and would not contribute to a cumulatively significant impact.

Recreation. Although some workers may use nearby park facilities during project construction, increased use would be minimal and temporary and would not contribute substantially to the physical deterioration of existing facilities. The projects from Table 5.20-1 also have the potential to add users to park facilities, but the increased use would also be minimal and, in most cases, temporary. The project would have less than significant effects on recreation and would not contribute to cumulative effects associated with other projects.

Transportation and Traffic. Construction of the proposed project would have the potential for temporary impacts to traffic volumes, level-of-service standards, road hazards, and emergency access. Use of local roads for transport of construction equipment and construction personnel would increase traffic slightly but would be temporary and short-term, and would not exceed existing capacities. The underground power line duct bank installation would require temporary lane closures. Impacts due to traffic and temporary lane closures as a result of the construction of the proposed project would be reduced to a less than significant level with implementation of SDG&E's Standard Operating Procedures and Mitigation Measure T-1, Construction Traffic Control Plan, discussed in Section 5.16, Transportation and Traffic. Impacts from the Proposed Project, combined with construction of the projects listed in Table 5.20-1,

would have the potential to cumulatively impact transportation and traffic in the surrounding area; however, the construction schedules of the projects listed in Table 5.20-1 and that of the proposed project are varied, with the construction of the FedEx Distribution Center, which is closest to the proposed substation site, expected to be completed by the time the proposed project would begin construction. In addition, it is not anticipated that the planned and current projects in the proposed project's vicinity will require lane closures simultaneously. Adherence to the measures discussed in Section 5.16 will ensure that the proposed project's cumulative impacts transportation and traffic will be incremental, short-term, and less than significant.

Tribal Cultural Resources. There are no known Tribal Cultural Resources (TCRs) identified during AB 52 Native American consultation or that are listed in, or are known to be eligible for listing in, the California Register of Historical Resources (CRHR) or local register of historical resources within the Proposed Project or the 0.25-mile surrounding area. However, it is possible that previously unidentified TCRs that may be eligible for inclusion in the CRHR or local registers could be discovered and damaged, or destroyed, during ground disturbance, which would constitute a significant impact absent mitigation. Mitigation Measures C-1 and C-2, discussed in sections 5.5, Cultural and Paleontological Resources, and 5.17, Tribal Cultural Resources, would evaluate and protect unanticipated TCR discoveries. Adherence to the mitigation measures would ensure that no tribal cultural resources would be affected during project construction or during operation of the project, and no contribution to cumulative impacts would occur.

Utilities and Service Systems. The construction of the Proposed Project would temporarily require a minimal water supply and would potentially generate wastewater that would be appropriately treated. Construction would require the disposal of a less than significant amount of all types of waste. No expanded facilities or services would be needed for the project, and use and disposal of all water and waste products would comply with all applicable laws and regulations. Since the substation would be an unstaffed, automated facility and would not have sanitation facilities located on site, impacts to utilities and service systems during operation and maintenance would be mostly limited to water use for landscape irrigation at the site that would result in a minor amount of water consumption. Therefore, a less than significant contribution to cumulative impacts to utilities and service systems would occur.

Corona and Induced Current Effects. No other planned or current project in the vicinity of the proposed project, besides the proposed project, will result in corona or induced current effects due to the nature of the purpose and design of those projects. The proposed project will not contribute to a cumulative impact to corona and induced current effects.

c. Does the project have environmental effects, which would cause substantial adverse effects on human beings, either directly or indirectly?

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED. The Proposed Project would not substantially adversely affect human beings directly or indirectly. The Initial Study identified no environmental effects that would cause substantial adverse effects on human beings. Adverse effects would be mitigated by implementation of APMs and mitigation measures and in most instances would be related to short-term construction impacts. There are no residences or schools adjacent to or in close proximity to the project; the nearest schools are 0.25 miles distant and the nearest residences are 0.3 miles distant. Nearby businesses could be affected during construction by impacts related to air quality, hazardous materials, and noise. These potential impacts would be reduced to a less than significant level with the implementation of the APMs and mitigation measures included in this Initial Study.

Section 6

Mitigation Monitoring Plan

6. Mitigation Monitoring Plan

SDG&E proposes to construct and operate the Ocean Ranch Substation Project ("Proposed Project"). An Initial Study was prepared to assess the Proposed Project's potential environmental effects. The Initial Study was prepared based on information in the Proponent's Environmental Assessment (PEA), project site visits, and supplemental research. The majority of the Proposed Project's impacts would occur during project construction. Within SDG&E's application, Applicant Proposed Measures (APMs) were proposed to reduce potentially significant adverse impacts related to project construction and operation.

The purpose of this Mitigation Monitoring Plan is to ensure effective implementation of each APM, as well as the mitigation measures identified by the Initial Study and imposed by the CPUC as part of project approval.

This Mitigation Monitoring Plan includes:

- The Applicant Proposed Measures and mitigation measures that SDG&E must implement as part of the Proposed Project;
- The actions required to implement these measures;
- The monitoring requirements; and
- The timing of implementation for each measure.

A CPUC-designated environmental monitor will carry out all construction field monitoring to ensure full implementation of all measures. In all instances where non-compliance occurs, the CPUC's designated environmental monitor will issue a warning to the construction foreman and SDG&E's project manager. Continued non-compliance shall be reported to the CPUC's designated project manager. Any decisions to halt work due to non-compliance will be made by the CPUC. The CPUC's designated environmental monitor will keep a record of any incidents of non-compliance with mitigation measures, APM, or other conditions of project approval. Copies of these documents shall be supplied to the CPUC.

6.1 Minor Project Refinements

The CPUC along with its environmental monitors will ensure that any project variance or deviation from the procedures identified under the monitoring program is consistent with CEQA requirements; no project variance will be approved by the CPUC if it creates new significant impacts. A variance should be strictly limited to minor project changes that will not trigger other permit requirements, that does not increase the severity of an impact or create a new impact, and that clearly and strictly complies with the intent of the mitigation measure. If a proposed change to the project has the potential for creating significant environmental effects, it will be evaluated to determine whether supplemental CEQA review is required. Any proposed deviation from the approved project, adopted mitigation measures, and Applicant Proposed Measures, and correction of such deviation, shall be reported immediately to the CPUC and the environmental monitor assigned to the construction site for their review and approval. In some cases, a variance may also require approval by a CEQA responsible agency.

6.2 Dispute Resolution

It is expected that the Mitigation Monitoring Plan will reduce or eliminate many potential disputes. However, even with the best preparation, disputes may occur. In such event, the following procedure will be observed:

- **Step 1.** Disputes and complaints (including those of the public) should be directed first to the CPUC-designated Project Manager for resolution. The Project Manager will attempt to resolve the dispute.
- **Step 2.** Should this informal process fail, the CPUC Project Manager may initiate enforcement or compliance action to address deviations from the Proposed Project or adopted Mitigation Monitoring Plan.
- **Step 3.** If a dispute or complaint regarding the implementation or evaluation of the Mitigation Monitoring Plan cannot be resolved informally or through enforcement or compliance action by the CPUC, any affected participant in the dispute or complaint may file a written "notice of dispute" with the CPUC Executive Director. This notice should be filed in order to resolve the dispute in a timely manner, with copies concurrently served on other affected participants. Within 10 days of receipt, the Executive Director or designee(s) shall meet or confer with the filer and other affected participants for purposes of resolving the dispute. The Executive Director shall issue an Executive Resolution describing his/her decision, and serve it on the filer and other affected participants.
- **Step 4.** If one or more of the affected parties is not satisfied with the decision as described in the Resolution, such party(ies) may appeal it to the Commission via a procedure to be specified by the Commission.

Parties may also seek review by the Commission through existing procedures specified in the CPUC Rules of Practice and Procedure for formal and expedited dispute resolution, although a good faith effort should first be made to use the foregoing procedure.

Table 6-1. Mitigation Monitoring Plan

Impact	Applicant Proposed Measure (APM) or Mitigation Measure	Monitoring Requirement	Timing of Action
	Biological Resources		
APM BIO-1	*General Biological Resources.* ▪ The Proposed Project work areas shall be limited to the sites specified in the project description. Access to the project site shall utilize existing access roads, where possible. Parking, driving, and storing of vehicles will be limited to previously disturbed, compacted, and developed areas, where possible. ▪ A contractor education program will be conducted by a qualified biologist. It will be conducted during all project phases and cover: (1) the potential presence of listed species and their habitats; (2) the requirements and boundaries of the project (e.g., areas delineated on maps and by flags or fencing); (3) the importance of complying with avoidance and minimization measures; (4) environmentally responsible construction practices; (5) identification of sensitive resource areas in the field; and (6) problem reporting and resolution methods. ▪ A qualified biologist will be assigned to the Proposed Project. The designated biologist will have the authority to halt construction in that segment of the Proposed Project to prevent impact to any listed species. ▪ Heavy equipment, construction, equipment maintenance, and staging activities will occur in designated areas and be restricted to existing roads and disturbed areas to the maximum extent practicable. ▪ Where possible, laydown, stockpiling, parking, driving, and storing of vehicles and equipment will be limited to previously disturbed/compacted and developed areas within and immediately adjacent to existing roads.	Review & attend contractor education program.	Prior to and during construction
APM BIO-2	*Vegetation and Special-Status Plant Species.* ▪ Disturbance to adjacent native vegetation will be avoided to the greatest extent.	Monitor to ensure that construction activities and vehicles are limited to approved disturbance areas	Prior to and during construction

Table 6-1. Mitigation Monitoring Plan

Impact	Applicant Proposed Measure (APM) or Mitigation Measure	Monitoring Requirement	Timing of Action
APM BIO-3	*Migratory Birds.* ▪ Pre-construction nest surveys will be conducted by a qualified biologist if construction or demolition activities on the project site occurs between January 1 and August 31 (nesting season). Surveys shall cover all potential nesting habitat within the PSA and be repeated on a weekly basis throughout the nesting season. If SDG&E determines that any staging yards included in the proposed project, is not needed, then those staging yards will be exempt from nest surveys ▪ If an active nest is found within the Proposed Project at any time, work will stop immediately in the immediate area of the nest and redirected away from the nest location. A no disturbance buffer zone will be established around each nest. The size of the buffer zone for non-special-status species will be determined by a qualified biologist. Any activities that might, in the opinion of the biological monitor, disturb nesting activities, will be prohibited in the buffer zone. If an active nest of a special-status species is identified, SDG&E shall consult with the USFWS and CDFW to determine the size of the buffer zone (except for burrowing owls, which will be determined in accordance with APM BIO-4). Nest locations will be mapped using GPS technology. ▪ The biological monitor will monitor all active nests and buffers at least once per week, to determine whether birds are being disturbed. If signs of disturbance or distress are observed, the biological monitor shall immediately implement adaptive measures to reduce disturbance. These measures could include, but are not limited to, increasing buffer size, halting disruptive construction activities in the vicinity of the nest until fledging is confirmed, or placement of visual screens or sound dampening structures between the nest and construction activity. ▪ The qualified biologist or biological monitor will monitor the nest until he or she determines that nestlings have fledged and dispersed or the nest is no longer active. The results of nest surveys and nest monitoring shall be included in biological monitoring reports, described in Mitigation Measure B-1 (Biological Monitoring and Reporting).	Review survey results and monitor implementation of required remedial activities.	Prior to and during construction

Table 6-1. Mitigation Monitoring Plan

Impact	Applicant Proposed Measure (APM) or Mitigation Measure	Monitoring Requirement	Timing of Action
APM BIO-4	*Special Status Wildlife Species.* ▪ Protocol-level surveys for the burrowing owl shall occur prior to the commencement of construction. The survey shall be conducted by a qualified biologist in accordance with the Staff Report on Burrowing Owl Mitigation. The surveys shall commence at least 30 days and not less than 14 days prior to construction. The survey results shall be provided to SDG&E within 14 days following completion of surveys. ▪ If burrowing owls are detected within the Project Study Area, measures consistent with the methodology as established in the Staff Report on Burrowing Owl Mitigation and in concurrence with the local CDFW office will be implemented. This includes, but is not limited to the use of buffers around burrows, inspection of equipment, monitoring, and the potential for development of a Burrowing Owl Exclusion Plan approved by the local CDFW office. ▪ Prior to the commencement of the construction phase, a qualified biologist shall conduct a preconstruction survey/sweep of Melrose Staging Yard to determine the presence of the western yellow bat. If the western yellow bat is not found during the initial preconstruction survey/sweep, the staging yard will be resurveyed weekly while the yard is in use for the project. Surveys will be conducted year-round. If roosts are found during the survey sweeps, a no disturbance buffer zone will be established of 165 feet from any active roost and 300 feet from any active maternity roost. The qualified biologist shall consult with CDFW to determine the appropriate buffer limits to adequately protect the species and the buffer sizes listed above may be reduced with concurrence from CDFW. The buffers will remain in place until the staging yard is no longer used for this project or until the bat(s) have left the roost and a buffer is no longer necessary.	Review survey results and monitor implementation of required remedial activities.	Prior to and during construction

Table 6-1. Mitigation Monitoring Plan

Impact	Applicant Proposed Measure (APM) or Mitigation Measure	Monitoring Requirement	Timing of Action
Biological monitoring and reporting	**B-1. Biological monitoring and reporting.** SDG&E shall assign a qualified biologist or biological monitor to the Project to monitor work during the construction phase and inspect the Project site at least once per week, or until such time that construction activities at locations identified by the monitor no longer have the potential to impact special-status species, native vegetation, wildlife habitat, or sensitive biological resources. The qualified biologist or biological monitor is responsible for ensuring that impacts to special-status species, native vegetation, wildlife habitat, and sensitive or unique biological resources are avoided or minimized to the fullest extent safely possible. Monitors are also responsible for communicating with construction supervisors and crews to ensure that work activities are conducted in compliance with APMs, mitigation measures, permit conditions, and other project requirements. The qualified biologist or biological monitor shall clearly mark sensitive biological resource areas with staking, flagging, or other appropriate materials that are readily visible and durable, and ensure that work activities are contained within approved disturbance area boundaries at all times. The monitors will inform work crews of these areas and the requirements for avoidance, and will inspect these areas at appropriate intervals for compliance with regulatory terms and conditions. The qualified biologist or biological monitor shall have the authority and responsibility to halt any project activities that are not in compliance with applicable mitigation measures, APMs, permit conditions, or other project requirements, or will have an unauthorized adverse effect on biological resources. The qualified biologist or biological monitor shall, to the extent safe, practicable, and consistent with mitigation measures and permit conditions, actively or passively relocate wildlife out of harm's way. Handling, relocation, release from entrapment, or other interaction with wildlife shall be performed consistent with mitigation measures, safety protocols, permits (including CDFW and USFWS permits), and other project requirements. If safety or other considerations prevent the qualified biologist or biological monitor from aiding trapped wildlife or wildlife in harm's way, SDG&E shall consult with the construction contractor, CDFW, wildlife rehabilitator, or other appropriate party to obtain aid for the animal. The qualified biologist or biological monitor shall communicate with work crews to ensure that all excavations, open tanks, trenches, pits, or similar wildlife entrapment hazards have been covered or have ramps installed to prevent wildlife entrapment, and communicate with work crews to ensure these structures are installed and functioning properly. Monitoring activities shall be thoroughly and accurately documented during each monitoring visit or inspection and shall include: ▪ Any special-status species observations, including location of observation, location and description of project activities in the vicinity, and any measures taken to avoid the species. In addition, all special-status species observations shall be reported to the California Natural Diversity Database (CNDDB). ▪ Bird nesting activities and buffers established. ▪ Wildlife entrapments and relocations. ▪ All non-compliance incidents, including nest buffer incursions, with resolution or remedial actions taken. ▪ Any other information relevant to compliance with biological resource APMs, mitigation measures, permit conditions, or other project requirements.	Monitor implementation of specified biological monitor activities.	Prior to and during construction

Table 6-1. Mitigation Monitoring Plan

Impact	Applicant Proposed Measure (APM) or Mitigation Measure	Monitoring Requirement	Timing of Action
	The qualified biologist or biological monitor shall compile this information into a brief monthly summary report to be submitted to the CPUC within 30 calendar days of the end of each month. At the conclusion of construction activities, a final project summary report shall be submitted to the CPUC within 90 calendar days of the end of construction.		
Worker Training	**B-2. Worker Training.** The contractor education program defined by APM BIO-1 shall stipulate the following general behavior requirements: 1. No wildlife may be harmed, except to protect life and limb. 2. Firearms shall be prohibited except for those used by security personnel. 3. Feeding of wildlife shall be prohibited. 4. SDG&E personnel shall not bring pets to work areas. 5. Plant or wildlife species shall not be collected under any circumstance, unless by an authorized/ permitted biologist. 6. Littering shall not be allowed. SDG&E shall not deposit or leave any food or waste in any work area. 7. Wildfires shall be prevented or minimized by exercising care when driving and by not parking vehicles where catalytic converters can ignite dry vegetation. The use of shields, protective mats, or other fire prevention methods shall be used during grinding and welding to prevent or minimize the potential for fire. Care shall be exhibited when smoking in permitted areas. 8. Field crews shall refer environmental issues, including wildlife relocation, dead or sick wildlife, hazardous waste, or questions about avoiding environmental impacts, to a biologist(s) approved by the CPUC, USFWS, and CDFW. Other CPUC, USFWS, or CDFW biologists or experts in wildlife handling may need to be brought in for assistance with wildlife relocations. 9. Night lighting shall be of the lowest illumination allowed for human safety, selectively placed, shielded, and to the maximum extent practicable, directed so as to not disturb adjacent land uses or streets. 10. Vehicle speeds on the project site shall be maintained at 15 mph or less.	Review & attend contractor education program. Monitor training implementation.	Prior to construction and during construction

Table 6-1. Mitigation Monitoring Plan

Impact	Applicant Proposed Measure (APM) or Mitigation Measure	Monitoring Requirement	Timing of Action
	Cultural Resources		
APM CUL-1	*Paleontological Resource Monitoring Program.* ▪ A paleontological resource monitoring program will be implemented during construction. The program will include construction monitoring, fossil salvage, laboratory preparation of salvaged specimens, curation of prepared specimens, and storage of curated specimens. A qualified paleontologist will be onsite to monitor all ground disturbing activities (e.g., grading and excavation) within native sediments, until the monitor determines monitoring activities are not necessary. The monitor will inspect all fresh cut slopes and trenches, spoils piles, and graded pad surfaces for unearthed fossil remains. If any paleontological find is identified during monitoring, then the monitor will communicate with the general environmental monitor and the construction manager. Salvage may include techniques such as "pluck-and-run," hand quarrying, and bulk matrix sampling and screen-washing. The monitor will also collect stratigraphic data to define the nature of fossiliferous sedimentary rock units within the Proposed Project area, their geographic distributions, and their lithologic characteristics. Paleontological monitoring would not be required in locations where artificial imported fill materials occur for the full depth of the proposed ground disturbance.	Review Paleontological Resource Monitoring Program for compliance with APM CUL-1. Monitor implementation of Program.	Prior to construction and during construction
Unanticipated discoveries	**C-1. Management of Unanticipated Discoveries of Historical Resources or Unique Archaeological Resources.** Unanticipated discovery protocols shall be communicated to project workers as part of the contractor education program. If previously unidentified cultural resources are identified during construction activities, construction work within 100 feet of the find shall be halted and directed away from the discovery until a Secretary of the Interior qualified archaeologist and tribal representative assesses the significance of the resource. The archaeologist, in consultation with the County, SHPO, any interested Tribes, and any other responsible public agency, shall make the necessary plans for recording and curating the find(s) and for the evaluation and mitigation of impacts if the finds are found to be eligible to the National Register of Historic Places or California Register of Historical Resources, or qualifies as a unique archaeological resource under CEQA Section 21083.2.	Review & attend contractor education program. Monitor implementation of unanticipated discovery protocols.	Prior to construction and during construction

Table 6-1. Mitigation Monitoring Plan

Impact	Applicant Proposed Measure (APM) or Mitigation Measure	Monitoring Requirement	Timing of Action
Human Remains	**C-2. Appropriate Treatment of Human Remains.** Upon discovery of human remains, all work within 100 feet of the discovery area must cease immediately, the area must be secured, and the following actions taken: ▪ The land manager/owner of the site is to be called and informed of the discovery. ▪ The San Diego County Coroner's Office is to be called. The Coroner has two working days to examine the remains after notification (Health and Safety Code Section 7050.5(b). The Coroner will determine if the remains are archaeological/historic or of modern origin, and if there are any criminal or jurisdictional questions. The Coroner will make recommendations concerning the treatment and disposition of the remains to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in Section 5097.98 of the Public Resources Code. ▪ If the Coroner believes the remains to be those of a Native American, he/she shall contact the NAHC by telephone within 24 hours. The NAHC will immediately notify the person it believes to be the most likely descendant (MLD) of the remains. ▪ The MLD has 48 hours to make recommendations to the land owner for treatment or disposition of the human remains. If the descendant does not make recommendations within 48 hours, the land owner shall re-inter the remains in an area of the property secure from further disturbance. If the land owner does not accept the descendant's recommendations, the owner or the descendant may request mediation by NAHC. Per California Health and Safety Code, six or more human burials at one location constitutes a cemetery (Section 8100) and willful disturbance of human remains is a felony (Section 7052).	Monitor implementation of human remain discovery protocols.	During construction
	Hazards and Hazardous Materials		
Interfere with emergency vehicles	See **T-1 Construction Traffic Control Plan** (Transportation and Traffic, below)		Prior to construction and during construction
	Noise		
Construction Noise	**N-1. Minimize Construction Vehicle, Equipment, and Traffic Noise.** SDG&E shall maintain construction equipment and vehicle mufflers in accordance with equipment vendor specifications on all engines used in construction. Where feasible, construction traffic shall be routed to avoid noise-sensitive areas, such as residences, educational facilities, hospitals, convalescent homes, and parks.	Monitor implementation.	During construction

Table 6-1. Mitigation Monitoring Plan

Impact	Applicant Proposed Measure (APM) or Mitigation Measure	Monitoring Requirement	Timing of Action
Hours limitation	**N-2. Limit Construction Noise to Daytime Hours.** SDG&E shall not operate any pneumatic hammer, pile driver, excavator, crane, hoist, or other equipment which generates loud or unusual noise from the hours of 10:00 p.m. to 7:00 a.m. Exceptions for work outside of these hours shall be allowed for project safety, to take advantage of the limited times when power lines can be taken out of service, to complete project work that must occur continuously without interruption, or as determined to be warranted by the CPUC. If nighttime work is needed because of clearance restrictions on power lines, SDG&E shall take appropriate measures to minimize disturbance to local residents, if any are within 500 feet of the work site, by informing them in advance of the work schedule and probable inconveniences.	Monitor implementation.	During construction
Blasting	**N-3. Secure City of Oceanside Explosive Permit for Blasting Activity.** In the event that blasting is required, SDG&E shall prepare and submit a plan for blasting that quantifies the resulting noise and vibration levels from the use of explosives. The plan shall in compliance with City of Oceanside procedures and requirements for all blasting activities and shall be submitted to the CPUC before blasting at each site.	Review Blasting Plan(s). Monitoring Plan(s) implementation.	Prior to construction and during construction.
Blasting	**N-4. Avoid Blasting Where Damage to Structures Could Occur.** Blasting shall be managed with a plan for each site. The plan shall include the blasting methods, surveys of existing structures and other built facilities, and distance calculations to estimate the area of effect of the blasting. The blasting plan shall identify and implement construction techniques available as an alternative to rock blasting for locations where damage to vulnerable structures could occur, where the distance depends on the force of the explosives under consideration. Rock anchoring or a mini-pile system shall be used if adjacent structures could be damaged as a result of blasting or any construction method used as an alternative to blasting. If any structure is inadvertently adversely affected by construction vibration from rock blasting, the structure shall be restored to conditions equivalent to those prior to blasting. SDG&E shall then fairly compensate the owner of any damaged structure for lost use of the property.	Compensate for any damage	During construction

Table 6-1. Mitigation Monitoring Plan

Impact	Applicant Proposed Measure (APM) or Mitigation Measure	Monitoring Requirement	Timing of Action
	Traffic/Transportation		
Construction traffic control	**T-1. Construction Traffic Control Plan.** Prior to the start of construction, San Diego Gas & Electric (SDG&E) shall prepare and submit a Construction Traffic Control Plan for review and approval to the City of Oceanside for public roads and transportation facilities that would be directly affected by the construction activities and/or would require permits and approvals. SDG&E shall submit the Construction Traffic Control Plan to the California Public Utilities Commission (CPUC) prior to conducting activities covered in the traffic control permits. The Construction Traffic Control Plan shall include, but not be limited to: ▪ The locations and use of flaggers, warning signs, lights, barricades, delineators, cones, arrow boards, etc., according to standard guidelines outlined in the Manual on Uniform Traffic Control Devices, the Standard Specifications for Public Works Construction, and/or the California Joint Utility Traffic Control Manual. ▪ Additional methods to reduce temporary traffic delays and trips during peak travel hours (8:00-10:00 a.m. and 4:00-6:00 p.m.) to the maximum extent feasible. ▪ Typical access routes between all staging areas and the proposed Ocean Ranch Substation work areas. To the extent feasible, access routes should minimize travel on College Boulevard. ▪ Defining methods to coordinate with all agencies responsible for encroachment permits throughout construction to minimize cumulative lane disruption impacts should simultaneous construction projects affect shared segments/portions of the circulation system. ▪ Prior to the start of construction, provide (or identify the timing to provide) copies of all approved permits and agreements to the CPUC and methods to comply with all specified requirements. ▪ Plans to coordinate in advance with emergency service providers to avoid restricting the movements of emergency vehicles. Police departments and fire departments shall be notified in advance by SDG&E of the proposed locations, nature, timing, and duration of any roadway disruptions, and shall be advised of any access restrictions that could impact their effectiveness. At locations where roads will be blocked, provisions shall be ready at all times to accommodate emergency vehicles, such as immediately stopping work for emergency vehicle passage, providing short detours, and developing alternate routes in conjunction with the public agencies. Documentation of the coordination with police and fire departments shall be provided to the CPUC prior to the start of construction. ▪ Plans to coordinate in advance with property owners, if any, that may have limited access to properties due to temporary lane closures. Provisions for ensuring secondary access should be provided. ▪ Plans to coordinate with North Country Transit District at least one month prior to construction to minimize the impacts associated with the interruption or delays of bus transit service to Routes 315 and 316. Documentation of this coordination shall be provided to the CPUC prior to the start of construction.	Monitor Traffic Control Plan implementation.	Before and during construction
	Tribal Cultural Resources		
APM-CUL-1	*Paleontological Resource Monitoring Program.*	See Cultural Resources	
Unanticipated discoveries	**C-1. Management of Unanticipated Discoveries of Historical Resources or Unique Archaeological Resources.**	See Cultural Resources	
Human Remains	**C-2. Appropriate Treatment of Human Remains.**	See Cultural Resources	

Appendix A

References

Appendix A: References

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Appendix B

List of Preparers

Appendix B. List of Preparers

A consultant team headed by Aspen Environmental Group prepared this document under the direction of the California Public Utilities Commission. The preparers and technical reviewers of this document are presented below.

Lead Agency

California Public Utilities Commission, Energy Division

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Project Management and Document Production

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Baron Creager, EIT, Environmental Engineer	Air Quality, Greenhouse Gas Emissions, Noise
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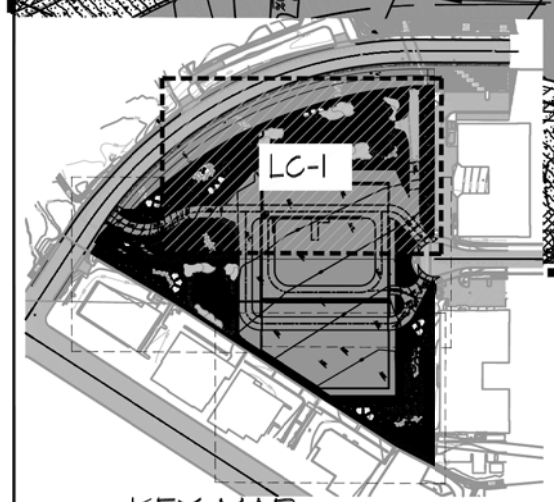
James Thurber, MS, PG, CEG, CHG	Hazards and Hazardous Materials

Appendix C

Landscape Concept Plan

MATCHLINE, SEE SHEET LC-2

MATCHLINE, SEE SHEET LC-3



KEY MAP

SCALE: 1" = 200'

ROOT BARRIER NOTE:

ALL TREES PLANTED WITHIN 5' OF ANY CURB, WALL, HARDSCAPE ELEMENT, BUILDING, FIRE HYDRANT, UTILITY VAULT, OR LIGHT FIXTURE SHALL RECEIVE A 10' LENGTH OF 24" DEEP ROOT BARRIER. NO ROOT BARRIER SHALL ENCIRCLE THE ROOT BALL.

Underground Service Alert
Call: TOLL FREE
1-800
227-2600
TWO WORKING DAYS BEFORE YOU DIG

"CAUTION": Remember that the USA Center notifies only those utilities belonging to the center. There could be other utilities present at the work site. The center will inform you of whom they will notify.

N

20 10 0 20 40 60
SCALE: 1"=20'-0"

JAMES P. BENEDETTI
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JPBLA

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ROCKY POINT DRIVE
OCEANSIDE, CA 92056
APN 161-512-2600 & 161-512-2700

REVISIONS

1ST SUBMITTAL
xx/xx/xx

Phase:

Date: 12/3/15

Reviewed by: JPB

Drawn: KCK

Job No.: 2015-31

Sheet Title: LANDSCAPE CONCEPT PLAN

Sheet: LC-1

Of 4 Sheets

PLANT SCHEDULE

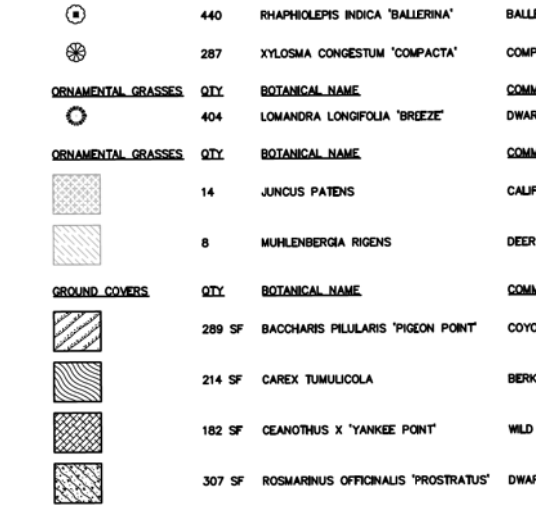
TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE
	9	ARBUTUS X 'MARINA'	ARBUTUS STANDARD	24"BOX
	49	GEIJERA PARVIFLORA	AUSTRALIAN WILLOW	15 GAL
	30	PRUNUS ILICIFOLIA	HOLLY LEAF CHERRY	15 GAL
	14	RHUS LANCEA	AFRICAN SUMAC MULTI-TRUNK	24"BOX

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE
	91	HETEROMELES ARBUTIFOLIA	TOYON	5 GAL
	440	RHAPHIOLEPIS INDICA 'BALLERINA'	BALLERINA INDIAN HAWTHORN	5 GAL
	287	XYLOSMA CONGESTUM 'COMPACTA'	COMPACT XYLOSMA	5 GAL

ORNAMENTAL GRASSES	QTY	BOTANICAL NAME	COMMON NAME	SIZE
	404	LOMANDRA LONGIFOLIA 'BREEZE'	DWARF MAT RUSH	1 GAL

ORNAMENTAL GRASSES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
	14	JUNCUS PATENS	CALIFORNIA GRAY RUSH	1 GAL	24" o.c.
	8	MUHLENBERGIA RIGENS	DEER GRASS	1 GAL	36" o.c.

GROUND COVERS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
	289 SF	BACCHARIS PILULARIS 'PIGEON POINT'	COYOTE BRUSH	1 GAL	36" o.c.
	214 SF	CAREX TUMULICOLA	BERKELEY SEDGE	1 GAL	36" o.c.
	182 SF	CEANOTHUS X 'YANKEE POINT'	WILD LILAC	1 GAL	48" o.c.
	307 SF	ROSMARINUS OFFICINALIS 'PROSTRATUS'	DWARF ROSEMARY	1 GAL	36" o.c.
	8 SF	SENECIO MANDRALISCAE	BLUE FINGER	1 GAL	36" o.c.



KEY MAP

SCALE: 1" = 200'

MATCHLINE, SEE SHEET LC-1

MATCHLINE, SEE SHEET LC-4

ROOT BARRIER NOTE:

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N

20 10 0 20 40 60
SCALE: 1"=20'-0"

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ROCKY POINT DRIVE
OCEANSIDE, CA 92056
APN 161-512-2600 & 161-512-2700

REVISIONS

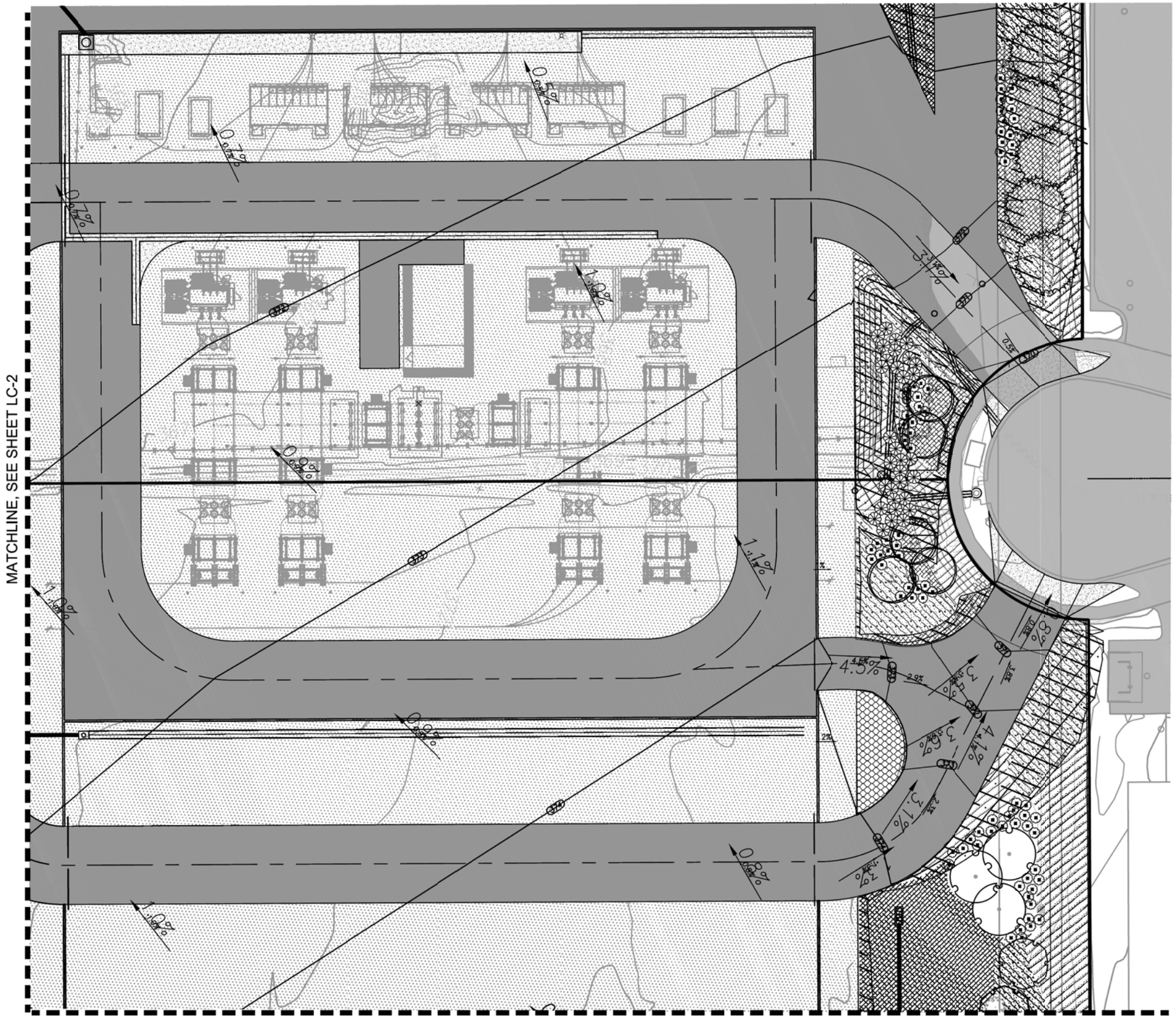
1ST SUBMITTAL
xx/xx/xx

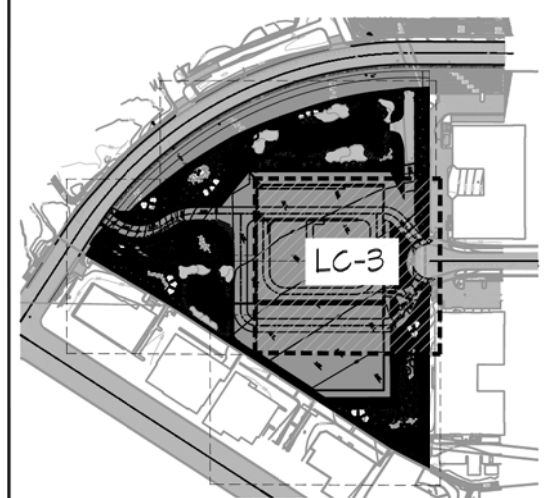
Phase:
Date: 12/3/15
Reviewed by: JPB
Drawn: KCK
Job No.: 2015-31

Shee: Title: LANDSCAPE CONCEPT PLAN & PLANT LEGEND

Sheet: LC-2

Of 4 Sheets





KEY MAP

SCALE: 1" = 200'

ROOT BARRIER NOTE:

ALL TREES PLANTED WITHIN 5' OF ANY CURB, WALL, HARDSCAPE ELEMENT, BUILDING, FIRE HYDRANT, UTILITY VAULT, OR LIGHT FIXTURE SHALL RECEIVE A 10' LENGTH OF 24" DEEP ROOT BARRIER. NO ROOT BARRIER SHALL ENCIRCLE THE ROOT BALL.

Underground Service Alert
Call: TOLL FREE
1-800
227-2600
TWO WORKING DAYS BEFORE YOU DIG

"CAUTION": Remember that the USA Center notifies only those utilities belonging to the center. There could be other utilities present at the work site. The center will inform you of whom they will notify.

N

20 10 0 20 40 60
SCALE: 1"=20'-0"

JAMES P. BENEDETTI
LANDSCAPE ARCHITECT
4403 MANCHESTER AVE., SUITE 201
ENCINITAS, CA 92024
760/479-0644 FAX 760/479-0645

JPBLA

JAMES P. BENEDETTI LANDSCAPE ARCHITECT — Signature — Exp. Date 3/31/16 — Date 9/23/15 — STATE OF CALIFORNIA

OCEAN RANCH SUBSTATION
ROCKY POINT DRIVE
OCEANSIDE, CA 92056
APN 161-512-2600 & 161-512-2700

REVISIONS

1ST SUBMITTAL
xx/xx/xx

Phase:

Date: 12/3/15

Reviewed by: JPB

Drawn: KCK

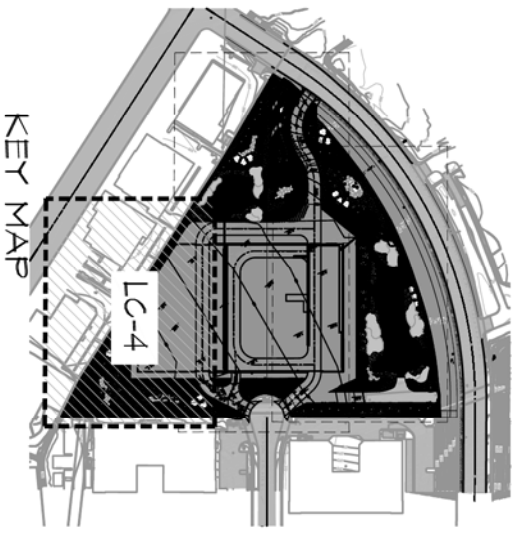
Job No.: 2015-31

Sheet Title: LANDSCAPE CONCEPT PLAN

Sheet: LC-3

Of 4 Sheets

KEY MAP



SCALE: 1" = 200'

MATCHLINE, SEE SHEET LC-2

MATCHLINE, SEE SHEET LC-3

ROOT BARRIER NOTE:

ALL TREES PLANTED WITHIN 5' OF ANY CURB, WALL, HARDSCAPE ELEMENT, BUILDING, FIRE HYDRANT, UTILITY VAULT, OR LIGHT FIXTURE SHALL RECEIVE A 10' LENGTH OF 24" DEEP ROOT BARRIER. NO ROOT BARRIER SHALL ENCIRCLE THE ROOT BALL.

Underground Service Alert
Call: TOLL FREE
1-800
227-2600

"CAUTION": Two working days before you dig, only those utilities belonging to the USA center. There could be other utilities present at the work site. The center will inform you of whom they will notify.

SCALE: 1"=20'-0"

20 10 0 20 40 60

N

OCEAN RANCH SUBSTATION
ROCKY POINT DRIVE
OCEANSIDE, CA 92056
APN 161-512-2600 & 161-512-2700

REVISIONS

1ST SUBMITTAL xx/xx/xx

Date: 12/3/15
Reviewed by: JPB
Drawn: KCK
Job No.: 2015-31
Phase:

Sheet Title: LANDSCAPE CONCEPT PLAN

Sheet: LC-4

Of 4 Sheets

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Appendix D

Best Management Practices Manual

Appendix D

Water Quality Construction Best Management Practices Manual

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M A N U A L

WATER QUALITY CONSTRUCTION BEST MANAGEMENT PRACTICES MANUAL

Prepared for:

Sempra Energy Utilities
101 Ash Street
San Diego, CA 92101-3017

URS Project No. 27644947.03B00

December 2002

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Table of Contents

Tables

Appendices

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BMP PROGRAM OVERVIEW

Water Quality Construction BMP Manual

The purpose of this Manual is to provide standardized best management practices (BMPs) to reduce or eliminate pollutants in runoff from Sempra Energy Utilities[1] (SEU) construction projects for water quality protection. This Manual applies to projects conducted by San Diego Gas and Electric Company (SDG&E), Southern California Gas Company (SCG) (hereon known as Utilities or Utility), and their contractors. The utilities service area encompasses 23,000 square miles of diverse terrain throughout most of Central and Southern California, from Visalia to the Mexican border. Utility projects within the service area are conducted in more than 530 communities and in over 200 municipal jurisdictions. Many of these projects throughout the service area are subject to a variety of National Pollutant Discharge Elimination System (NPDES) permits.

Because of the breadth of jurisdictions and applicable permits that apply to utility projects, this Manual has been developed to provide a consistent approach to water quality management to be applied by the utilities and their contractors throughout their service areas. Most construction projects performed by the utilities and their contractors are linear pipeline or electric installations, which are usually short term, fast moving, and are low impact on narrow corridor sections of land. Many of the BMPs presented in this Manual have used the best and most practical pollution prevention features from several sources such as State of California and Caltrans BMPs that integrate well into our unique utility construction activities.

This Manual is organized into three main sections: BMP Program Overview; BMP Selection and Implementation; and BMP Details. The BMP Details section is divided into four functional BMP categories, 1-Sediment Controls, 2-Waste and Materials Management Controls, 3-Non-Storm Water Discharge Controls and 4-Erosion Control and Soil Stabilization. Within each of these categories, specific information, including "When" and "How" to implement the BMP, plus Maintenance and Inspection information are provided for each BMP. Pictures and diagrams are also provided on several BMPs for easy reference.[2]

The Manual is a tool designed to assist with the identification of BMPs appropriate for use on a specific site or project. The Manual provides guidance to SEU in their support for water quality goals and meeting regulatory requirements. The BMP selection process provides users with guidance for typical BMPs that may apply to standard SEU construction projects. During BMP selection, the users of this Manual should take into account the benefits and limitations of each of the BMPs considered in the context of the site conditions. Finally, BMP success is contingent not only on appropriate design and implementation, but on the coordination and communication between the designers, engineers, and the field construction teams.

Utility Type Projects

Most Utility projects are very different from commercial or residential developments, building sites, and Caltrans projects. Utility projects are smaller, short term, long and thin, impacting narrow corridors of land. Utility projects are constantly moving or progressing along the route

[1] Sempra Energy Utilities is composed of San Diego Gas & Electric Company and Southern California Gas Company.
[2] Photographs provided in this Manual have been obtained from URS Corp., Great Circle Int'l, LLC, and Caltrans.

and thus have minimal exposure of soil or transportable materials to storm water at any one time. Often, utility projects are in the Right-of–Ways of streets or along utility corridors that must be maintained to ensure safe access to electric and gas lines. BMPs usually are only in place for a few days or even hours. Therefore, BMPs will typically be implemented just prior to a forecasted storm event.

BMP Field Guide

The BMP Field Guide is a separate document developed from the Water Quality BMP Manual that contains the condensed BMPs and supporting information. The Field Guide was designed to be a "pocket sized" reference to the BMP Manual. The primary audience for the Field Guide is the SEU Construction and Maintenance crews who perform operations and activities within the utility service territory.

Training Program

The importance of training and of integrating the elements of employee and contractor training for pollution prevention controls into a comprehensive training program is part of the Utilities overall Water Quality Pollution Prevention Program. All applicable company employees and contractors hired by the company have the responsibility to comply with environmental laws, rules, and regulations. Training for the prevention of environmental related incidents is conducted for applicable employees who perform any operation or activity that has the potential to cause a pollutant to be released into the environment. Records are maintained as to when employees have received this training and instruction. Verification of contractor training should also be obtained.

Applicable employees should know and contact their local Environmental Representatives for support and guidance on any aspects of the Training Program.

BMP SELECTION AND IMPLEMENTATION

General Protocol

To select BMPs that are appropriate for a given project, the following steps should be followed:

Step 1 – Identify Activities, Pollutants and Issues of Concern
Step 2 – Evaluate Site Conditions and Select BMPs
Step 3 – Implement, Monitor, and Maintain the BMPs

Step 1 – Identify Activities, Pollutants, and Issues of Concern

The first step in BMP selection is to identify the project activities, the potential pollutants of concern and the local issues of concern. Project activities may include saw cutting, trenching, excavation, stockpiling of soil, grading and grubbing, access road maintenance, paving, or other activities with the potential to impact storm water and non-storm water discharges. Pollutants of concern may include sediment; petroleum products such as fuel, oil, and grease from vehicle and equipment operation; paving materials such as concrete and asphalt components; other materials used or stored on site, such as pesticides, herbicides, fertilizer, detergents, paint, adhesives, and solvents; and project wastes such as litter, debris, hazardous wastes, and liquid wastes. The local issues of concern may include:

- Proximity to sensitive receiving waters (environmentally sensitive areas or Clean Water Act Section 303(d) listed water bodies, examples: Santa Monica Bay, San Diego Bay).
- Local regulatory requirements influencing BMP selection, or timing of BMP implementation.

Step 2 – Evaluate Site Conditions and Select BMPs

To assist in BMP selection, this Water Quality Construction BMP Manual presents BMPs that are anticipated to be most applicable to utility construction projects. Utility projects are unique in that they are typically very short-term and fast moving, have minimal exposure of soil or transportable materials at any one time to storm water. The selector should consider any project-specific requirements or factors such as BMP effectiveness, cost, availability, feasibility, and suitability for the site. For example, important site conditions to consider include the amount of soil disturbance, anticipated weather conditions, soil type and erodibility, flow path length, and slope of exposed soil. Selected BMPs can and should be modified to suit the scope of the project and site conditions. Table 1 presents guidelines for BMP selection and implementation at a construction site. Table 2 presents a BMP selection worksheet for utility activities. These implementation guidelines and selection worksheet can be used to select BMPs for a specific project. Finally, a selector may discover a better BMP for their situation not listed in Tables 1 or 2. Environmental Services encourages creative and practical pollution prevention techniques. These new techniques can be shared with others to support the water quality goals of the region.

Step 3 – Implement, Monitor, and Maintain the BMP System

It is important that selected BMPs be implemented in a sequence that maximizes protection of water quality, be monitored regularly for effectiveness and be maintained as necessary throughout the project. Most BMPs will only be implemented when needed, and/or when a storm

event is forecasted or occurs. Table 1 presents a suggested schedule for BMP implementation and sequencing. Steps in this schedule should be reviewed for each project as applicable. All BMPs should be monitored and inspected regularly and particularly before, and after rain events. BMPs should be maintained during a project in accordance with the procedures outlined in the BMP Details Section.

BMP Installation Contractors

This Water Quality Construction BMP Manual identifies some utility activities and operations that may require outside contractors to install the applicable BMPs. However, the utility crews will implement most BMPs. Most types of BMP materials are readily available from local suppliers.

Table 1
BMP SELECTION AND SEQUENCING GUIDE

Step No.	Description	What to Do	BMP Options
1.	Before Construction	Before construction, evaluate, mark, and protect important trees and associated rooting zones, unique areas (e.g., wetlands), and other areas to be preserved, especially in perimeter areas.	4-01, other user-defined BMPs
2.	Site Access Areas (construction entrances, roadways equipment parking areas)	Stabilize site entrances and access roads if applicable prior to earthwork.	1-07, other user-defined BMPs
3.	Storm Drain Inlet Protection	Install inlet protection at down-gradient inlets that project runoff/tracking might impact.	1-06, other user-defined BMPs
4.	Perimeter Sediment Control	Install perimeter sediment controls (silt fence, fiber rolls, etc.) as applicable prior to land disturbing activities. Install additional runoff control measures during construction as needed.	1-02, 1-03, 1-04, 1-05, other user-defined BMPs
5.	Material and Waste Storage Areas	Prepare staging areas, material storage and disposal areas as applicable. Grade to reduce run-on and runoff, install perimeter controls, obtain clean-up materials, plastic covers for stockpiles, etc. prior to storing materials on site.	2-01 through 2-08, 1-08, other user-defined BMPs
6.	Earthwork (trenching, excavation, grading, surface roughening, grubbing)	Begin excavation, trenching, or grading after installing applicable sediment and runoff control measures. Install additional control measures as work progresses as needed.	through 1-09, other user-defined BMPs
7.	Surface Stabilization (temporary and permanent seeding, mulching)	Apply temporary or permanent soil stabilization measures as applicable on all disturbed areas where work is delayed or completed.	4-01 through 4-08, other user-defined BMPs
8.	Construction and Paving (install utilities, buildings, paving)	Implement applicable control practices as work takes place.	3-01 through 3-10, other user-defined BMPs
9.	Final Stabilization and Landscaping	Stabilize open areas as applicable. Remove temporary control measures and install final stabilization controls appropriately (topsoil, trees and shrubs, permanent seeding, mulching, sodding, riprap)	3-07, 4-03, 4-04, other user-defined BMPs

Table 2
BMP SELECTION WORKSHEET FOR UTILITY ACTIVITIES

Sempra Energy Utility BMP No.	BMP Options	Construction				Maint. And Repair				
		Potholing	Overhead Electric	Underground Electric	Underground Gas	Gen. Maint. and Repair	Inspect and Repair	Tree Trimming	Veg. Control	Insulator Washing
Section 1 Sediment Controls										
Choose from one or more of the following BMP options when applicable:										
BMP-1-01	Scheduling									
BMP-1-02	Silt Fence									
BMP-1-03	Fiber Rolls									
BMP-1-04	Gravel Bag Berm									
BMP-1-05	Sand bag Barrier									
BMP-1-06	Storm Drain Inlet Protection									
BMP-1-07	Tracking Controls									
BMP-1-08	Stockpile Management									
Other-User Defined	BMP Description:									
Section 2 Waste Management and Material Controls										
Choose from one or more of the following BMP options when applicable:										
BMP-2-01	Material Delivery and Storage									
BMP-2-02	Material Use									
BMP-2-03	Spill Control									
BMP-2-04	Solid Waste Management									
BMP-2-05	Hazardous Materials/Waste Management									
BMP-2-06	Contaminated Soil Management									
BMP-2-07	Sanitary/Septic Waste Management									
BMP-2-08	Liquid Waste Management									
Other-User Defined	BMP Description:									
Section 3 Non-Storm Water Discharge Controls										
Choose from one or more of the following BMP options when applicable:										
BMP-3-01	Dewatering Operations									
BMP-3-02	Paving Operations									

Table 2 (continued)
BMP SELECTION WORKSHEET FOR UTILITY ACTIVITIES

Sempra Energy Utility BMP No.	BMP Options	Construction				Maint. And Repair				
		Potholing	Overhead Electric	Underground Electric	Underground Gas	Gen. Maint. and Repair	Inspect and Repair	Tree Trimming	Veg. Control	Insulator Washing
Section 3 Non-Storm Water Discharge Controls (Continued)										
BMP-3-03	Vehicle and Equipment Washing									
BMP-3-04	Vehicle and Equipment Fueling									
BMP-3-05	Concrete/Coring/Sawcutting and Drilling Waste Management									
BMP-3-06	Dewatering Utility Substructures and Vaults									
BMP-3-07	Vegetation Management including Mechanical and Chemical Weed Control									
BMP-3-08	Over-Water Protection									
BMP-3-09	Removal of Utility Location/Mark-Out Paint									
Other-User Defined	BMP Description:									
Section 4 Erosion Control and Soil Stabilization										
Choose from one or more of the following BMP options when applicable:										
BMP-4-01	Preservation of Existing Vegetation									
BMP-4-02	Temporary Soil Stabilization									
BMP-4-03	Hydraulic Mulch									
BMP-4-04	Hydroseeding									
BMP-4-05	Soil Binders									
BMP-4-06	Straw Mulch									
BMP-4-07	Geotextiles, Plastic Covers and Erosion Control Blankets/Mats									
BMP-4-08	Dust (Wind Erosion) Control									
Other-User Defined	BMP Description:									

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BMP DETAILS

This Section provides details for the selection and implementation of BMPs for the most common utility construction activities. Once the BMP objectives are defined, it is necessary to identify the category or categories of BMPs that are best suited to meet each objective. A category is a grouping of BMPs related in how they prevent pollution. The four categories are:

- Section 1 – Sediment Controls
- Section 2 – Waste Management and Material Controls
- Section 3 – Non-Storm Water Discharge Controls
- Section 4 – Erosion Control and Soil Stabilization

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Section 1 – Sediment Controls

Sediment particles (soil/dust) from utility activities can be transported to a different location by wind or water flow. Once these particles have become detached, they are considered a pollutant. Sediment Controls include any method that traps the soil particles after they have been detached and moved by wind or water. Sediment Controls are usually passive systems that rely on filtering or settling the particles out of the water or wind that is transporting them. The sediment that has accumulated by the BMPs can be disposed of as excess soil on the construction site. Sediment Controls presented in this Manual include the following:

- BMP 1-01 Scheduling
- BMP 1-02 Silt Fence
- BMP 1 03 Fiber Rolls
- BMP 1-04 Gravel Bag Berm
- BMP 1-05 Sand bag Barrier
- BMP 1-06 Storm Drain Inlet Protection
- BMP 1-07 Tracking Controls
- BMP 1-08 Stockpile Management

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When

Scheduling must be considered for applicable projects year-round.

How

Use the following measures as applicable:

- Consider scheduling major soil disturbing activities or activities near environmentally sensitive areas (e.g., adjacent to water bodies) during the non-rainy season.
- Monitor the weather forecast for seasonable and unseasonable rain events. Weather information is available from the following sources:
  - San Diego: www.wrh.noaa.gov/sandiego/index.shtml or (619) 289-1212
  - Los Angeles/Oxnard: www.nwsla.noaa.gov or (805) 988-6610
  - AccuWeather: www.accuweather.com
- Always be prepared to deploy erosion and sediment control and soil stabilization BMPs. Off site sediment discharges can occur during the non-rainy season because of unseasonable rainfall, wind, non-storm water discharges, and vehicle tracking and must be prevented.

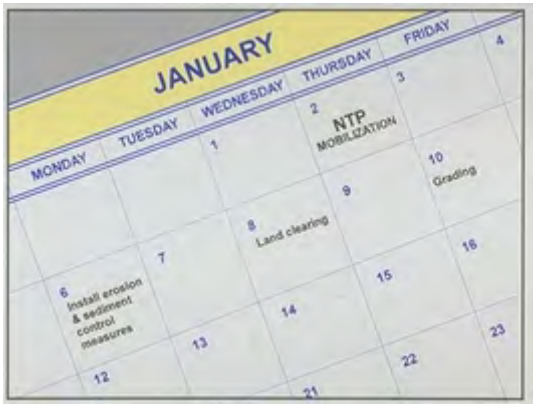
PLUS, DURING THE RAINY SEASON (October 1–May 1, Desert regions differ August 1- May 30)

- Sequence work to minimize soil-disturbing activities during forecasted rain events.
- Limit disturbed soil area to the amount of acreage that can be protected prior to a forecasted rain event.
- Stabilize disturbed soil areas as soon as practical, and, at a minimum, prior to a forecasted rain event.
- Protect environmentally sensitive areas, such as drainage channels, streams, and natural watercourses.
- When rainfall is forecast, adjust the construction schedule to implement soil stabilization and sediment controls on all disturbed areas prior to the onset of rain.

Maintenance and Inspection

- Review applicable scheduling and sequencing of construction activities throughout the project to minimize the amount or time that soil is exposed and the total area of exposed soil.
- Inspect erosion and sediment controls prior and after each storm event, and routinely throughout the rainy season (to be consistent with all the other BMPs).

Pictures



When

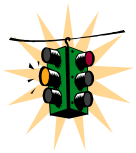
Silt fences are temporary linear sediment barriers made of permeable fabric designed to intercept and slow the flow of sediment-laden sheet flow runoff. Silt fences allow sediment to settle from runoff before water leaves the construction site.

Silt fences are placed:

- Below the toe of exposed and erodible slopes.
- Down-slope of exposed soil areas.
- Around temporary stockpiles.
- Along streams and channels.
- Along the perimeter of a project.

How

- Construct silt fences with a setback of at least 3 feet from the toe of a slope in areas suitable for temporary ponding or deposition of sediment. Where a 3-foot setback is not practicable, construct as far from the toe of the slope as practicable.
- Generally, silt fences shall be used in conjunction with soil stabilization source controls up slope to provide effective control, particularly for slopes adjacent to water bodies or Environmentally Sensitive Areas.
- Construct the length of each reach (length of fence) so that the change in base elevation along the reach does not exceed 1/3 the height of the barrier; each reach should not exceed 500 feet. The last 6 feet of the reach should be turned upslope.
- The maximum length of slope draining to the silt fence should be 200 ft or less.
- Excavate a trench to place the bottom of the silt fence into that is not wider or deeper than necessary.
- Key-in, or bury the bottom of silt fence fabric in trench and tamp into place. If it is not feasible to trench along the slope contour, use sand bags or backfilling to key in the bottom of the fabric.
- Install fence post at least 12 inches below grade on down slope side of trench.



- **Silt fences should not be considered for installation below slopes steeper than 1:1 (vertical : horizontal) or that contain a high number of rocks or loose dirt clods.**

Maintenance and Inspection

- Repair or replace split, torn, slumping, undercut or weathered fabric.
- Inspect silt fences prior and after each storm event, and routinely throughout the rainy season.
- Remove accumulated sediment when it reaches one third (1/3) of the barrier height. Removed sediment shall be incorporated in the project at appropriate locations or disposed of at an SCG/SDG&E-approved site
- Silt fences that are damaged and become unsuitable for the intended purpose shall be removed and disposed of and replaced with new silt fence barriers.
- Remove silt fence when no longer needed. Fill and compact post-holes and anchorage trench, remove sediment accumulation, and grade fence alignment to blend with adjacent ground.

Pictures

Silt fence installed at the toe of an erodible slope. Note use is combined with fiber rolls and serves as perimeter control.

When

A fiber roll consists of straw, flax or other similar materials that are rolled and bound into a tight roll that is generally placed on the face of slopes at regular intervals to intercept runoff, reduce flow velocity, release the runoff as sheet flow and provide the removal of sediment.

- May be used along the top, face and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow.
- Fiber rolls may be used as check dams.
- Fiber Rolls can also be used where flows are moderately concentrated, such as ditches, swales, and storm drain inlets (Storm Drain Inlet Protection to divert and/or detain flows.).
- Fiber rolls are appropriate for perimeter site control or along streams, channels, storm drain inlets, or around stockpiles to intercept sediment laden storm water and non-storm water runoff.

How

Installation

- Locate fiber rolls on level contours spaced 8 to 20 feet apart along the face of the slope.
- Its best to stake fiber rolls into a 2 to 4 inch deep trench.
- Drive stakes into fiber rolls at a minimum of 4-foot intervals
- If more then one fiber roll is placed in a row, fiber rolls should be butted together and not overlapped.

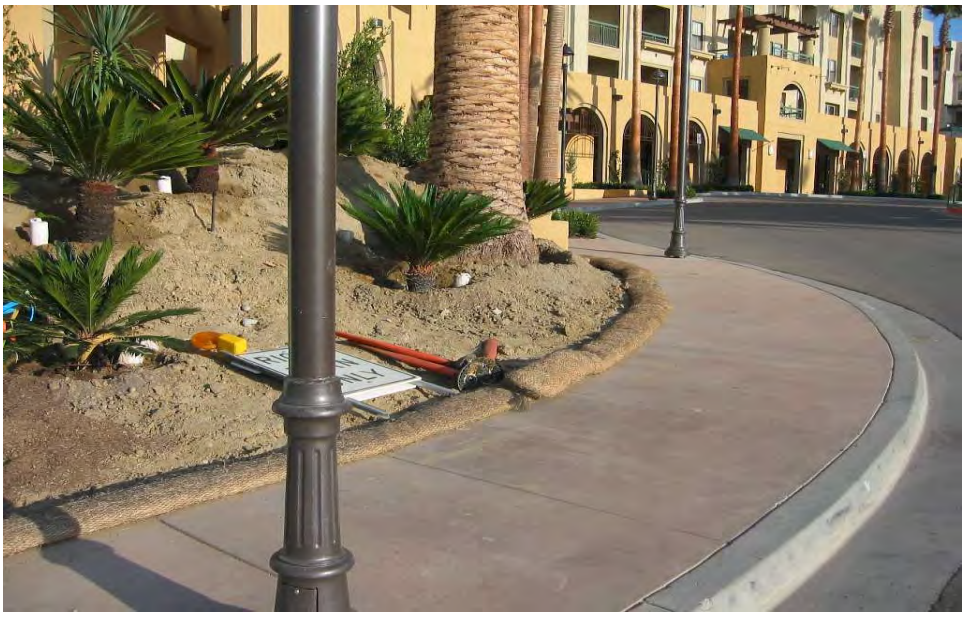
Removal

- If used on slopes, fiber rolls are typically left in place.
- If used as Storm Drain Inlet Protection, stockpile control, or other temporary control measures, the fiber rolls should be removed at the completion of the construction project.
- If fiber rolls are removed, collect and dispose of fiber roll and sediment accumulation as appropriate. Fill and compact holes, trenches, depressions, or any other ground disturbance to blend with adjacent ground.

Maintenance and Inspection

- Repair or replace spilt, torn, unraveling, or slumping fiber rolls.
- Inspect fiber rolls if rain is forecasted, perform maintenance as needed.
- Inspect fiber rolls prior and after each storm event, and routinely throughout the rainy season.

Pictures



Fiber rolls as perimeter control

Fiber roll installation on the face of a slope.

When

A gravel bag berm consists of a single row of gravel bags that are installed end-to-end to form a barrier across a slope to intercept runoff, reduce its flow velocity, release the runoff as sheet flow and provide some sediment removal. Gravel bags can also be used where flows are moderately concentrated, such as ditches, swales, and storm drain inlets (Storm Drain Inlet Protection to divert and/or detain flows). Gravel bag berms are appropriate for perimeter site control or along streams, channels, storm drain inlets, or around stockpiles to intercept sediment laden storm water and non-storm water runoff. Use gravel bag berms:

- Where it is desirable to filter sediment in runoff. Note that gravel bag berms are generally more permeable than sand bags. Sand bag barriers should be used in cases where it is desirable to block and pond flows (e.g., for containment of non-storm water flows).
- Along the face and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow.
- On a project-by-project basis to maximize effectiveness.
- Gravel bags may be implemented with other BMPs to maximize sediment containment.

How

- When used as a linear control for sediment removal:
  - Install along a level contour.
  - Turn ends of gravel bag row up slope to prevent flow around the ends.
  - Generally, gravel bag barriers are used in conjunction with temporary soil stabilization controls up slope to provide effective control.
- When used for concentrated flows:
  - Stack gravel bags to required height. When the height requires 3 rows or more, use a pyramid approach.
  - Upper rows of gravel bags shall overlap joints in lower rows.
- Construct gravel bag barriers with a setback of at least 3 feet from the toe of a slope. Where a 3-foot setback is not practicable, construct as far from the toe of the slope as practicable.

Maintenance and Inspection

- Inspect gravel bag berms prior and after each storm event, and routinely throughout the rainy season.
- Reshape or replace gravel bags as needed.
- Repair washouts or other damages as needed.
- Inspect gravel bag berms for sediment accumulations and remove sediments when accumulation reaches one-third of the berm height. Removed sediment shall be incorporated in the project at appropriate locations or disposed of at an SCG/SDG&E-approved site.
- Remove gravel bag berms when no longer needed. Remove sediment accumulation, and clean, re-grade, and stabilize the area. Removed sediment shall be incorporated in the project at appropriate locations or disposed of at an SCG/SDG&E-approved site.

Pictures

Gravel bags and fiber rolls used as a perimeter sediment control system.

Gravel bags used as perimeter control.

When

A sand bag barrier is a temporary linear sediment barrier consisting of stacked sand bags, designed to intercept and slow sediment-laden storm water and non-storm water runoff. Sand bag barriers allow sediment to settle from runoff before water leaves the construction site.

- Sand bags can be used where flows are moderately concentrated, such as ditches, swales, and storm drain inlets to divert and/or detain flows. See BMP on Storm Drain Inlet Protection.
- To divert or direct flow away from disturbed slopes or create a temporary sediment basin.
- During construction activities in streambeds when the contributing drainage area is 1 to 5 acres.
- To capture and detain non-storm water flows until proper cleaning operations occur.
- When site conditions or construction sequencing require adjustments or relocation of the barrier to meet changing field conditions and needs during construction.
- To temporarily close or continue broken, damaged or incomplete curbs.

Sand bag barriers are used:

- Where it is desirable to block and pond flow (e.g., for containment of non-storm water flows). Use caution when using sand bag barriers in traffic areas or other areas where potential flooding is not desirable.
- Along the perimeter of a site, vehicle and equipment fueling and maintenance areas, chemical storage areas, or stockpiles.
- Below the toe or down slope of exposed and erodible slopes.
- Parallel to streams, channels, and roadways.
- Across channels to serve as a barrier for utility trenches or provide a temporary channel crossing for construction equipment, or to reduce stream impacts.

How

- When used as a linear control for sediment removal:
  - Install along a level contour.
  - Turn ends of sand bag row up slope to prevent flow around the ends.
  - Generally, sand bag barriers shall be used in conjunction with temporary soil stabilization controls up slope to provide effective control.
- When used for concentrated flows:
  - Stack sand bags to required height. When the required height is three rows or more, use a pyramid approach. Upper rows of sand bags shall overlap joints in lower rows.
  - Construct sand bag barriers with a setback of at least 3 feet from the toe of a slope. Where a 3-foot setback is not practicable, construct as far from the toe of the slope as practicable.

Maintenance and Inspection

- Inspect sand bag barriers prior and after each storm event, and routinely throughout the rainy season.
- Repair washouts or other damages as needed, or as directed by the projects Environmental Representative.
- Inspect sand bag barriers for sediment accumulations and remove sediments when accumulation reaches one-third the barrier height.
- Remove sand bags when no longer needed. Remove sediment accumulation, and clean, re-grade, and stabilized the area. Incorporate removed sediment at appropriate project locations or dispose of at an SCG/SDG&E-approved site.

Pictures

Sand bags used as perimeter control.

When

A device used at storm drain inlets to protect against the discharge of sediment-laden storm water and non-storm water runoff from construction activities. The device develops a pond behind it giving the sediment time to settle out before discharge to the storm drain. Do not construct such that runoff will result in:

- Ponding into road traffic or onto erodible surfaces or slopes, or
- Overflowing onto the sidewalk

This BMP is required on all construction projects where sediment laden surface runoff may enter a storm drain inlet and watercourses.

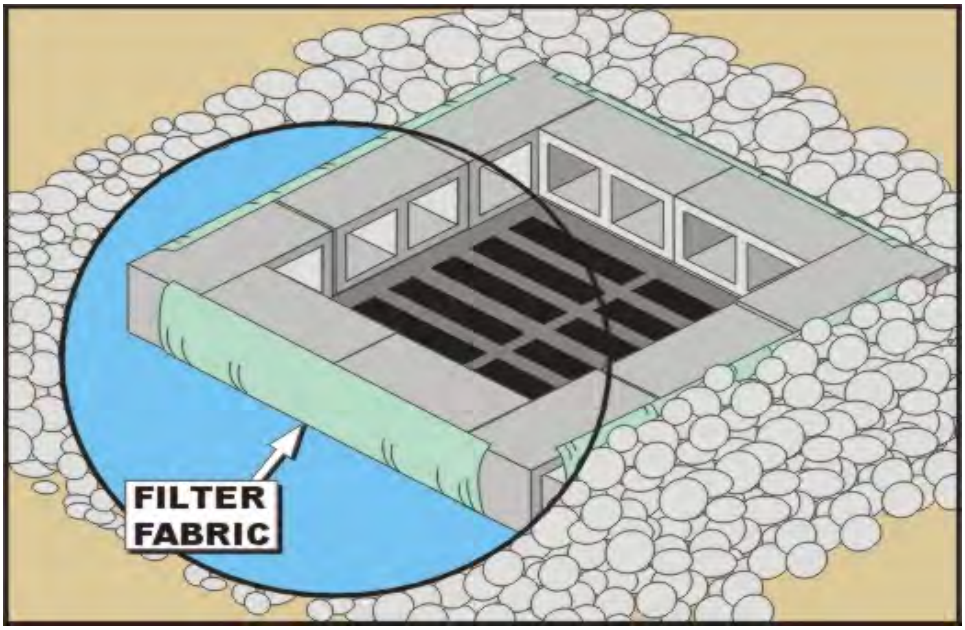
How

- Identify downstream storm drain inlets that have the potential to runoff from construction activities.
- Where a storm drain inlet is on or at the bottom of a slope, a series of small check dams (i.e., gravel bags) constructed at intervals along the slope may be required to slow the runoff.
- Select appropriate protection and construct inlet protection based on the configuration of inlets at the site.

Maintenance and Inspection

- Inspect inlet protection devices prior and after storm event, and routinely throughout the rainy season.
- Remove inlet protection devices at the end of the construction period, or when the inlet can no longer be impacted by the project.
- During inspections:
  - Inspect bags, silt fence, or filter fabric for holes, gashes, and snags.
  - Check gravel bags for proper arrangement and displacement; and
  - Remove the sediment behind the barrier when it reaches one-third the height of the barrier. Removed sediment should be incorporated in the project or disposed of at an approved Utility disposal site.

Pictures



Block and gravel-type inlet protection.

Inlet protection that blocks flow is good for preventing non-storm water discharges from entering the drain.

Pictures (continued)

Gravel bag inlet protection.

Inlet protection using fiber rolls and filter fabric.

When

Tracking controls reduce offsite tracking of sediment and other pollutants by providing a stabilized entrance at defined construction site entrances and exits and/or providing methods to clean-up sediment or other materials to prevent them from entering a storm drain by sweeping or vacuuming.

- Stabilize entrances should be implemented on a project-by-project basis in addition to other BMPs.
- Sweeping or vacuuming should be implemented when sediment is tracked from the project site onto public or private paved roads, typically at points of site exit.
- Use stabilized entrances and/or sweeping at construction sites:
  - where dirt or mud is tracked onto public roads
  - adjacent to water bodies
  - where poor soils are encountered, such as soils containing clay.
  - where dust is a problem during dry weather conditions.

How

Stabilized Construction Entrances

- Limit the points of entrance/exit to the construction site by designating combination or single purpose entrances and exits. Require all employees, subcontractors and others to use them. Limit speed of vehicles to control dust.
- 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.
- Use of constructed or constructed/manufactured steel plates with ribs for entrance/exit access is allowed.
- If aggregate is selected, place crushed aggregate over geotextile fabric to at least 12 inches deep, or place aggregate to a depth recommended by a geotechnical engineer. A crushed aggregate greater than 3 inches but smaller than 6 inches shall be used.

Street Sweeping and Vacuuming

- Inspect potential sediment tracking locations routinely.
- Visible sediment tracking should be swept or vacuumed as needed. Manual sweeping is appropriate for small jobs.
- Manual sweeping is appropriate for small projects. For larger projects, it is preferred to use sweeping methods that collect removed sediment and material.

If not mixed with debris or trash, incorporate the removed sediment back into the project or depose of it at an approved disposal site.

Maintenance and Inspection

Stabilized Construction Entrance

- Inspect routinely for damage and assess effectiveness. Repair if access is clogged with sediment.
- Where tracking has occurred on roadways sweeping should be conducted the same day. Preferably water should not be used to wash sediment off the streets. If water is used, it should be captured preventing sediment-laden water from running off the site.
- Keep all temporary roadway ditches clear.

Street Sweeping and Vacuuming

Inspect inlet and outlet access points routinely and sweep tracked sediment as needed.

Be careful not to sweep up any unknown substance or any object that may be potentially hazardous.

- After sweeping is finished, properly dispose of sweeper wastes.

Pictures

Manufactured metal plates knock dirt off vehicles before exiting a site.

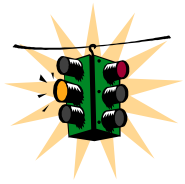
When

Use this BMP when projects require stockpiled soil and paving materials. The stockpile management practices used differ based on forecasted weather or terrain.

- Protection of stockpiles must be implemented whenever there is a potential for transport of materials by a water source (forecast precipitation or any non-storm water runoff).

How

- One or more of the following options may be used to manage stockpiles and prevent stockpile erosion and sediment discharges for stormwater and non-storm water runoff/run-on.
  - Stockpile may be returned to the excavation if precipitation is forecast.
  - Protect stockpiles from stormwater run-on using a temporary perimeter sediment barrier such as berms, silt fences, fiber rolls, covers, sand/gravel bags, or straw bale barriers, as appropriate.
  - Stockpiles may be hauled off or temporarily stored in a protected location off site.
- Keep stockpiles organized and surrounding areas clean.
- Protect storm drain inlets, watercourses, and waterbodies from stockpiles, as appropriate.
- Implement dust control practices as appropriate on all stockpiled material.



- **Stockpiles should be covered, stabilized, or protected with a perimeter sediment barrier prior to the onset of precipitation.**

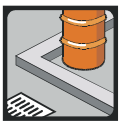
Maintenance and Inspection

Repair and/or replace covers, and perimeter containment structures as needed.

Pictures

Stockpile covered with plastic and secured with large rocks.

Silt fence used for stockpile perimeter control.



Section 2 – Waste Management and Material Controls

Federal, state and local laws, regulations, ordinances and permits prohibit the discharge of contaminated stormwater to storm drains and surface waters. Transport of sediment, and other pollutants, such as litter, paint, solvents, fuel, lubricants and demolition wastes, can be carried away from a construction site in stormwater. Therefore, BMPs are to be used for those construction activities that could cause pollution to ensure that pollutants are properly managed and are not discharged to storm drains and surface waters.

Waste Management and Materials Controls are source control BMPs that reduce or prevent contact between wastes and/or materials and storm water. Waste Management and Materials Controls presented in this Manual include the following:

- BMP 2-01 Material Delivery and Storage
- BMP 2-02 Material Use
- BMP 2-03 Spill Control
- BMP 2-04 Solid Waste Management
- BMP 2-05 Hazardous Materials/Waste Management
- BMP 2-06 Contaminated Soil Management
- BMP 2-07 Sanitary/Septic Waste Management
- BMP 2-08 Liquid Waste Management

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When

If it is necessary to store materials at a construction site. This BMP does not apply to materials and supplies stored on trucks that are driven on site and off site daily.

How

Use the following measures as appropriate:

- Only store the minimum amount of material that is needed for the job.
- Locate storage areas away from storm drain inlets, drainage systems, and watercourses to prevent storm water run-on from reaching the materials.
- If practical, store materials in enclosed storage containers such as cargo containers.
- Store materials on impervious surfaces or use plastic groundcovers to prevent any spills or leakage from contaminating the ground.
- For known hazardous materials, keep materials covered using plastic of other waterproof materials.
- If necessary provide secondary containment systems around material storage areas to prevent contaminated run-off/run-on from leaving storage area(s).
- Keep adequate supply of spill kit materials nearby.
- Ensure that qualified personnel are available when hazardous materials are delivered to ensure proper delivery and storage in designated area.
- When storage area is no longer needed, return it to original condition.
- Bagged materials such as cold patch, concrete mix, and other materials with the potential to pollute runoff should be placed on pallets and under cover.

Maintenance and Inspection

Repair or replace covers, containment structures, or perimeter controls as needed to ensure proper functioning. Perform routine inspections of designated delivery and storage areas.

Pictures

Materials are covered and neatly stored with a curbed area.

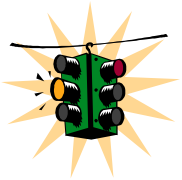
When

Apply this BMP when the following materials are used or prepared on site:

- Pesticides and herbicides.
- Fertilizers and soil amendments.
- Detergents.
- Petroleum products such as fuel, oil, and grease.
- Asphalt and other concrete components.
- Hazardous chemicals such as acids, lime, glues, adhesives, paints, solvents, and curing compounds.
- Mastic, pipe wrap, primers, and paint.
- Concrete compounds.
- Welding material.
- Other materials that may be detrimental if released to the environment.

How

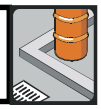
- Reduce or eliminate use of hazardous materials on site when practical. Contact your Environmental Representative for additional information.
- Empty latex paint and paint cans, used brushes, paint rags, absorbent materials, and drop cloths. When these items are thoroughly dry and are no longer hazardous, may be disposed of 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.
- When possible, mix paint indoors, otherwise use secondary containment structures. Do not clean paintbrushes or rinse paint containers into a street, gutter, storm drain, sanitary sewer 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 practical, and rinse into a concrete washout pit or temporary sediment trap. For oil-based paints, clean brushes to the extent practical and filter and reuse thinners and solvents.
- If possible, recycle residual paints, solvents, non-treated lumber, and other materials.



- **Do not over-apply fertilizers, pesticides, and soil amendments. Prepare only the amount needed. Strictly follow the recommended usage instructions.**
- Keep an ample supply of spill clean up material near use areas. Instruct employees in spill clean up procedures.
- Avoid exposing applied materials to rainfall unless sufficient time has been allowed for them to dry or cure.
- Hazardous materials use shall also be managed in accordance with the BMP on "Hazardous Materials/Waste Management."

Maintenance and Inspection

- Spot-check employees and contractors regularly throughout the job's duration to ensure appropriate practices are being employed.



When

This best management practice (BMP) applies to all construction sites at all times. Spill control procedures are implemented anytime chemicals and/or hazardous substances are stored. Substances may include, but are not limited to fuels, lubricants, solvents, fertilizers, pesticides, herbicides, soil binders, coolants, paints, and sewage.

To the extent that work can be accomplished safely, spills of materials or chemicals shall be contained and cleaned up immediately.

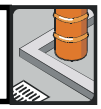
How

Stop the spillage of material if it can be done safely. Clean the contaminated area, and properly dispose of contaminated materials. For all spills notify the project foreman and/or the Environmental Representative. Use the following spill prevention and controls when applicable.

- To the extent that it doesn't compromise clean up activities, spills shall be covered and protected from storm water run-on during rainfall.
- Spills shall not be buried or diluted with wash water.
- Used clean up materials, contaminated materials, and recovered spill material shall be stored and disposed of in accordance with federal, state and local regulations Refer to BMP on "Hazardous Materials/Waste Management").
- Use absorbent materials on spills rather than using water to hose down the spill.
- When water is used for cleaning and decontamination of a spill, the water shall not be allowed to enter storm drain inlets or watercourses, and shall be collected and disposed of properly. Coordinate disposal of these wastes with the Environmental Representative.
- Keep spill cleanup kits in areas where any materials are used and stored.

Maintenance and Inspection

- Perform routine inspections to verify that spill control clean up materials are near material storage, unloading, and use areas.



When

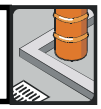
These BMPs should be used on all construction projects that generate solid waste. Solid wastes may include, but are not limited to concrete, cement, asphalt rubble, masonry brick/block, vegetation debris, steel and scrap metals, pipe and electrical cuttings, non-hazardous equipment parts, Styrofoam, general trash and other materials used to transport and package construction materials.

How

- Practice good housekeeping and keep site clean.
- Use “dry” methods for site clean up such as sweeping, vacuuming and hand pick-up.
- Designate a waste storage area on site. If a designated waste storage area is not feasible, remove wastes from the site regularly.
- Prohibit littering by employees, contractors and visitors.
- Trash receptacles should be available on site and/or on construction vehicles.
- Protect wastes from being washed away by rainfall, storm water run-on, or other waters (irrigation, water line breaks, etc.).
- To prevent storm water run-on from contacting stored solid waste (stockpiled materials) use berms, secondary containment, covered dumpsters/roll-offs or other temporary diversion structure or measures.
- For materials with the potential for spills or leaks, stockpile on impervious surfaces or use plastic groundcovers to prevent spills or leaks from infiltrating the ground.
- Do not hose out or clean out dumpsters or containers at the construction site.
- Prevent solid waste and trash from entering and clogging storm drain inlets.
- As practical, incorporate any removed clean sediment and soil back into the project.
- Reference BMP on Stockpile Management.

Maintenance and Inspection

- Collect site trash regularly, especially before rainy or windy conditions.
- Perform routine inspections of site, including storage areas, dumpsters, stockpiles and other areas where trash and debris are collected.
- Close trashcan lids and dumpster covers before rainy or windy conditions.



When

Use this BMP when projects involve the storage and use of hazardous materials, and the generation of waste byproducts, from the following:

- Petroleum products such as oils, fuels, greases, cold mix, and tars
- Glues, adhesives, and solvents
- Herbicides, pesticides, and fertilizers
- Paints, stains, and curing compounds
- Other hazardous or toxic substances

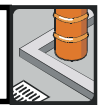
How

Hazardous materials and wastes shall be managed in accordance with the following procedures:

- Minimize the amount of hazardous materials stored at the construction site and the production and generation of hazardous waste at the construction site.
- Cover or containerize and protect from vandalism any hazardous materials and wastes.
- Clearly mark all hazardous materials and wastes. Place hazardous waste containers in secondary containment systems if stored at the construction site.
- Stockpiled cold mix should be placed on and covered with plastic.
- Do not mix waste materials, because this complicates or inhibits disposal and recycling options and can result in dangerous chemical reactions.
- Storm water that collects within secondary containment structures must be inspected prior to being discharged to ensure no pollutants are present. Contaminated storm water must be managed per Utility Environmental Practices (EPs)
- Spills cannot be discharged from a secondary containment system. See BMP on Spill Control.
- Hazardous waste must be segregated from other solid waste and disposed of properly.
- In addition to following this BMP, employees or contractors are responsible for compliance with federal, state, and local laws regarding storage, handling, transportation, and disposal of hazardous waste.

Maintenance and Inspection

- Routinely inspect the covers on hazardous material storage areas for tears or flaws and repair as necessary.
- All secondary containment systems must be able to hold the volume of the largest container in the storage area, plus provide sufficient additional capacity for storm events.
- Perform routine inspections to ensure that no hazardous materials or waste are improperly left exposed to storm water.



When

This contaminated soil management BMP should be used whenever soil contamination is suspect or contaminated soil is encountered. Construction crews should be extra vigilant on projects located in highly urbanized or industrial areas where soil contamination may have occurred because of spills, illicit discharges, and leaks from underground storage tanks.

Contaminated soils may also be encountered during digging and trenching activities on highways and roadways.

How

Contaminated soil wastes should be managed in accordance with the following procedures:

- Identify contaminated soil; look for the following:
  - Soil that is discolored, black, gray, white; or
  - Soil that has an unusual odor, such as, petroleum, acid, alkaline, sewage, solvent, or any other chemical smell.
- If any potentially contaminated soil is detected, discontinue the activity and contact the projects Environmental Representative.
- Contaminated soils must be managed properly per Utility Environmental Practices (EPs).

Maintenance and Inspection

- Perform routine inspections of digging and trenching operations looking for contaminated soils.
- All contaminated soils must be managed as hazardous substances, if applicable, in accordance with applicable federal, state, and local laws.

When

Use this BMP on all construction sites that use temporary or portable sanitary/septic waste systems.

How

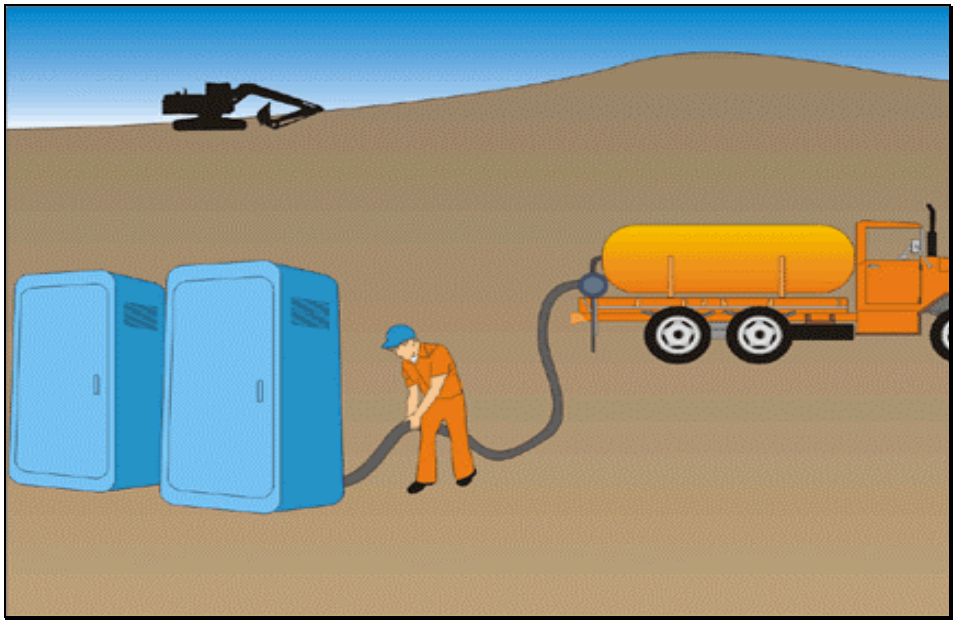
Sanitary/septic wastes shall be managed in accordance with the following procedures:

- Incorporate into regular safety meetings, education of employees, contractors, and suppliers on:
  - potential dangers to humans and the environment from sanitary/septic wastes
  - approved sanitary/septic waste 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 shall be secured to prevent overturning.
- Sanitary wastewater should not be buried or discharged, except to a properly permitted sanitary sewer discharge facility. A permit may be required from the local Sanitation District.
- Use only reputable, licensed sanitary/septic waste haulers.
- Temporary sanitary facility's holding tanks shall be emptied prior to transport.

Maintenance and Inspection

- Onsite sanitary/septic waste storage and disposal should be routinely inspected.
- Ensure that sanitary/septic facilities are maintained in good working order routinely serviced by a licensed service.

Pictures



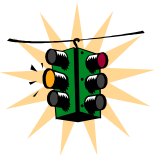
Good septic waste management.

When

- Liquid waste management is applicable to construction projects that generate any of the following non-hazardous byproducts, residuals, or wastes, such as:
  - Drilling slurries and drilling fluids
  - Grease-free and oil-free wastewater and rinse water
  - Dredging spoils
  - Other non-storm water liquid discharges not permitted by separate permits.
- Separate BMPs should also be referenced for the following onsite liquid wastes:
  - Dewatering operations
  - Liquid hazardous wastes, or
  - Concrete slurry residue

How

- Vehicle and equipment cleaning using water is discouraged on site.
- Drilling residue and drilling fluids should be disposed of in accordance with Sempra Energy Utilities procedures at an approved disposal site. Coordinate the disposal of these wastes with your Environmental Representative.
- Wastes generated as part of an operational procedure, such as waterladen dredged material and drilling mud, should be contained and not allowed to flow into drainage channels or receiving waters.
- Contain non-hazardous liquid wastes in a controlled area, such as a lined holding pit, lined sediment basin, roll-off bin, or portable tank.
- Containment devices must be of sufficient quantity or volume to completely contain the liquid wastes generated and any addition volume based on anticipated rainfall.



- **Do not locate containment areas or devices where accidental release of the contained liquid can threaten health or safety, or discharge to watercourses, storm drain system, or to a receiving water.**
- Capture all liquid wastes running off a surface that has the potential to affect the storm drainage system. Examples are: wash water and rinse water from cleaning walls or pavement.
- If the liquid waste is sediment laden, use a sediment trap or capture in a containment device and allow sediment to settle.
- Disposal of liquid wastes are subject to specific laws and regulations, or to requirements of other permits secured for the construction project. Contact your Environmental Representative for further information.

Maintenance and Inspection

- Remove deposited solids from containment areas and containment systems as needed, and at the completion of the project.
- Inspect containment areas and containment systems routinely for damage, and repair as needed.

Section 3 – Non-Storm Water Discharge Controls

Non-Storm Water Discharge Controls include general site and operations BMP measures that minimize pollution of water. Non-Storm Water Discharge Controls presented in this Manual include the following:

- BMP 3-01 Dewatering Operations
- BMP 3-02 Paving Operations
- BMP 3-03 Vehicle and Equipment Washing
- BMP 3-04 Vehicle and Equipment Fueling
- BMP 3-05 Concrete/Coring/Sawcutting and Drilling Waste Management
- BMP 3-06 Dewatering Utility Substructures and Vaults
- BMP 3-07 Vegetation Management including Mechanical and Chemical Weed Control
- BMP 3-08 Over-Water Protection
- BMP 3-09 Removal of Underground Utility Location/Mark-Out Paint

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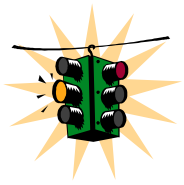
When

- This BMP is applicable to trench or excavation dewatering.
- Discharges of non-storm water from a trench or excavation that contain sediments or other pollutants to the sanitary sewer, storm drain systems, creek bed (even if dry), or receiving waters is prohibited. Water from dewatering activities is generally allowed to be discharged if the water does not contain any sediment or other pollutants. Verify with your local jurisdiction.
- Generally, non-contaminated discharges of non-storm water to lands (such as infiltration) are allowed. Some areas may require a permit or other regulatory approval. Verify with your local jurisdiction.



- **This BMP is not applicable to utility vault or sub-structure dewatering. For these applications, refer to the BMP on Dewatering Utility Substructures and Vaults.**
- **This BMP is not applicable if the water is known, or suspected to be, contaminated. Under these conditions, contact your Environmental Representative.**

How

Water generated by dewatering activities may be managed in accordance with the following procedures:

- Use water where possible for construction activities such as compaction and dust control. If used for these applications, ensure that the water will infiltrate and not run-off from the land to storm drain systems, to creek beds (even if dry) or to receiving waters.
- If allowed, infiltrate to an appropriate landscaped, vegetated or soil area. Note: Infiltration may be prohibited in accordance with local requirements. See "When" above.
- If water is to be discharged to land for infiltration:
  - The water may contain sediments, but must not be contaminated with other pollutants.
  - The water must not run-off from the land to storm drain systems, to creek beds (even if dry) or other surface waters.
  - Permission may be needed from the property owner on which the infiltration will occur.
- Water from dewatering, that contains only sediment, may be discharged if the sediment is allowed to settle out or the sediment is filtered out first. Alternatively, a vacuum truck may be used to remove the water and haul it to an authorized discharge location.
- If a permit is required, provide temporary onsite storage (Baker tanks, etc.) of water removed from trenches, excavations, etc., until a permit to discharge is obtained.
- If a permit is obtained for discharge to a storm water or sanitary sewer system, conduct all dewatering discharge activities in accordance with permit requirements.

Maintenance and Inspection

- Inspect pumps, hoses and all equipment before use. Monitor dewatering operations to ensure it does not cause offsite discharge or erosion.
- Inspect routinely, when applicable activities are under way.

When

Use this BMP for projects that involve pavement surfacing, resurfacing, removal, or patching applications of the following:

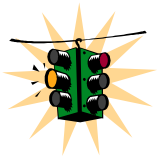
- Cold mix
- Asphalt
- Chip seal, seal coat, tack coat, slurry seal, or fog seal
- Portland cement concrete

For pavement grinding, sawcutting, coring or drilling, refer to BMP Concrete/Coring/ Sawcutting and Drilling Waste Management.

How

Use the following methods as applicable:

- Protect storm drain inlets near work and downgradient of the area to be paved.
- If onsite mixing is planned then an area must be designed for conducting the mixing. This area should be paved or made impervious (e.g., plastic or wood sheeting) and be located away from storm drain inlets or watercourses.
- Minimize overspray of tackifying emulsions or placement of other paving materials beyond the limits of the area to be paved.
- Use dry methods to clean equipment and conduct cleaning in accordance with the BMP on Vehicle and Equipment Washing.
- Material use and stockpiles to be managed in accordance with BMPs on material Use and Stockpile Management.
- Collect and remove all broken asphalt and concrete, recycle when feasible and dispose of materials in accordance with local, state, and federal requirements.



- **Do not apply asphalt, concrete paving, seal coat, tack coat, slurry seal or fog seal if rain is expected during the application or curing period.**
- **Avoid if possible, transferring, loading, or unloading paving materials near storm drain inlets or watercourses. If not possible, use BMP on Storm Drain Inlet Protection.**

Maintenance and Inspection

- Inspect and maintain equipment and machinery routinely to minimize leaks and drips.
- Inspect inlet protection measures routinely.

When

Use these procedures on all construction sites where vehicle and equipment cleaning is performed. Note that onsite vehicle and equipment washing is not typically performed on utility type construction projects and requires specific approval of a Utility Environmental Representative.

How

Use the following methods as applicable:

- Use "dry" cleaning methods such as wiping down, rather than water washing vehicles or equipment.
- Whenever possible washing should not be conducted at the construction site
- If onsite vehicle washing is authorized by the Environmental Representative, use the following general methods:
  - Vehicle and equipment washing must be located away from storm drain inlets, drainage systems, or watercourses.
  - Place sand bags or another type of berm around storm drain inlets and drainage systems to prevent wash water from entering a storm inlet, drainage system or watercourse.
  - Never discharge wash water to the storm drain system.
  - Use as little water as possible. High-pressure sprayers may use less water than a hose.
  - Use a positive shutoff valve to minimize water usage.

Maintenance and Inspection

Monitor employees and contractors through the duration of the construction project to ensure appropriate practices are being implemented.

When

Use this BMP for projects where onsite fueling of vehicles and equipment, including handheld equipment, is planned.

Vehicle and equipment fueling, except for handheld equipment, is typically not done on the construction site. Onsite fueling of vehicles and equipment may be planned if it is impractical to send vehicles and equipment off site for fueling.

Handheld equipment is treated separately from other equipment. Handheld equipment includes those smaller, manually operated pieces of equipment such as trenchers, mowers, chainsaws, generators, and other equipment that need fueling during regular daily operation.

How

Use the following measures as applicable:

Fueling Vehicles and Handheld Equipment

- If practical, fuel vehicles and equipment off site.
- Mobile fueling equipment is the preferred equipment used for onsite fueling.
- Fuel storage and fueling areas should be located away from storm drain inlets, drainage systems, and watercourses.
- All fueling will be conducted with the fueling operator in attendance at all times regardless if fuel nozzles are equipped with automatic shutoff features.
- Fuel tanks should not be "topped off."
- All fueling operators should have readily available spill containment and cleanup equipment and materials.
- Clean up any spills immediately and properly dispose of contaminated materials.
- Properly store and dispose of rags and absorbent material used to clean up any spilled fuel.
- Mobile fueling trucks and operators must have all necessary permits, licenses and training.

Maintenance and Inspection

- Check to ensure adequate supply of spill cleanup materials are available.
- Perform routine inspections of designated fueling areas.
- Report all spills immediately to the project Supervisor or the Environmental Representative

When

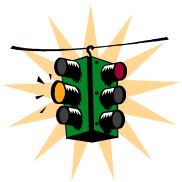
Projects where concrete and asphalt are used or where slurry or pavement/concrete wastes are generated by construction activities, including:

- Sawcutting
- Coring/drilling
- Grinding, re-paving or patching
- Encasing conduit in concrete
- Tower footings

For managing any concrete curing compounds, use the BMP on Hazardous Materials/Hazardous Waste Management. For managing paving operations, use BMP Paving Operations.

How

- Install storm drain protection at any down-gradient inlets that may be impacted by the activity. See the BMP on Storm Drain Inlet Protection.
- Minimize the amount of water used during coring/drilling or sawcutting. During wet coring or sawcutting, use shovel or wet vacuum to lift the slurry from the pavement. Additionally, if wet vacuuming is not adequate to capture wastewater from the activity, sand bag barriers or other containment should be used.
- If concrete residue remains after drying, the area should be swept up and residue removed to avoid contact with storm water or entering a storm drain or waterbody via the wind.



- **Do not wash residue or particulate matter into a storm drain inlet or watercourse**.
- The following options should be used for concrete truck chute and/or pump and hose washout:
  - If available, arrange to use an existing concrete washout station. Upon entering site, concrete truck drivers should be instructed about practices being used on site.
  - **Concrete Washouts:** Washout stations can be a plastic lined temporary pit or bermed areas designed with sufficient volume to completely contain all liquid and waste concrete materials plus enough capacity for rainwater. The designated area must be located away from storm drain inlets, or watercourses.
  - **Washout in Trench:** Manually rinsing the concrete truck chute into the trench itself.
  - **Bucket Washout:** Manually rinsing the chute into a wheelbarrow, plastic bucket or pail, and then empty the bucket into the concrete truck barrel or on top of the placed concrete.

Maintenance and Inspection

- Responsible personnel should ensure that all concrete truck drivers are instructed about project practices when the trucks arrive onsite.
- Clean out designated washout areas as needed or at a minimum when the washout is 75 percent full to maintain sufficient capacity throughout the project duration.
- Any designated onsite washout areas must be cleaned out and all debris removed upon project completion. Dispose of concrete waste according to the BMP on Solid Waste Management.
- Inspect routinely, when applicable activities are underway to ensure that concrete washout does not overflow.

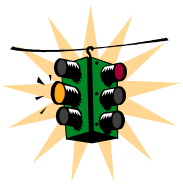
When

This BMP is applicable to utility substructure (vault) dewatering. This BMP does not apply to trench, excavation or other general dewatering associated with construction activities.

How

The discharge of water from dewatering of vaults and substructures to the storm drain is allowed under an existing NPDES permit (General Permit CAG990002, Order No. 2001-11-DWQ). General requirements for discharge under this permit are listed below:

- All dewatering discharges conducted by utility crews, including contractors, shall follow the latest versions of SCG/SDG&E Environmental Practice (EP) on Vault and Substructure Dewatering.
- Discharges to land require prior approval from the landowner.
- If the water to be discharged conforms to the practices within the EP, the discharge is allowed.



- **During discharge, do not allow pollutants (e.g., sediment) to come in contact with the discharge. For example, if there is pre-existing soil in the path of the discharge (i.e., gutter), it must be swept up or avoided before discharging the substructure water.**

Maintenance and Inspection

- Implement applicable provisions of the Environmental Practice.
- Inspect pumps, hoses and equipment before use and routinely when applicable activities are underway.
- Observe dewatering activities to ensure they do not cause erosion or discharge of potential pollutants.

When

Use this BMP whenever vegetation control is used. Vegetation control may consist of manual or mechanical removal of vegetation and/or chemical treatment.

How

General Vegetation Management Procedures:

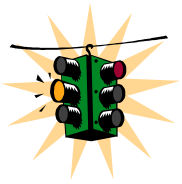
- Do not allow vegetation debris to enter storm drain inlets and watercourses.
- Identify drain inlets and watercourses, both upstream and downstream of the work site(s).
- Pre-plan the work to protect stormwater drainage systems and watercourses from discharge of potential pollutants, maintain equipment in good operating condition.
- Set up the work area to minimize the tracking of material by vehicles and equipment in or out of the work area.

Practice Good Housekeeping at the Work Site(s):

- Litter and debris should be collected and disposed of properly.
- Containers of liquids should be secured with lids until needed.
- Transport collected non-hazardous materials for proper disposal. If the material is a hazardous waste, follow the BMP on Hazardous Materials & Hazardous Waste Management. Contact your Environmental Representative.
- If a leak or spill occurs, protect drainage systems and watercourses from spilled material; follow the BMP on Storm Drain Inlet Protection.

Mechanical Weed Control Procedures

Mechanical weed control is the physical removal of weeds or unwanted vegetation growing around electric utility poles and electric distribution or transmission structures for fire control.

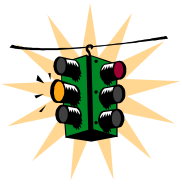


- **Do not stack or leave removed weeds or vegetation or other debris on or near drain inlets or in the storm water drainage system or watercourses.**
- **Do not fuel equipment next to drain inlets or place fuel or oil cans near or in watercourses, the storm drainage system or next to a drain inlet.**
- **Because of fire control requirements, do not leave cut vegetation around structures.**

Chemical Weed Control Procedures

This method of weed and vegetation control uses herbicides to eliminate and prevent weed growth. The purpose is to control vegetation growth year-round as needed for effective fire control.

To achieve effective vegetation control through chemical means and protect the environment, application personnel should:



- Use the correct herbicide for the application.
- Consider the seasonal timing of the application as applicable.
- **Do not use chemical vegetation control prior to a forecasted rain event.**

The applicators shall follow the following procedures:

- Only use those herbicides approved by SDG&E/SCG.
- Application of herbicides must conform to the SDG&E/SCG herbicide application protocol in addition to any Contractor owned protocols and label instructions. Contact your Environmental Representative for additional information.

How (continued)

- Apply pesticides only as specified on the "Pesticide Use Recommendation" on the label. The pesticide label is considered the law, and use of an herbicide inconsistent with the label is considered a violation. Follow safety and application methods as specified in the Annual Pesticide Safety Training.
- Follow the herbicide/pesticide application protocol when near storm water drainage system or watercourses.
- Calibrate the spray rig as needed, to ensure accurate application of herbicides.
- Record the use of all herbicides.
- Avoid using overhead irrigation for as long as recommended by the chemical manufacturer after applying pesticides or post-emergents.
- Avoid applying post-emergents prior to a predicted rain event.

Maintenance and Inspection

- Ensure that spraying equipment is maintained to prevent malfunctions.
- Inspect to confirm that mechanical and chemical weed control procedures have not created an erosion problem.

When

Prior to conducting over water activities, confirm the need for permits with appropriate local and state agencies.

This BMP applies to projects where:

- Construction, maintenance or repair activities will be conducted above surface waters. These activities include, but are not limited to, chipping, grinding, scraping, welding/burning, painting, wrapping and coating of pipes and conduits.
- Surface waters (dry or running) include creeks, streams, rivers, lakes and wetlands, bays, estuaries and oceans.

How

Use the following measures as applicable:

- Containment systems must be properly designed and installed prior to the beginning of any operation that may impact a water body to prevent discharge of pollutants to surface waters.
- The work area should be kept clean of all trash and potential pollutants.
- Containment booms should be placed around the area of work as necessary to contain the discharge of potential contaminants such as oil and hydraulic fluid.
- Special attention should be given to existing and forecasted wind and weather conditions to prevent pollutant discharges to surface waters.
- Shrouds should be used to prevent paint overspray, welding slag, and other pollutants from entering surface waters and being dispersed into the air. Shrouding may not be effective during periods of high wind.
- Shrouds should be large enough to adequately enclose or segregate the working area from surface waters. This may include a plywood barrier, visqueen, and scaffolding to help prevent fugitive material from entering surface waters.
- Support structures such as scaffolding shall be used in conjunction with shrouding to withstand potential wind stress.
- Contaminated shrouding material and equipment shall be thoroughly cleaned or disposed of properly.

Maintenance and Inspection

- Inspect the containment systems and shrouds routinely during work activities to ensure their integrity.

When

Use this BMP when utility projects involve mark-out by painting surfaces where underground utilities are located and where paint is required to be removed by local jurisdictions or another authority.

How

Use the following methods and options to remove Utility Mark-Out Paint:

- Use non-toxic, light degradable mark-out paint when possible
- Hydro Pressure wash
- Dry abrasive blast/grinding
- Wet abrasive blast/grinding
- Wet/Dry Vacuum
- Dry Sweep
- Install storm drain inlet protection at adjacent down gradient inlets during wet hydro pressure washing and wet abrasive blasting and grinding.
- Minimize the amount of water used during hydro washing.
- Use shovel or wet vacuum to lift the paint slurry from the pavement or surface.
- If wet vacuuming is not adequate to capture all wastewater from these activities, use additional containment (sand bags, booms, or other containment devices) methods near the work area to prevent the discharge to a storm drain inlet or watercourse.
- If paint residue remains after drying, the area should be swept up and residue removed to avoid contact with storm water.
- If paint residue remains after sweeping, the area can be water washed, as long as the water containing the paint residue is not allowed to enter storm drain inlets or watercourses.
- All waste should be disposed of using the BMPs for Liquid Waste Disposal.

Maintenance and Inspection

- Inspect all containment systems to ensure proper placement prior to starting utility paint removal operations
- Inspect and adjust equipment frequently; and maximize efficiency of the paint removal operations.

Section 4 – Erosion Control and Soil Stabilization

Erosion is the detachment of soil by water or wind. Erosion is a natural process that can be accelerated by construction activities such as grading and trenching. For example, when a site is cleared and grubbed, protective vegetation is removed and the disturbed soil is directly exposed to wind and water. Erosion Controls protect the soil surface and prevent the soil particles from being detached by rainfall or wind. Preservation of Existing Vegetation is an example of an Erosion Control BMP.

Soil Stabilization is a form of erosion control. It protects the exposed soil surface from rain and wind thereby preventing erosion. Hydroseeding is an example of a Soil Stabilization BMP. Erosion Control and Soil Stabilization BMPs in this Manual include:

- BMP 4-01 Preservation of Existing Vegetation
- BMP 4-02 Temporary Soil Stabilization (General)
- BMP 4-03 Hydraulic Mulch
- BMP 4-04 Hydroseeding
- BMP 4-05 Soil Binders
- BMP 4-06 Straw Mulch
- BMP 4-07 Geotextiles, Plastic Covers and Erosion Control Blankets/Mats
- BMP 4-08 Dust (Wind Erosion) Control

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When

This BMP is applicable to projects when:

- There are areas on site where no construction activity is planned or will occur later.
- Identify areas to be preserved in the immediate vicinity of the construction site, and mark as appropriate before clearing and grubbing or other soil disturbance activities begin.
- Areas with vegetation that can be preserved to protect against soil erosion, such as on steep slopes, watercourses, and building sites in wooded areas.
- Areas designated as Environmentally Sensitive Areas (ESAs), or where federal, state, or local government regulations require preservation, such as wetlands, vernal pools, marshes, etc. These areas are typically flagged by a qualified biologist.

How

Use the following measures as applicable:

- Preserve existing vegetation whenever possible.
- If necessary, contact the project Environmental Representative for any clarification regarding areas to be preserved.
- Whenever possible minimize disturbed areas by locating temporary roadways to avoid stands of trees and shrubs and follow existing contours to reduce cutting and filling.
- Construction materials, equipment storage and parking areas should be located outside the drip line of any tree to be retained.
- Consider the impact of grade changes to existing vegetation and the root zone.
- Remove any markings, barriers, or fencing after project is completed.

Maintenance and Inspection

- Maintain the clearly marked limits of disturbance during construction as appropriate to preserve vegetation.
- Inspect barriers regularly during construction.

Pictures

Vegetation to be preserved is marked and outside the work area.

When

This BMP is applicable to major projects when steep slopes are disturbed.

- For surface protection methods to prepare or protect the soil surface from the combined erosive effects of wind, rain, and storm water runoff.
- On slopes where the soil has been exposed because of construction activities, one or more Soil Stabilization BMPs may be required to be implemented.

How

- Use one or more of the below temporary soil stabilization practices when applicable as described above:
  - Hydraulic Mulch.
  - Hydro seeding.
  - Soil Binders.
  - Straw Mulch.
  - Geotextiles, Plastic Covers and Erosion Control Blankets/Mats.
- Implement prior to the onset of precipitation.
- Implement BMPs such as fiber rolls or gravel bag berms to break up the slope lengths as follows:
  - On steep slopes, BMPs should be placed on slopes 100 feet and greater at intervals no greater than 50 feet.
  - On very steep slopes, BMPs should be placed on slopes 50 feet and greater at intervals no greater than 25 feet.
- Permanent erosion control shall be applied to areas deemed substantially complete during the project's defined seeding window.
- Refer to individual Soil Stabilization BMPs for specific instructions for use.

Maintenance and Inspection

- Refer to individual temporary soil stabilization BMPs for maintenance and inspection requirements.

Pictures

Applying a tackifier using a trailer mounted pump and hose.

Applying soil stabilization manually in harder to reach areas.

When

- Hydraulic mulch is typically applied to disturbed areas requiring temporary protection until permanent vegetation is established or disturbed areas that must be re-disturbed following an extended period of inactivity.
- Avoid use in areas where the mulch would be incompatible with immediate earthwork activities and would have to be removed.

How

- Prior to application, roughen embankment and fill areas by rolling with a crimping or punching type roller or by track walking. Track walking shall only be used where other methods are impractical.
- Avoid mulch over-spray onto the traveled way, sidewalks, lined drainage channels, and existing vegetation.
- Hydraulic Mulches:
  - Apply as a liquid slurry using a hydraulic application machine (i.e., hydroseeder) at rates of mulch and stabilizing emulsion recommended by the manufacturer. Wood fiber hydraulic mulches are generally short-lived (only last a part of a growing season) and must be applied 24 hrs before rainfall to dry and become effective.
- Hydraulic Matrices:
  - Apply a combination of wood fiber and/or paper fiber mixed with acrylic polymers as binders. Apply as a liquid slurry using a hydraulic application machine (i.e., hydroseeder) at rates recommended by the manufacturer. Hydraulic matrices must be applied 24 hours before rainfall to dry and become effective.
- Bonded Fiber Matrix (BFM)
  - Apply BFM using a hydraulic application machine (mulch and tackifier are pre-mixed in a single bag) in accordance with manufacturers instructions. Do not apply immediately before, during, or after a rainfall.

Maintenance and Inspection

- Maintain an unbroken, temporary mulched ground cover throughout the period of construction when the soils are not being reworked. Inspect before expected rainstorms and repair any damaged ground cover and re-mulch exposed areas of bare soil.
- After any rainfall event, maintain all slopes to prevent erosion.

Pictures

Applying hydraulic mulch.

Close-up of bonded fiber matrix

When

Hydroseeding typically consists of applying a mixture of fiber, seed, fertilizer, and stabilizing emulsion with hydro-mulch equipment, which temporarily protects disturbed soil areas from erosion. It is applied on:

- Disturbed Soil Areas (DSAs) requiring temporary protection until permanent vegetation is established, or
- DSAs that must be redisturbed following an extended period of inactivity.

How

- Avoid use of hydroseeding in areas where the best management practice (BMP) would be incompatible with future earthwork activities and would have to be removed such as:
  - Steep slopes are difficult to protect with temporary seeding.
  - Temporary seeding may not be appropriate in dry periods without supplemental irrigation.
  - Temporary vegetation may have to be removed before permanent vegetation is applied.
  - Temporary vegetation is not appropriate for short-term inactivity.
- Hydroseeding can be accomplished using a multiple-step (with straw mulch) or a one-step process (mixed with hydraulic mulch, hydraulic matrix, or bonded fiber matrix). When the one-step process is used to apply the mixture of fiber, seed, etc., the seed rate shall be increased to compensate for all seed not having direct contact with the soil.
- Prior to application, roughen the slope, fill area, or area to be seeded with the furrows trending along the contours.
- Apply a straw mulch as necessary to keep seeds in place and to moderate soil moisture and temperature until the seeds germinate and grow.
- Follow-up applications shall be made as needed to cover weak spots, and to maintain adequate soil protection.
- Avoid over-spray onto the travel way, sidewalks, drainage channels and existing vegetation.

Maintenance and Inspection

- All seeded areas shall be inspected for failures and re-seeded, fertilized, and mulched within the planting season, using not less than half the original application rates. Any temporary revegetation efforts that do not provide adequate cover must be revegetated.
- After any rainfall event, maintain all slopes to prevent erosion.

Pictures

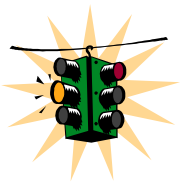
Applying hydroseed.

When

Soil binders are typically applied to disturbed soil areas requiring short-term temporary protection. Because soil binders can often be incorporated into the work, they may be a good choice for areas where grading activities will soon resume.

How

- Selection of soil binders should be approved by the projects Environmental Representative after an evaluation of site-specific factors. Binders have the following limitations:
  - Soil binders generally experience spot failures during heavy rainfall and may need reapplication after a storm and do not hold up to pedestrian or vehicular traffic.
  - Soil binders may not penetrate soil surfaces made up primarily of silt and clay, particularly when compacted.
  - Some soil binders may not perform well with low relative humidity. Under rainy conditions, some agents may become slippery or leach out of the soil.
  - May not cure if low temperatures occur within 24 hours of application.
- Follow manufacturer's recommendations for application procedures and cleaning of equipment after use. Any onsite cleaning must use appropriate BMPs for pollution prevention plans.
- Prior to application, roughen embankment and fill areas. Track walking shall only be used where rolling is impractical.
- Soil binders should not be applied during or immediately before rainfall, as they require a minimum curing time of 24 hours before they are fully effective.



- Avoid over-spray onto the traveled way, sidewalks, lined drainage channels, sound walls, and existing vegetation.
- **Do not apply soil binders to frozen soil, areas with standing water, under freezing conditions, or when the temperature is below 4°C (40°F) during the curing period.**
- More than one treatment is often necessary, although the second treatment may be diluted or have a lower application rate.
- For liquid agents:
  - Crown or slope ground to avoid ponding.
  - Uniformly pre-wet ground according to manufacturer's recommendations.
  - Apply solution under pressure. Overlap solution 150 to 300 mm (6 to 12 in).
  - Allow treated area to cure for the time recommended by the manufacturer; typically, at least 24 hours.
  - Apply second treatment before first treatment becomes ineffective, using 50 percent application rate.
  - In low humidities, reactivate chemicals by re-wetting according to manufacturer's recommendations.

Maintenance and Inspection

- Reapplying the selected soil binder may be needed for proper maintenance. Traffic areas should be inspected routinely.
- After any rainfall event, maintain all slopes to prevent erosion.

When

Straw mulch is used when:

- Temporary soil stabilization surface cover is needed on disturbed areas until soils can be prepared for re-vegetation and permanent vegetation is established.
- In combination with temporary and/or permanent seeding strategies to enhance plant establishment.
- Note, there is a potential for introduction of weed-seed and unwanted plant material with straw.

How

- A tackifier is the preferred method for anchoring straw mulch to the soil on slopes. Tackifiers act to glue the straw fibers together and to the soil surface, and the tackifier shall be selected based on longevity and ability to hold the fibers in place. Soil binders (tackifier) will generally experience spot failures during heavy rainfall events.
- A tackifier is typically applied at a rate of 125 pounds per acre. In windy conditions, the rates are typically 150 pounds per acre.
- Crimping, punch roller-type rollers, or track-walking may also be used to incorporate straw mulch into the soil on slopes. Track walking shall only be used where other methods are impractical.
- Avoid placing straw onto the traveled way, sidewalks, lined drainage channels, sound walls, and existing vegetation.
- Straw mulch with tackifier shall not be applied during or immediately before rainfall.
- Apply loose straw at a minimum rate of 4,000 pounds per acre, either by machine using a straw blower or by hand distribution.
- The straw mulch must be evenly distributed on the soil surface.
- Anchor the mulch in place by using a tackifier or by “punching” it into the soil mechanically. “Punching” of straw does not work in sandy soils.
- Methods for holding the straw mulch in place depend on the slope steepness, accessibility, soil conditions and longevity. If the selected method is incorporation of straw mulch into the soil, then do as follows:
  - On small areas, a spade or shovel can be used.
  - On slopes with soils, which are stable enough, and of sufficient gradient to safely support construction equipment without contributing to compaction and instability problems, straw can be “punched” into the ground using a knife-blade roller or a straight bladed coulter, known commercially as a “crimper.”
  - On small areas and/or steep slopes, straw can also be held in place using plastic netting or jute. The netting shall be held in place using 11 gauge wire staples, geotextile pins or wooden stakes (as described in BMP on “Geotextiles, Plastic Covers and Erosion Control Blankets/Mats”).
- Remove straw as necessary prior to permanent seeding or soil stabilization.

Maintenance and Inspection

- The key consideration in maintenance and inspection is that the straw needs to last long enough to achieve erosion control objectives.
- Reapplication of straw mulch and tackifier may be required to maintain effective soil stabilization over disturbed areas and slopes.
- After any rainfall event, maintain all slopes to prevent erosion.

Pictures

Straw mulch.

When

- The following methods are used when disturbed soils may be particularly difficult to stabilize or access, including the following situations:
  - Steep slopes, generally steeper than 1:3 (V:H).
  - Slopes where the erosion hazard is high.
  - Slopes and disturbed soils where mulch must be anchored.
  - Disturbed areas where plants are slow to develop adequate protective cover.
  - Channels with high flows.
  - Channels intended to be vegetated.
  - Slopes adjacent to water bodies of Environmentally Sensitive Areas (ESAs).
- Blankets and mats are generally not suitable for excessively rocky sites, or areas where the final vegetation will be mowed (because staples and netting can catch in mowers).
- Plastic results in 100 percent runoff, therefore, their use is limited to:
  - Covering stockpiles.
  - Covering small graded areas for short periods, such as through an imminent storm event, until alternative measures may be installed.

How

- Proper site preparation is essential to ensure complete contact of the blanket or matting with the soil.
- Grade and shape the area of installation.
- Remove all rocks, clods, vegetation or other obstructions so that the installed blankets or mats will have complete, direct contact with the soil.
- Prepare seedbed by loosening of topsoil.
- Seed the area before blanket installation for erosion control and revegetation. Seeding after mat installation is often specified for turf reinforcement application. When seeding prior to blanket installation, all check slots and other areas disturbed during installation must be re-seeded. Where soil filling is specified, seed the matting and the entire disturbed area after installation and prior to filling the mat with soil.
- U-shaped wire staples, metal geotextile stake pins or triangular wooden stakes can be used to anchor mats and blankets to the ground surface.
- Wire staples and metal stakes should be driven flush to the soil surface.
- All anchors should be 6 in to 18 in long and have sufficient ground penetration to resist pullout. Longer anchors may be required for loose soils.
- Installation on slopes – Consult the manufacturer's recommendations for installation. In general, these will be as follows:
  - Begin at the top of the slope and anchor the blanket in a 6 in deep by 6 in wide trench. Backfill trench and tamp earth firmly.
  - Unroll blanket downslope in the direction of water flow.
  - Overlap the edges of adjacent parallel rolls 2 in to 3 in and staple every 3 ft.
  - When blankets must be spliced, place blankets end over end (shingle style) with 6 in overlap. Staple through overlapped area, approximately 12 in apart.
  - Lay blankets loosely and maintain direct contact with the soil. Do not stretch.
  - Staple blankets sufficiently to anchor blanket and maintain contact with the soil. Staples shall be placed down the center and staggered with the staples placed along the edges.
- Blankets and mats must be removed and disposed of prior to application of permanent soil stabilization measures.

Maintenance and Inspection

- Areas treated with temporary soil stabilization should be inspected routinely and before and after significant forecasted storm events. Any failures should be repaired immediately. Areas treated with temporary soil stabilization should be maintained to provide adequate erosion control. Temporary soil stabilization should be reapplied or replaced on exposed soils when greater than 10 percent of the previously treated area becomes exposed or exhibits visible erosion.
- If washout or breakage occurs, re-install the material after repairing the damage to the slope or channel.

Pictures

Several types of Erosion Control Blankets.

When

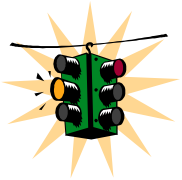
This practice is implemented on exposed soils or materials subject to wind erosion.

How

Use the following measures as applicable:

- Water applied for dust control should be applied evenly and in a manner that does not generate runoff.
- Appropriate methods of applying dust control (covers or water and the means to apply it) should be available for projects with the potential to create dust.
- Dust control must be implemented in accordance with local air quality requirements.
- Dust control methods should be approved by an Environmental Representative.
- Obtain prior approval to use any chemical dust suppressant from the projects Environmental Representative.
- Non-potable water should not be conveyed in tanks or drainpipes that will be used to convey potable water and there should be no connection between potable and nonpotable supplies. Non-potable tanks, pipes and other conveyances should be marked **"NON-POTABLE WATER – DO NOT DRINK."**
- If reclaimed wastewater is used for dust control, the sources and discharge must meet California Department of Health Services water reclamation criteria and the Regional Water Quality Control Board (RWQCB) requirements. Approval for use of reclaimed wastewater must be obtained from the projects Environmental Representative.

(dry or running)



Maintenance and Inspection

- Check areas protected to ensure coverage.
- Reapply water or maintain covers, as necessary to maintain their effectiveness.

Pictures

Water being applied for dust control.

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APPENDIX A DEFINITIONS AND ACRONYMS

BMP	Best Management Practice
BASE	Construction and Operations Center (The Gas Company)
C&O Center	Construction and Operations Center (SDG&E)
Caltrans	California Department of Transportation
Discharger	Any person who discharges waste that could affect the quality of California waters.
DSA	Disturbed Soil Area
EP	Environmental Practice
FCD	Formal Communication Document
Non-rainy Season	May 1 to October 1, except for Southern California Desert Area where the non-rainy season ends August 1.
Rainy Season	October 1 through May 1, except for Southern California Desert Area where the rainy season starts on August 1.
RWQCB	Regional Water Quality Control Boards (RWQCB) – nine Water Boards located throughout California that are responsible for enforcing water quality standards within their boundaries.
Runoff	Rainfall or snow melt that is not absorbed by soil, evaporated, or transpired by plants, but finds its way into streams as surface flow.
ROW	Right of Way
SCG	Southern California Gas Company (The Gas Company)
SDG&E	San Diego Gas and Electric Company
SWRCB	State Water Resources Control Board (SWRCB) – The State Board responsible for protecting and preserving water quality and water rights in California.
SEU	Sempra Energy Utilities
SWPPP	Storm Water Pollution Prevention Plan
Watershed	The total land area that contributes water to a river, stream, lake, or other body of water. Synonymous with drainage area, drainage basin.

APPENDIX A DEFINITIONS AND ACRONYMS

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Appendix E

Geotechnical Siting Studies

GEOTECHNICAL SITING STUDY

SAN DIEGO GAS & ELECTRIC
PROPOSED OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK – PARCELS 7, 16 AND 17
OCEANSIDE, CALIFORNIA

June 26, 2012

June 26, 2012
Project No. 124202

Mr. Richard Miller
San Diego Gas & Electric
8316 Century Park Court
Suite CP 52G
San Diego, California 92123-1582

Subject: Geotechnical Siting Study
San Diego Gas & Electric
Proposed Ocean Ranch Substation
Pacific Coast Business Park - Parcels 7, 16 and 17
Oceanside, California

Dear Mr. Miller:

This report presents the results of our geotechnical siting study of three potential sites for the proposed San Diego Gas & Electric Ocean Ranch Substation to be located in the Pacific Coast Business Park in Oceanside, California. The three potential sites included Parcels 7, 16 and 17.

We appreciate this opportunity to be of continued service and look forward to future endeavors. If you have any questions about our report, please contact us at (858) 320-2000.

Very truly yours,

KLEINFELDER, INC.

Trampus L. Grindstaff
Project Engineer

Kevin M. Crennan, GE 2511
Senior Geotechnical Engineer

REGISTERED PROFESSIONAL ENGINEER
KEVIN M. CRENNAN
No. 2511
EXP. 12/31/13
GEOTECHNICAL
STATE OF CALIFORNIA

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Project Engineering Geologist

REGISTERED GEOLOGIST
DALE M. HAMELEHLE
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CERTIFIED ENGINEERING GEOLOGIST
EXP. 12/31/12
STATE OF CALIFORNIA

5015 Shoreham Place, San Diego CA 92122 **p |** 858.320.2000 **f |** 858.320.2001

TABLE OF CONTENTS

Section **Page**

5015 Shoreham Place, San Diego CA 92122 **p |** 858.320.2000 **f |** 858.320.2001

TABLE OF CONTENTS (CONTINUED)

Section

5015 Shoreham Place, San Diego CA 92122 **p |** 858.320.2000 **f |** 858.320.2001

1 INTRODUCTION

1.1 PURPOSE AND SCOPE OF SERVICES

San Diego Gas & Electric (SDG&E) is evaluating the suitability of three potential sites for siting a new substation within the Pacific Coast Business Park located in the Oceanside area of San Diego County. Kleinfelder has performed a siting study of Parcels 7, 16 and 17 located in the southern portion of Pacific Coast Business Park. The purpose of our siting study was to present preliminary geologic and geotechnical considerations pertaining to development of the potential substation sites in order to assist SDG&E with selecting and potentially acquiring one of the sites. Supplemental subsurface exploration, laboratory testing, analysis and design would be required during the future design-level phase.

For this current study, we performed a site reconnaissance and reviewed regional geologic literature and readily available consultant reports for the business park. In addition, we performed a limited field and laboratory investigation to further evaluate the subsurface conditions within each of the three potential sites. Using data obtained from the above activities, we evaluated geologic hazards and developed geotechnical considerations for use in evaluating the candidate sites. Specifically, we performed the following tasks:

- Review of readily available geotechnical and geologic literature including previously completed geotechnical studies, project site grading report, topographic maps, geologic maps, and stereoscopic aerial photographs.
- Perform a geologic reconnaissance of the three parcels.
- Perform a limited geotechnical subsurface field investigation and laboratory testing.
- Compilation and synthesis of the data obtained.
- Evaluation of potential geologic hazards including surface fault rupture, seismicity and ground shaking, liquefaction and seismic induced settlement, landsliding, expansive soils, unconsolidated soils, tsunamis and seiches, and flooding.

- Preparation of this report presenting our preliminary findings and conclusions, specifically those related to potential geologic and soils constraints that may impact site development and performance.

2 SITE DESCRIPTION AND HISTORY

2.1 PROJECT AND SITE DESCRIPTION

The project area for all three potential substation locations (Parcels 7, 16 and 17) is located off of Avenida del Oro in the Pacific Coast Business Park in Oceanside, California, as shown on Plate 1, Site Vicinity Map. Our understanding of the proposed development is based on our review of Concept Layout Plan for Ocean Ranch Substation, prepared by San Diego Gas & Electric. The plan for Parcel 7 was dated January 27, 2012 and the plans for Parcels 16 and 17 were dated March 1, 2012. In general, the plans include a layout of a new substation with a perimeter access road, battery storage areas and water quality areas.

Parcel 7 is located along the west side of Avenida del Oro at the south end of Blacks Beach Street. Parcels 16 and 17 share a property boundary and are located east of Parcel 7 and Avenida del Oro, at the south end of Rocky Point Drive. The three parcels are shown on Plate 1, Site Vicinity Map and on Plate 2, Field Exploration Map.

Parcel 7 is semi-rectangular in shape and sits north of an existing US Postal Office. Site elevations range from about 387 feet Mean Sea Level (MSL) in the southwest corner to about 382 feet MSL in the northeast corner. An approximate 50-foot high slope descends from the south end of the site to the post office. The site is sparsely vegetated with native grasses and small bushes. A roughly graded access road for the existing SDG&E transmission corridor is located along the western side of the parcel. Existing slopes on the south, west and east sides of the site appear to have inclinations of about 2 horizontal to 1 vertical (2H:1V). An approximate 4-foot high soil berm is located on the north end of the site. Preliminary plans provided by SDG&E indicate the substation may be located along the southwest portion of the parcel with an access road from the cul-de-sac off of Blacks Beach Street. Existing SDG&E transmission easements are located on the west and south sides of the parcel.

Parcels 16 and 17 are triangular in shape and have a common property boundary directly south of Rocky Point Drive. These parcels are moderately to densely vegetated with native grasses and bushes. Avenida del Oro borders the western property line of Parcel 16 and an existing commercial development is located to the north, south and east of Parcel 17. An approximately 4-foot high soil berm with small trees traverses

through the central portion of the parcels along the property boundary, roughly in a southwest to northeast direction. Existing slopes located on the southern portion of Parcel 16 appear to have inclinations of about 2H:1V. The sites have gentle to moderately sloping topography with gradients that slope to the southwest. The total differential elevation across each parcel is approximately 4 feet, with Parcel 17 being about 4-foot higher in elevation overall. A large soil berm surrounds the cul-de-sac on the north end of each site; however, an access road for Parcel 16 is located on the west side of Rocky Point Drive. Relatively large (40 to 50 feet in diameter) stormwater desilting basins are located within the northern portion of Parcel 7 and the southwestern portion of Parcels 16 and 17. These desilting basins have a corrugated steel stand pipe within the deepest portion of the basin. The sides of the basins on Parcels 16 and 17 have several erosion gullies that are about 1 to 3 feet in depth. It is anticipated that loose soil sediments have accumulated within each of these desilting basins. Preliminary plans indicate the proposed substation for either site may be located at the northern portion of the parcels and the access road located from cul-de-sac at the south end of Rocky Point Drive.

2.2 SITE HISTORY

Our understanding of the proposed substation sites is based on our discussions with SDG&E and our review of the following documents:

- Preliminary Geotechnical Investigation, Pacific Coast Industrial Park, SW Corner of College Boulevard and Old Grove Road, Oceanside, California, prepared by Medall, Aragon Geotechnical, Inc. (MAG), dated June 14, 2004.

- Supplemental Geotechnical Investigation, Pacific Coast Business Park, Oceanside, California, by Davis Earth & Materials, Inc., dated December 9, 2005 (included as Appendix C of Christian Wheeler 2006 report).

- Report of Supplemental Geotechnical Investigation, Pacific Coast Business Park, Old Grove Road and Avenida del Oro, Oceanside, California, prepared by Christian Wheeler Engineering, dated June 14, 2006.

- Report of Mass Grading Observations and Testing, Pacific Coast Business Park, Old Grove Road and Avenida del Oro, Oceanside, California, prepared by Christian Wheeler Engineering, dated May 2, 2007.

- Rough Grading Plans for Pacific Coast Business Park, Parcels 1 through 30, City of Oceanside, California, Sheets 1 through 19, prepared by BHA Inc., As-built dated March 6, 2008.

- Concept Layout Plan for Ocean Ranch Substation, prepared by San Diego Gas & Electric Company, San Diego California, dated January 27, 2012.

- Concept Layout Plan for Ocean Ranch Substation, Parcels 16 and 17, prepared by San Diego Gas & Electric Company, San Diego California, dated March 1, 2012.

Based on our review of the referenced documents, soils placed during grading operations in the early 1980's for the alignment of Avenida del Oro and the commercial development along the southern site boundary of the business park were identified as "offsite fills". The referenced 2004 geotechnical study by Medall, Aragon Geotechnical (MAG) indicates the fill soils were placed under controlled conditions, however, the competency of the fill needed to be further evaluated. Reports for the compaction testing during grading operations were not available for our review for these areas located along the west and southern portions of Parcels 16 and 17, respectively. The 2006 Christian Wheeler (CW) report states the fill was placed in the early 1980's and placement of this fill was observed, tested and documented by Prater Associates in 1982. Based on this information, CW considered the fill suitable in its current condition to support new fill and/or settlement-sensitive improvements. However, the 2006 report did recommend that all residual soils, and all loose alluvial / colluvial soils be removed and replaced as properly compacted fill. Undocumented fill soil was also noted within the alignment of the 20-foot-wide easement for a 27-inch water line that bisects Parcels 16 and 17. As discussed in a following section, this undocumented fill was reportedly removed in a later phase of grading and replaced with compacted fill.

A bedding plane shear zone was identified by MAG (2004) near the base of the existing 30-foot high cut slope along the southern property boundary of Parcel 7. The bedding shear zone was characterized as a soft clayey gouge varying in thickness up to about one inch. The bedding shear is referred to as a low-angle bedding parallel shear zone. Such shear zones typically have significantly reduced strength relative to adjacent intact materials and occur in association with landslides. The MAG (2004) report recommended that a buttress, or stability fill, be placed along the existing cut slope with the key of the

excavation at least 5 feet below the bedding plane shear to improve the new fill slope's stability. The 2006 report by CW concurred with the stability fill recommendation by MAG for Parcel 7.

Previous grading within the business park in the 1980s consisted of rough grading of Avenida del Oro from the southern site boundary to its intersection with Old Grove Road, between Parcel 7 and Parcel 16. Fills over 60 feet in thickness exist where Avenida del Oro bisects the parcels and crosses the previously filled canyon, or finger drainage feature, at the southern portion of the business park. Cut slopes up to about 40 feet in height were located along the southern and western property line of Parcel 7. Pre-grading elevations on the parcels varied from about 302 feet MSL within the drainage feature on Parcel 16, up to approximately 400 feet at northwest corner of Parcel 7.

The Christian Wheeler (2007) grading report documents that the mass grading operations for the business park development were performed in accordance with the geotechnical recommendations presented in the referenced reports (MAG, 2004 and Christian Wheeler, 2006). Specifically, the grading report documents the stability fill on Parcel 7 was constructed as recommended and the key excavation extended 5 feet below the base of a bedding plane shear zone. Recommended subdrains at the base of the deep canyon fills within Parcels 16 and 17 were documented as being located and tied into existing drainage systems. The deep canyon drain was also completed within a finger canyon of Parcel 7 and a heel drain was installed along the south side of Parcel 7 within the stability fill slope. Sheets 15 through 17 of the as-built grading plans by BHA, Inc. are included in Appendix C for reference

Undocumented fill soils associated with the 27-inch water line traversing Parcels 16 and 17 were addressed during the removal and relocation of the water line. However, in some areas of the parcels, the alluvial / colluvial soils were evaluated and deemed competent by Christian Wheeler (2007) by utilizing in-place density testing during grading. This slightly contradicts the recommendations provided in the referenced geotechnical reports that all of the alluvium / colluvium should be removed prior to fill placement, but was based on direct observation and testing during grading. Due to the deep canyon fills (nearly 80 feet) in some areas of Parcel 16 and 17, settlement monuments were installed. Results of the settlement monitoring were not included in the Christian Wheeler (2007) grading report and supplemental monitoring results have not been provided for our review. Based on the final graded surface elevations, a cut / fill transition was documented traversing Parcel 7

and possibly the extreme northern corner of Parcel 16. Undercutting within the cut portion of these parcels was not completed at the time of grading, as the location of proposed improvements was not known at that time. Undercuts are typically performed with the cut portion of cut / fill transitions in order to limit potential differential settlement within structures by having all foundation elements or slab-on-grade within compacted fill.

3 INVESTIGATION METHODS

3.1 GEOLOGIC EVALUATION

Our geologic evaluation consisted of reviewing aerial photographs, geologic reports and maps reasonably available to our office, previous geotechnical and as-graded reports provided by SDG&E, and observation of the geotechnical conditions in the field at the time of our field reconnaissance and subsurface investigation. The geology of the site area is shown Regional Geologic Map, Plate 3.

Based on the results of our initial desktop review, we focused our investigation on the primary geotechnical issues including the stability fill slope on the south end of Parcel 7, the existing condition of the fill material, the alluvium / colluvium within the canyon drainages below engineered fill, potential settlement of deep fills placed within the drainage features within Parcels 16 and 17, and the cut / fill transitions within the graded pads.

3.2 FIELD RECONNAISSANCE

A certified engineering geologist from Kleinfelder conducted a site reconnaissance of the three parcels to assess and document current surface conditions. The graded pads are undeveloped and topography is relatively gently sloping. Vegetation varies from sparse to locally dense. Surficial soils show signs of desiccation or shrinkage and some surface cracking, which are indicative of near-surface clayey soil which has dried. Desilting basins are present in Parcels 7, 16 and 17. Several deeply eroded channels leading to and within the desilting basins have developed. All three parcels have semi-circle gravel bags placed on the surface at intervals across the sites for reducing surface runoff velocity and associated erosion. Relatively soft and moist soil conditions were observed at the ground surface in some areas during the site reconnaissance.

3.3 LIMITED SUBSURFACE INVESTIGATION

Kleinfelder conducted a limited subsurface investigation of the three parcels that included six borings and seven test pits. The borings were excavated between the dates of April 24 and April 26, 2012 to depths between 50 and 80 feet. The 8-inch diameter borings were excavated with a truck-mounted drill rig equipped with hollow stem augers and operated by Scott's Drill Company of Oceanside, California.

Seven backhoe test pits were excavated on April 25, 2012. The depth of the excavations ranged from about 5 to 10 feet. The test pit excavations were performed by Cut'N Core Inc., of San Diego, California. The test pit excavations were backfilled with compactive effort applied by the backhoe with a sheeps foot wheel attachment. The approximate location of each boring and test pit excavation is shown on Plate 2, Field Exploration Map, and logs of borings and test pit excavations are included in Appendix A, along with additional details of the field investigation.

3.4 LABORATORY TESTING

A limited laboratory testing program was conducted to evaluate physical characteristics of select soils encountered. The limited testing primarily consisted of moisture content and unit weight to evaluate the fill, consolidation testing of the alluvium that remained in place below the fill, and expansion index tests. The testing was performed in general accordance with the applicable ASTM test methods. Details of the laboratory testing program are presented in Appendix B.

4 SITE CONDITIONS

4.1 REGIONAL GEOLOGIC SETTING

The project site is situated in the western San Diego County section of the Peninsular Ranges geomorphic province of California. This province is characterized by mountainous terrain on the east composed mostly of Mesozoic igneous and metamorphic rocks, and relatively low-lying coastal terraces to the west underlain by late Cretaceous-, Tertiary-, and Quaternary-age sedimentary rocks. The portion of the province in San Diego County that includes the project sites generally consists of Tertiary-age sedimentary rocks and Quaternary-age alluvial materials deposited in the inland valleys. The proposed sites are underlain by the Eocene-age Santiago Formation consisting of interbedded sandstone, siltstone and claystone, according to Tan and Kennedy (2005).

4.2 REGIONAL FAULTING AND SEISMICITY

The Peninsular Ranges are traversed by several major active faults. The Whittier-Elsinore, San Jacinto, and the San Andreas faults are major active fault systems located northeast of the site and the Rose Canyon, Newport-Inglewood (offshore), Coronado Bank, and San Diego Trough are active faults located to the west-southwest. Tectonic activity associated with these and other faults is predominantly right-lateral strike-slip movement. These faults, as well as other faults in the region, have the potential for generating earthquakes and associated strong ground motions at the proposed sites. The nearest of these fault systems, the Rose Canyon fault, lies approximately 8 miles to the west and is the most significant fault to the site with respect to the potential for seismic activity. Lindvall and Rockwell (1995) have described the Rose Canyon fault system in terms of several segments that each has distinctive earthquake potential. The closest segment is the Delmar segment located about 8 miles to the west, which extends from La Jolla on the south to Oceanside on the north where it apparently merges with the Newport-Inglewood fault zone.

4.3 SITE GEOLOGY

The site is underlain by the Eocene-age Santiago Formation and surficial units consisting of fill and undifferentiated alluvium / colluvium. Detailed descriptions of these units are provided in Appendix A (Boring Logs and Test Pit Excavations), and

generalized descriptions are provided in the subsequent sections below as described in the cited literature and as observed on the sites.

4.3.1 Fill

Fill materials are present throughout each of the three parcels and are associated with the mass grading operations for the Pacific Coast Business Park in 2007 and construction of Avenida del Oro in the 1980s. Our review of previous topographic maps and our limited field investigation indicates that the fill depth is up to about 50, 80 and 85 feet within Parcels 7, 16 and 17, respectively. Compaction of this fill was observed and tested by Christian Wheeler (2007) and was reported to be a minimum 90 percent relative compaction based on the ASTM D1557 modified proctor maximum dry density. For fills deeper than 50 feet, as noted for Parcels 16 and 17, the fill was reported to have been compacted to a minimum of 95 percent relative compaction per ASTM D1557. Standard Penetration Test (SPT) and California Sampler blow counts for fill soils encountered at the three parcels ranged from 24 to 92 blows per foot, which are generally consistent with the reported levels of compaction. The fills were likely derived from the on-site materials and generally consist of clayey sand, sandy clay and silty sand. The specified Expansion Index for grading was for a maximum EI of 90 within the upper 5 feet. The majority of fills throughout each parcel are documented and considered engineered fill, with the exception of older fills associated with construction of Avenida del Oro and the neighboring commercial development along the southern portion of Parcel 17.

Limited laboratory test results for moisture content of fill soils collected during our field investigation ranged between 5.5 and 31.9 percent with an average of about 12 percent. Reported optimum moisture contents for soils used as fill material during the 2006 and 2007 grading operations ranged between 9.7 and 21.7 percent (Christian Wheeler, 2007). The high moisture content of 31.9 percent is likely attributed to the depth of the sample tested being just above the fill / formation contact where perched water may accumulate. The in-situ dry density test results of the soil samples tested from our study were between 115 and 125 pounds per cubic foot (pcf), with an average of about 121 pcf. The Christian Wheeler grading report documented the maximum dry density of the fill soils tested and placed during the earthwork operations at the three parcels between 110 and 123 pcf.

4.3.2 Alluvium / Colluvium

Alluvium / Colluvium accumulates on and near the bottom of the natural slopes and drainages on the site through a combination of stream deposition and gravitational processes. These materials were identified in the referenced geotechnical reports to be located in drainage features and consist primarily of sandy clays and clays. Complete removal and recompaction was recommended. However, as previously discussed in this report, in-situ relative density testing and observation was performed during grading by Christian Wheeler (2007) in some areas where the material was encountered and determined by Christian Wheeler that they were of suitable density and depth so that complete removal was not required. The thickness of these soils was about 10 feet at three of the exploratory boring locations (B-4, B-5 and B-6) in Parcels 16 and 17. SPT and California Sampler blow counts for these soils ranged from 55 to 87 blows per foot.

4.3.3 Santiago Formation

The Cretaceous-age Santiago Formation has been mapped underlying the subject site (Kennedy and Tan, 2005), and was encountered in the previous consultant investigations and all of our explorations performed during our subsurface evaluation. Data from the exploratory borings and trenches and examination of the numerous cut slopes on and near the site indicate the Santiago Formation consists primarily of interbedded fine to coarse, light gray to light brown, massively bedded sandstone, clayey siltstone, and claystone. The sandstones vary from very highly cemented with thin concretionary beds to moderately cemented and friable. Siltstones are massive to locally thinly bedded, and moderately well-cemented. Recorded SPT and California Sampler blow counts for the Santiago Formation were relatively high, having a range of penetration of 2 to 5 inches for 50 blows.

4.4 GROUNDWATER

Groundwater was not encountered in any of our borings or test pit excavations. We anticipate that groundwater is located well below the proposed construction elevations. The depth to the regional groundwater table is anticipated to be significantly deeper than anticipated grading depths. The groundwater table may fluctuate with seasonal variations and irrigation. Groundwater is not expected to be a constraint to development at any of the sites.

5 DISCUSSIONS, CONCLUSIONS, AND RECOMMENDATIONS

5.1 POTENTIAL GEOLOGIC HAZARDS

Potential geologic hazards considered in our study include, fault surface rupture, seismic shaking, landslides, liquefaction, seismically induced settlement, tsunamis, seiches, flooding, and expansive soils. The following sections discuss these hazards and their potential at this site in more detail.

5.1.1 Seismic Shaking

The project area is considered to be seismically active, as is most of southern California. Based on our review of the referenced geologic maps, stereoscopic aerial photographs, and geologic reconnaissance, the subject sites are not underlain by known active or potentially active faults (i.e., faults that exhibit evidence of ground displacement in the last 11,000 years and 1,600,000 years, respectively), nor do the sites lie within an Alquist-Priolo Earthquake Fault Zone.

The Rose Canyon, Newport Inglewood Fault (offshore segment) is the closest active fault with an approximate distance of about 8 miles to the west of the site. The maximum moment magnitude associated with the offshore segment of the Rose Canyon, Newport Inglewood Fault is 7.1 (Cao et. al., 2003). The seismic shaking hazard is essentially the same for all three parcels.

5.1.2 Fault Surface Rupture

As previously discussed, the subject sites are not underlain by known active or potentially active faults. Therefore, the potential for ground rupture due to faulting at the sites is considered low for all three parcels.

5.1.3 Landslides and Slope Stability

Landslides are deep-seated ground failures (several tens to hundreds of feet deep) in which a large arcuate shaped section of a slope detaches and slides downhill. Landslides should not be confused with minor slope failures (slumps), which are usually limited to the topsoil zone and can occur on slopes composed of almost any geologic material. Landslides can cause damage to structures both above and below the slide mass. Structures above the slide area are typically damaged by undermining of

foundations. Areas below a slide mass can be damaged by being overridden and crushed by the failed slope material.

Several formations within the San Diego region are particularly prone to landsliding. These formations generally have high clay content and are more prone to mobilize when they become saturated with water. Other factors, such as steeply dipping bedding that project out of the face of the slope and/or the presence of fracture planes, will also increase the potential for landsliding.

No surficial indications of deep-seated landsliding were noted at the three sites during our field reconnaissance or in topographic maps we reviewed. There were no mapped landslides in the geologic literature we reviewed. As discussed earlier, prior to mass grading at the site a bedding plane shear zone was identified by MAG (2004) near the base of the currently existing 30-foot high cut slope along the southern property boundary of Parcel 7. The bedding shear zone was characterized as a low-angle bedding plane composed of soft clayey gouge varying in thickness up to about one inch. Such shear zones typically have significantly reduced strength relative to adjacent intact materials and can occur in association with landslides. To address the presence of the shear zone and its potential effect on slope stability, a buttress fill was placed along the southern side of Parcel 7. Slope stability analyses performed by MAG (2004) concluded that the buttressed fill slope achieved a factor of safety in excess of 1.5.

Kleinfelder performed a cursory review of the static and seismic slope stability analyses in the report for the stability fill slope north of the existing US Post Office complex. Soil strength parameters used in the initial analyses by MAG for the slope stability check were confirmed from the results of our field investigation, direct shear testing, and engineering judgment.

The external static and seismic factors of safety calculated from the slope stability analyses were above the generally accepted minimum factors of safety of 1.5 and 1.1, respectively. Based on the results of our review, field investigation and limited engineering evaluations indicating the calculated factors of safety exceed the industry minimum, it is our opinion that the potential for significant large-scale slope instability is considered low for all three parcels.

5.1.4 Liquefaction and Seismic Settlement

The term liquefaction describes a phenomenon in which saturated, cohesionless soils temporarily lose shear strength (liquefy) due to increased pore water pressures induced by strong, cyclic ground motions during an earthquake. Structures founded on or above potentially liquefiable soils may experience bearing capacity failures due to the temporary loss of foundation support, vertical settlements (both total and differential), and undergo lateral spreading. The factors known to influence liquefaction potential include soil type, relative density, grain size, confining pressure, depth to groundwater, and the intensity and duration of the seismic ground shaking. The cohesionless soils most susceptible to liquefaction are loose, saturated sands and some silts.

Seismic settlement can occur either as a result of post-liquefaction reconsolidation as porewater pressure dissipates, or in unsaturated, predominantly granular and loose soils that tend to densify during seismic shaking.

The majority of the subject site is underlain at depth by weakly to moderately cemented formational sandstone and claystone at depth, or by well-compacted engineered fill. Based on the dense/firm and clayey/plastic nature of the on-site formational deposits and compacted fill as well as the absence of a shallow groundwater in those areas, it is our opinion that the potential for liquefaction and seismic settlement is very low for all three parcels.

5.1.5 Expansive Soils

Expansive soils are characterized by their ability to undergo significant volume changes (shrink or swell) due to variations in moisture content. Changes in soil moisture content can result from precipitation, landscape irrigation, utility leakage, roof drainage, perched groundwater, drought, or other factors and may result in unacceptable settlement or heave of structures or concrete slabs supported on grade.

Based on the results of our review, limited investigation, and experience with similar materials, the fill soils used for all three sites are expected to have a low to medium potential for expansive soils. A sample of the fill material from Boring B-1 at Parcel 7 was tested for expansion index (ASTM D4829). This test result indicates an expansion index (EI) of 54. Based on this result, our visual evaluation of samples from our borings and our review of previous reports, these materials may be classified in the medium

expansion range (between 50 and 90 EI). However, it is possible that there is a potential for some highly expansive soils in some lifts of fill or areas of the sites. The granular materials of the Santiago Formation were tested from test pits TP1 and TP3 in the cut portion of Parcel 7 and indicated expansion indices of 5 and 29, respectively. The test results indicate the formational soils at this near-surface elevation of Parcel 7 have a very low to low expansion potential. However, more expansive soils should be expected at other elevations of the formation.

Based on the recommendations provided by Christian Wheeler (2006), selective grading was to be performed for soils placed within the upper 5 feet of each parcel. The selective grading was recommended to provide a cap of fill material with an expansion index of less than 90. The Christian Wheeler (2007) grading report references an expansion index test result on one sample of fill collected from each of the three parcels. The test results of the samples collected range between 50 and 61, which correspond to low to medium expansion potential. However, the sample number and soil type number documented in the report do not correlate with the in-place density tests data recorded for each of the parcels, so the location of these samples is not clear. Based on the test data recorded for expansion potential and soil type in the grading report, the actual expansion potential of soils used as fill in each of the three parcels is not clear. As stated above, we anticipate soils used as fill within the parcels to have a medium expansion range, but highly expansive soils may be encountered in localized areas or lifts of fill. We were not able to differentiate the lots with respect to expansion potential of the near-surface soils. Therefore, the hazard for expansive soil is essentially the same for all three parcels. The maximum expansion index of 90 specified during the previous grading exceeds the typically specified value of 50 in San Diego County, due to characteristics of the on-site Santiago Formation. Depending on the actual near–surface soils present, possible measures to mitigate the potential impacts of expansion and shrinkage may include compacting near-surface soils in excess of optimum moisture content, providing surface drainage to minimize infiltration and fluctuations in moisture content near settlement sensitive improvements, deepening foundations, and providing additional reinforcement within concrete.

5.1.6 Tsunamis and Seiches

Tsunamis are long wavelength seismic sea waves (long compared to the ocean depth) generated by sudden movements of the ocean bottom during submarine earthquakes, landslides, or volcanic activity. A seiche is an oscillation (wave) of a body of water in an enclosed or semi-enclosed basin that varies in period, depending on the physical dimensions of the basin, from a few minutes to several hours, and in height from several inches to several feet. A seiche is caused chiefly by local changes in atmospheric pressure, aided by winds, tidal currents, and occasionally earthquakes. Based on the inland location and elevation of the three parcels, the potential for damage due to either a tsunami or seiche is considered nil.

5.1.7 Flood Hazard

According to a Federal Emergency Management Agency (FEMA) flood insurance rate maps (FEMA map panels numbers 0758F), the sites are considered to be outside of 100-year and 500-year floodplains. Based on review of topographic maps, the three parcels are not located downstream of a dam or within a dam inundation area. Based on this review and our site reconnaissance, the potential for flooding of the three parcels is considered low.

5.2 SETTLEMENT OF DEEP FILLS

Settlement of deep fills occurs from self-weight of the fill. This occurs slowly, even when subsurface and surface drainage is provided, and is a function of a number of variables including depth, soil type, age of fill, degree of initial compaction, and degree of wetting. Experience has shown that this consolidation may approach from 0.2 percent (for granular soils) to 0.5 percent (for clayey soils) of the fill thickness. The settlement may be larger if the fine grained soil from underlying alluvium/colluvium is considered along with the fill thickness. This settlement is in addition to the static settlements due to loading from structures or new fill loading. Specific settlement estimates can be provided once the site is selected and locations of the proposed substation improvements are known. Although the actual magnitude and rate of settlement is dependent on several variables, experience has shown this can take about 10 to 20 years to occur with about half the settlement occurring in the first 5 years.

Based on the estimated maximum fill depths of 80 to 85 feet on Parcels 16 and 17, we estimate maximum total settlement that would occur to be on the order of 3 to 5 inches. It is difficult to speculate on how much settlement has occurred and how much more may occur. As previously discussed in this report, settlement monitoring points were recommended and reportedly installed within Parcels 16 and 17. Kleinfelder recommends that SDG&E make additional attempts to obtain and review the settlement monitoring results for the parcels if these are considered in selection and acquisition process. It should also be noted that SDG&E typically utilizes decomposed granite or aggregate base rather than pavement over much of their substations, and the higher infiltration rate of these materials can lead to potentially larger settlements occurring over a shorter time period than sites covered with pavements and buildings.

Differential settlement between equipment pads within the substation will be dependent on the depth of fill below the proposed substation layout in each parcel. Based on our review of the referenced concept layout plans and as-built grading sheets, the range of fill depth in the general area below each of the proposed substations are approximately 0 to 34 feet at Parcel 7, 8 to 66 feet at Parcel 16, and 20 to 61 feet at Parcel 17.

5.3 GEOTECHNICAL CONSIDERATIONS FOR SITE SELECTION AND DEVELOPMENT

Based on the results of our review, geologic reconnaissance and limited field and laboratory investigation, it is our opinion that substation construction is feasible at any of the three proposed sites from a geotechnical perspective. Although there are geotechnical differences between the sites, it is our opinion that they are not significant enough to establish a clear ranking of sites. The similarities and differences of the sites are discussed below along with the associated implications to site development.

- The three sites are located adjacent to each other within the Pacific Coast Business Park. Mass grading occurred at about the same time in 2006 and 2007 with the same design team and contractor. The three sites are located in an area with similar geotechnical conditions with variable depths of compacted fill placed over very dense/firm Santiago Formation.

- The maximum depth of fill varies from 55, 80 and 85 on Parcels 7, 16 and 17, respectively. Based on a potential total settlement of about 0.4 to 0.5 percent of the fill depth for clayey fill soil, we estimate maximum settlements may be on the order of 3 to 5 inches. However it is difficult to estimate how much may have

occurred since the completion of grading in 2006 and how much more may occur in the future. Settlement can be a function of the variation of fill depth and the inclination of natural slope the fill was placed on. Based on our review of the grading plans, both Parcels 16 and 17 appear to have underlying natural slope inclinations of approximately 3H:1V to the south. Parcel 7 appears to have a natural slope inclination that is typically flatter than 5:1, however slope geometry is more irregular in shape and orientation. Although settlement monitoring data was not available for our review, considering the generally good level of compaction of the engineered fill and the time it will have been in place prior to development, it is unlikely that total or differential settlement would be beyond tolerable limits by SDG&E and impact structures. Potential settlement can be further evaluated if and when the post-grading settlement monitoring data is provided.

- Alluvial / colluvial soils were left in-place within the drainage features below the fill on Parcels 16 and 17 but were either not present or completely removed on Parcel 7. These types of materials are typically removed and recompacted since they may be more susceptible to settlement or consolidation due to their younger geologic age and method of deposition. The initial geotechnical reports recommended removal and recompaction, however, the lower portion was left in place since observation and in-situ testing during grading indicated they were of adequate density. Up to approximately 10 feet of this clayey material was encountered in three of our borings and uncorrected SPT and California sampler blow counts were 55 to 87 blows per foot. Due to their depth, thickness, and observed density, the potential for settlement of the alluvial / colluvial soils impacting the proposed substation is low.

- With respect to topography, Parcel 7 is bordered by three descending slopes, Parcel 16 is bordered by one descending slope and Parcel 17 is bordered by one ascending slope. Due to the presence of a bedding plane shear zone observed in a large diameter boring by MAG (2004), a large buttress or stability fill slope on the order of 30-feet in height was designed and constructed along the south side of Parcel 7. The slope was designed to have a minimum factor of safety of 1.5 for static conditions. The as-graded report states that the buttress fill was constructed as designed.

- Based on the previous grading performed at the sites, remedial grading should be anticipated in the proposed substation areas of all three parcels. The recommended extent of this grading should be established as part of the design-level geotechnical investigation. However, we expect that the cut portions would be overexcavated and recompacted so that proposed improvements do not traverse cut / fill transitions. The fill areas would be overexcavated and recompacted due to the age of fill and observed loose surficial soils during our field studies. For preliminary planning purposes, the depth of remedial grading may be up to about 3 feet in depth. Based on our prior experience with SDG&E substations traversing cut / fill transitions, the cut portion of the substation is typically overexcavated and recompacted to a depth of 3 feet. The cut area needing remedial grading is largest for Parcel 7 with a small area potentially located on Parcel 16.

- All three of the parcels have similar existing vegetation and would require a similar level of preparation prior to grading. Prior to grading at any of the proposed sites, existing trees and shrubs will require removal.

- Excavation into the on-site materials can likely be achieved with moderate to heavy effort with conventional heavy-duty excavation equipment. The formational materials of the Santiago Formation will generally break down fairly well under compactive effort, but some oversize cemented sandstone / claystone may remain. Oversize material greater than 6 inches in diameter should be placed a minimum of 8 feet below finish grade in areas outside the substation pad, a minimum of 8 feet from the face of fill slopes, and not in areas where underground construction is planned such as drilled pier foundations or trenches for utility ducts.

- Expansive soils are present on all three sites. The specification during mass grading was for an expansion index less than 90 in the upper 5 feet. Although some clay layers within the undisturbed Santiago Formation had expansion indices over 120, blending of clays, sands and silts during mass grading appears to have generally reduced the expansion index of the fill and complied with the specification. Results of 37 expansion index tests during grading of the business park (Christian Wheeler, 2007) indicate typical EIs between about 50 and 80 (low to medium expansion potential). Our limited observations and laboratory testing

are consistent with this. As part of the design-level geotechnical studies of the selected site, additional laboratory testing to evaluate expansive soil potential should be performed.

- Due to the similarity in site conditions, we do not anticipate a significant difference in foundation type or size for the three parcels. We anticipate that the foundations for structures and equipment pads will be supported on shallow spread and continuous footings founded on engineered fill. Remedial grading would be required on portions of Parcel 7 so that foundations for each individual structure are supported entirely on engineered fill.

- Spread and continuous footings for proposed substation structures that will be founded on engineered fill soils can be designed using a preliminary allowable soil bearing pressure of 2,500 psf, for dead loads plus long-term live loads. These preliminary values are based on a minimum width of 12 inches and may be increased by 500 psf for each additional foot of depth up to a maximum of 4,000 psf for fill. These values are subject to confirmation during the design-level geotechnical investigation.

- Although existing slopes along the proposed sites are considered to be grossly stable, the surficial soils may be somewhat erodible due to their sandy nature. Of the three sites, Parcel 7 has the largest surface area of slopes requiring vegetation and maintenance and Parcel 17 has the least.

5.4 RECOMMENDATIONS FOR ADDITIONAL STUDY

We recommend that a design-level geotechnical investigation be performed for the selected site to support project design. The investigation should include development-specific subsurface exploration and laboratory testing. The purpose of the study would be to further evaluate the subsurface conditions at the proposed structure locations, along with the samples collected during this study, and to provide information pertaining to the engineering characteristics of earth materials at the selected project site. We also recommend that corrosion testing be performed on on-site soil types and imported soils (if any) used in the project. Based on this siting study and the results of the recommended additional geotechnical evaluation and laboratory testing for the selected site, recommendations for grading/earthwork, surface and subsurface drainage,

foundations, pavement structural sections, and other pertinent geotechnical design considerations may be formulated.

6 LIMITATIONS

Recommendations contained in this siting study are based on our review of reports by others, field observations and subsurface explorations, laboratory tests, and our present knowledge of the proposed project. It is possible that soil conditions could vary between or beyond the points explored. If soil conditions are encountered during design-level geotechnical investigations or construction that differ from those described herein, we should be notified immediately in order that a review may be made and any supplemental recommendations provided. If the scope of the proposed project, including the proposed foundation systems or structural locations, changes from that described in this report, our recommendations should also be reviewed and a response issued. We have not reviewed the grading plans or foundation plans for the project. References to elevations and locations provided within this report were based upon general information provided for our use. Kleinfelder, Inc. did not provide surveying services.

Other standards or documents referenced in any given standard cited in this report, or otherwise relied upon by the authors of this report, are only mentioned in the given standard; they are not incorporated into it or "included by reference", as the latter term is used relative to contracts or other matters of law.

We have strived to prepare the findings, conclusions, and recommendations in this report in a manner consistent with the standards of care and skill ordinarily exercised by members of this profession practicing under similar conditions in the geographic vicinity and at the time the services were performed. No warranty or guarantee, express or implied, is made. The recommendations provided in this report are preliminary and not suitable for final design, and are based on the assumption that Kleinfelder will be retained to perform a design level investigation of the selected site, provide a program of tests and observations during the construction phase in order to evaluate compliance with our recommendations and to evaluate the site conditions exposed. Information and recommendations presented in this report should not be extrapolated to other areas or be used for other projects without our prior review and response.

This report may be used only by San Diego Gas & Electric and only for the purposes stated, within a reasonable time from its issuance. Land use, site conditions (both on site and off site) or other factors may change over time, and additional work may be

required with the passage of time. Any party other than San Diego Gas & Electric who wishes to use this report shall notify Kleinfelder of such intended use. Based on the intended use of the report, Kleinfelder may require that additional work be performed and that an updated report be issued. Non-compliance with any of these requirements by the client or anyone else will release Kleinfelder from any liability resulting from the use of this report by any unauthorized party.

The scope of services for this subsurface exploration and geotechnical report did not include environmental assessments or evaluations regarding the presence or absence of wetlands or hazardous substances in the soil, surface water, or groundwater at this site. Kleinfelder will assume no responsibility or liability whatsoever for any claim, damage, or injury which results from pre-existing hazardous materials being encountered or present on the project site, or from the discovery of such hazardous materials.

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PLATES

SOURCE: Esri WORLD IMAGERY

N

0 400 800 1,600

Feet

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SITE VICINITY MAP

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

PLATE

1

LEGEND

B-1 APPROXIMATE BORING LOCATION

TP-1 APPROXIMATE TEST PIT LOCATION

SOURCE: Esri WORLD IMAGERY

0 150 300 600 Feet

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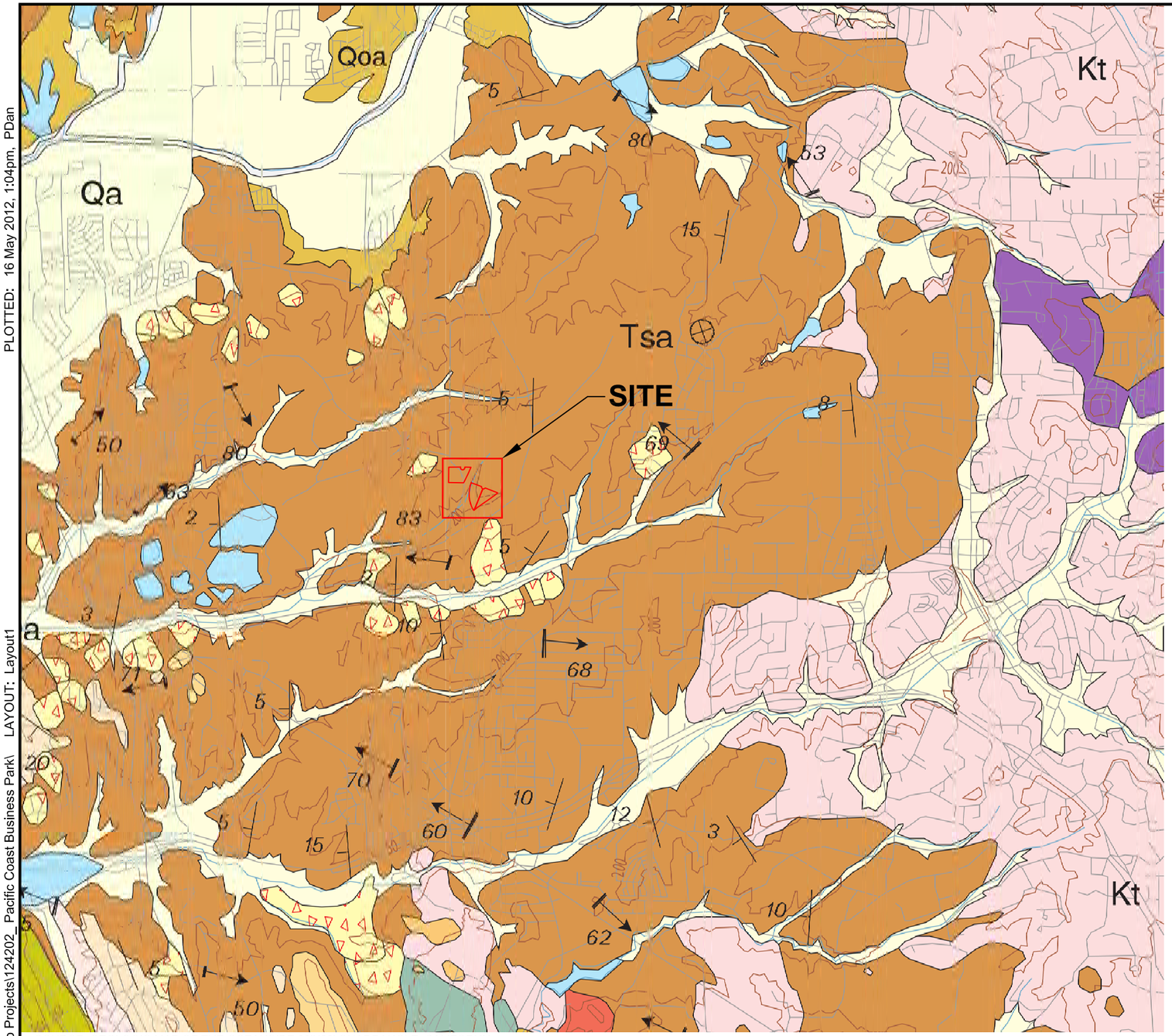
FIELD EXPLORATION MAP

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

PLATE

2



SOURCE: GEOLOGIC MAP OF THE OCEANSIDE 30'X60' QUADRANGLE, CALIFORNIA
1) CALIFORNIA DIVISION OF MINES AND GEOLOGY, LOS ANGELES, CALIFORNIA
2) U. S. GEOLOGICAL SURVEY, RIVERSIDE, CALIFORNIA

LEGEND

Alluvial flood plain deposits (late Holocene)—Active and recently active alluvial deposits along canyon floors. Consists of unconsolidated sandy, silty, or clay-bearing alluvium. Does not include alluvial fan deposits at distal ends of channels

Landslide deposits undivided (Holocene and Pleistocene)—Highly fragmented to largely coherent landslide deposits. Unconsolidated to moderately well consolidated. Most mapped landslides contain scarp area as well as slide deposit. In some areas scarp is shown separately. Many Pleistocene-age landslides were reactivated in part or entirely during late Holocene. Most of the landslides in the quadrangle have occurred within the Capistrano Formation, however, there are many within the Monterey and Santiago formations as well

Old alluvial flood plain deposits undivided (late to middle Pleistocene)—Fluvial sediments deposited on canyon floors. Consists of moderately well consolidated, poorly sorted, permeable, commonly slightly dissected gravel, sand, silt, and clay-bearing alluvium. Where more than one number is shown (e.g., Qoa_{2-6}) those deposits are undivided (Fig. 3). Includes:

Old paralic deposits, Unit 7 (late to middle Pleistocene)—Mostly poorly sorted, moderately permeable, reddish-brown, interfingered strandline, beach, estuarine and colluvial deposits composed of siltstone, sandstone and conglomerate. These deposits rest on the 9-11 m Bird Rock terrace (Fig. 3)

Old paralic deposits, Unit 6 (late to middle Pleistocene)—Mostly poorly sorted, moderately permeable, reddish-brown, interfingered strandline, beach, estuarine and colluvial deposits composed of siltstone, sandstone and conglomerate. These deposits rest on the 22-23 m Nestor terrace (Fig. 3)

Old paralic deposits, Unit 3 (late to middle Pleistocene)—Mostly poorly sorted, moderately permeable, reddish-brown, interfingered strandline, beach, estuarine and colluvial deposits composed of siltstone, sandstone and conglomerate. These deposits rest on the 45-46 m Guy Fleming terrace (Fig. 3)

Santiago Formation (middle Eocene)—Named by Woodring and Popenoe (1945) for Eocene deposits of northwestern Santa Ana Mountains. There are three distinctive parts. A basal member that consists of buff and brownish-gray, massive, coarse-grained, poorly sorted arkosic sandstone and conglomerate (sandstone generally predominating). In some areas the basal member is overlain by gray and brownish-gray (salt and pepper) central member that consists of soft, medium-grained, moderately well-sorted arkosic sandstone. An upper member consists of gray, coarse-grained arkosic sandstone and grit. Throughout the formation, both vertically and laterally, there exists greenish-brown, massive claystone interbeds, tongues and lenses of often fossiliferous, lagoonal claystone and siltstone. The lower part of the Santiago Formation interfingers with the Delmar Formation and Torrey Sandstone in the Encinitas quadrangle

Tonalite undivided (mid-Cretaceous)—Mostly massive, coarse-grained, light-gray hornblende-biotite tonalite

Gabbro undivided (mid-Cretaceous)—Mostly massive, coarse-grained, dark-gray and black biotite-hornblende-hypersthene gabbro

Contact—Contact between geologic units; dotted where concealed.

Fault—Solid where accurately located; dashed where approximately located; dotted where concealed. U = upthrown block, D = downthrown block. Arrow and number indicate direction and angle of dip of fault plane.

Anticline—Solid where accurately located; dotted where concealed.

Syncline—Solid where accurately located; dotted where concealed.

Kgd—granite pegmatite dike

Closed depression—Closed depression in Elsinore fault zone.

Landslide—Arrows indicate principal direction of movement. Queried where existence is questionable.

Strike and dip of beds
- Inclined
- Overturned
- Vertical
- Horizontal

Strike and dip of igneous foliation
- Inclined
- Vertical

Strike and dip of igneous joints
- Inclined
- Vertical

Strike and dip of metamorphic foliation
- Inclined

Strike and dip of sedimentary joints
- Vertical

3500 0 1750 3500 ft
APPROXIMATE SCALE: 1 inch = 3500 ft

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REGIONAL GEOLOGIC MAP

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

PLATE **3**

PLOTTED: 16 May 2012, 1:04pm, PDan
LAYOUT: Layout1
ATTACHED IMAGES: Images: MAP SYMBOLS.JPG Images: QA.JPG
ATTACHED XREFS:
ALBUQUERQUE, NM
CAD FILE: U:\PDan\San Diego Projects\124202_ Pacific Coast Business Park\

APPENDIX A

FIELD EXPLORATION AND BORING LOGS

APPENDIX A
FIELD EXPLORATION AND BORING LOGS

Prior to any subsurface exploration, Kleinfelder notified Underground Service Alert (USA) to clear proposed boring locations of conflicts with utilities. In addition, Kleinfelder subcontracted a private utility locating company to sweep the proposed boring locations for underground utilities at the site. As required by the County of San Diego department of Environmental Health (DEH), explorations deeper than 20 feet were permitted. In addition, the field activities were monitored by a paleontologist.

The subsurface investigation included six borings and seven test pits. The borings were excavated to depths between 50 and 80 feet. The 8-inch diameter borings were excavated with a truck-mounted drill rig equipped with hollow stem augers and operated by Scott's Drill Company of Oceanside, California. An engineer from our office supervised the field operations and logged the borings. Selected bulk, disturbed, and intact samples were retrieved from the borings, sealed, and transported to our laboratory for further evaluation. Our typical vertical sampling interval was five feet; however, due to the extent of the deep canyon fills and knowledge of the previous grading operations, our sampling interval was increased to 10 feet in some of the deeper fill soils. The borings were backfilled using bentonite chips and soil cuttings.

In-place soil samples were obtained at the test boring locations using a California penetration sampler driven a total of 18-inches (or until practical refusal), into the undisturbed soil at the bottom of the boring. The soil sampled by the California sampler (3-inch O.D., 2.4 inches I.D.) was retained in 6-inch long brass tubes for laboratory testing. The samplers were driven using a 140 pound automatic hammer falling 30 inches. The total number of hammer blows required to drive the sampler the final 12 inches is termed the blow count and is recorded on the Logs of Borings. The blow counts presented on the Logs have not been adjusted for the effects of overburden pressure, input driving energy, rod length, sampler correction, or boring diameter correction.

Seven backhoe test pits were excavated to depths ranging from about 5 to 10 feet. An engineer from our office supervised the field operations and logged the pits. Selected bulk samples were retrieved from the excavations and transported to our laboratory for further evaluation. The test pit excavations were backfilled with compactive effort

applied by the backhoe with a sheeps foot wheel attachment. The approximate location of each boring and test pit excavation is shown on Plate 2, Field Exploration Map.

Soil was classified in the field according to the Unified Soil Classification System (USCS) using the visual-manual procedure in accordance with ASTM D 2488. Field descriptions and classifications were reviewed against the laboratory descriptions (ASTM D2487) and adjusted where laboratory data was available.

A Unified Soil Classification System (USCS) chart and a Boring Log legend are presented as Plates A1a and A1b, respectively. The Logs of Borings and test pits are presented as Plates A1 through A23. The Logs of Borings and test pit excavations describe the earth materials encountered, samples obtained, and show field and laboratory tests performed. The logs also show the general location, boring number, drilling date, and the names of the logger and drilling subcontractor. The boundaries between soil types shown on the logs are approximate because the transition between different soil layers may be gradual.

SAMPLER GRAPHICS

	HYDRO-EXCAVATION
	HAND AUGER
	BULK / BAG SAMPLE
	CALIFORNIA SAMPLER (3 inch outside diameter)
	MODIFIED CALIFORNIA SAMPLER (2 OR 2-1/2 inch outside diameter)
	STANDARD PENETRATION SPLIT SPOON SAMPLER (2 inch outside and 1.4 inch diameter)
	SHELBY TUBE SAMPLER OR PUSH TUBE SAMPLER
	TEXAS CONE PENETRATION
	DYNAMIC CONE PENETRATION
	VANE SHEAR
	GEO-PROBE / MACROCORE SAMPLER
	SONIC SAMPLER
	CONTINUOUS CORE SAMPLE
	HQ CORE SAMPLE (2.500 inch (63.5 mm) core diameter)
	NQ CORE SAMPLE (1.874 inch (47.6 mm) core diameter)
	NX CORE SAMPLE (2.154 inch (54.7 mm) core diameter)

WATER LEVEL (level where first observed)

WATER LEVEL (level after exploration completion)

WATER LEVEL (additional levels after exploration)

OBSERVED SEEPAGE

1. The report and log key are an integral part of these logs. All data and interpretations in this log are subject to the stated explanations and limitations stated in the report.

2. Lines separating strata on the logs represent approximate boundaries only. Actual transitions may be gradual.

3. No warranty is provided as to the continuity of soil or rock conditions between individual sample locations.

4. Logs represent general soil or rock conditions observed at the point of exploration on the date indicated.

5. In general, Unified Soil Classification System designations presented on the logs were based on visual classification in the field and were modified where appropriate by visual classifications in the office and/or laboratory gradation and index property testing.

6. Fine grained soils that plot within the hatched area on the Plasticity Chart, and coarse grained soils with between 5% and 12% passing the No. 200 sieve require dual USCS symbols, ie., GW-GM, GP-GM, GW-GC, GP-GC, GC-GM, SW-SM, SP-SM, SW-SC, SP-SC, SC-SM.

7. 50/X indicates number of blows required to drive the identified sampler X inches with a 140 pounds hammer falling 30 inches.

UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D 2487)

COARSE GRAINED SOILS (More than half of material is larger than the #200 sieve)	**GRAVELS** (More than half of coarse fraction is larger than the #4 sieve)	CLEAN GRAVEL WITH <5% FINES	Cu ≥4 and 1≤ Cc≤3	**GW**	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
			Cu <4 and/ or 1>Cc >3	**GP**	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
		GRAVELS WITH 5% TO 12% FINES	Cu ≥4 and 1≤ Cc≤3	**GW-GM**	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE FINES
				GW-GC	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE CLAY FINES
			Cu <4 and/ or 1>Cc >3	**GP-GM**	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE FINES
				GP-GC	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE CLAY FINES
		GRAVELS WITH > 12% FINES		**GM**	SILTY GRAVELS, GRAVEL-SILT-SAND MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
				SW	CLAYEY GRAVELS, GRAVEL-SAND-CLAY-SILT MIXTURES
	SANDS (More than half of coarse fraction is smaller than the #4 sieve)	CLEAN SANDS WITH <5% FINES	Cu ≥6 and 1≤ Cc≤3	**SW**	WELL-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE OR NO FINES
			Cu <6 and/ or 1>Cc >3	**SP**	POORLY GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE OR NO FINES
		SANDS WITH 5% TO 12% FINES	Cu ≥6 and 1≤ Cc≤3	**SW-SM**	WELL-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE FINES
				SW-SC	WELL-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE CLAY FINES
			Cu <6 and/ or 1>Cc >3	**SP-SM**	POORLY GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE FINES
				SP-SC	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE CLAY FINES
		SANDS WITH > 12% FINES		**SM**	SILTY SANDS, SAND-GRAVEL-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-GRAVEL-CLAY MIXTURES
				SC-SM	CLAYEY SANDS, SAND-SILT-CLAY MIXTURES

FINE GRAINED SOILS (More than half of material is smaller than the #200 sieve)	SILTS AND CLAYS (Liquid Limit less than 50)	**ML**	INORGANIC SILTS AND VERY FINE SANDS, SILTY OR CLAYEY FINE SANDS, SILTS WITH SLIGHT PLASTICITY
		CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
		CL-ML	INORGANIC CLAYS-SILTS OF LOW PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
		OL	ORGANIC SILTS & ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS (Liquid Limit greater than 50)	**MH**	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILT
		CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
		OH	ORGANIC CLAYS & ORGANIC SILTS OF MEDIUM-TO-HIGH PLASTICITY

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5015 Shoreham Place
San Diego, CA 92122
www.kleinfelder.com PH. 858-320-2000 FAX. 858-320-2001

PROJECT NO.	124202
DRAWN BY:	EK
CHECKED BY:	DH
DATE:	May. 07, 2012
REVISED:	

GRAPHICS KEY

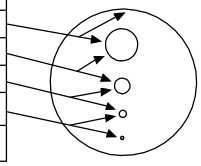
SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

PLATE

A-1a

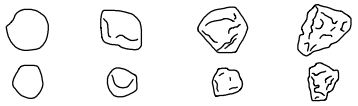
GRAIN SIZE

DESCRIPTION		SIEVE SIZE	GRAIN SIZE	APPROXIMATE SIZE
Boulders		>12"	>12"	Larger than basketball-sized
Cobbles		3 - 12'	3 - 12"	Fist-sized to basketball-sized
Gravel	coarse	3/4 -3"	3/4 -3"	Thumb-sized to fist-sized
	fine	#4 - 3/4"	0.19 - 0.75"	Pea-sized to thumb-sized
Sand	coarse	#10 - #4	0.079 - 0.19"	Rock salt-sized to pea-sized
	medium	#40 - #10	0.017 - 0.079"	Sugar-sized to rock salt-sized
	fine	#200 - #10	0.0029 - 0.017"	Flour-sized to sugar-sized
Fines		Passing #200	<0.0029	Flour-sized and smaller



ANGULARITY

DESCRIPTION	CRITERIA
Angular	Particles have sharp edges and relatively plane sides with unpolished surfaces
Subangular	Particles are similar to angular description but have rounded edges
Subrounded	Particles have nearly plane sides but have well-rounded corners and edges
Rounded	Particles have smoothly curved sides and no edges



PLASTICITY

DESCRIPTION	LL	FIELD TEST
Non-plastic	NP	A 1/8-in. (3 mm) thread cannot be rolled at any water content.
Low (L)	< 30	The thread can barely be rolled and the lump or thread cannot be formed when drier than the plastic limit.
Medium (M)	30 - 50	The thread is easy to roll and not much time is required to reach the plastic limit. The thread cannot be rerolled after reaching the plastic limit. The lump or thread crumbles when drier than the plastic limit
High (H)	> 50	It takes considerable time rolling and kneading to reach the plastic limit. The thread can be rerolled several times after reaching the plastic limit. The lump or thread can be formed without crumbling when drier than the plastic limit

MOISTURE CONTENT

DESCRIPTION	FIELD TEST
Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, usually soil is below water table

REACTION WITH HYDROCHLORIC ACID

DESCRIPTION	FIELD TEST
None	No visible reaction
Weak	Some reaction, with bubbles forming slowly
Strong	Violent reaction, with bubbles forming immediately

APPARENT / RELATIVE DENSITY - COARSE-GRAINED SOIL[1]

APPARENT DENSITY	SPT-N_{60} (# blows/ft)	MODIFIED CA SAMPLER (# blows/ft)	CALIFORNIA SAMPLER (# blows/ft)	RELATIVE DENSITY (%)
Very Loose	<4	<4	<5	0 - 15
Loose	4 - 10	5 - 12	5 - 15	15 - 35
Medium Dense	10 - 30	12- 35	15 - 40	35 - 65
Dense	30 - 50	35 - 60	40 - 70	65 - 85
Very Dense	>50	>60	>70	85 - 100

[1]NOTE: AFTER TERZAGHI AND PECK, 1948

CONSISTENCY - FINE-GRAINED SOIL

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (Qu)(psf)	CRITERIA
Very Soft	< 1000	Thumb will penetrate soil more than 1 in. (25 mm)
Soft	1000 - 2000	Thumb will penetrate soil about 1 in. (25 mm)
Firm	2000 < 4000	Thumb will indent soil about 1/4 in. (6 mm)
Hard	4000 < 8000	Thumb will not indent soil but readily indented with thumbnail
Very Hard	> 8000	Thumbnail will not indent soil

STRUCTURE

DESCRIPTION	CRITERIA
Stratified	Alternating layers of varying material or color with layers at least 1/4 in. thick, note thickness
Laminated	Alternating layers of varying material or color with the layer less than 1/4 in. thick, note thickness
Fissured	Breaks along definite planes of fracture with little resistance to fracturing
Slickensided	Fracture planes appear polished or glossy, sometimes striated
Blocky	Cohesive soil that can be broken down into small angular lumps which resist further breakdown
Lensed	Inclusion of small pockets of different soils, such as small lenses of sand scattered through a mass of clay; note thickness
Homogeneous	Same color and appearance throughout

CEMENTATION

DESCRIPTION	FIELD TEST
Weakly	Crumbles or breaks with handling or slight finger pressure
Moderately	Crumbles or breaks with considerable finger pressure
Strongly	Will not crumble or break with finger pressure

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SOIL DESCRIPTION KEY

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

PLATE
A-1b

Date Begin - End:	4/25/12	**Drill Company:**	Scott's Drilling	**BORING LOG B-1**	
Logged By:	E. Koprulu	**Drill Crew:**			
Hor.-Vert. Datum:	NAD83 - NAD83	**Drill Equipment:**	CME-55	**Hammer Type - Drop:**	140 lb. Automatic - 30"
Angle from Vert.:	0 degrees	**Exploration Method:**	Hollow Stem Auger		
Weather:	Overcast	**Auger Diameter:**	8 inches		

FIELD EXPLORATION

Latitude: 33.21237° N
Longitude: 117.29526° W
Approximate Surface Elevation (ft): 385.0

Surface Condition: Bare Earth and Grass

Approximate Elevation (feet)	Depth (feet)	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. blows/6 in	Recovery	USCS Symbol	Moisture Content (%)	Dry Density (pcf)	Passing No.4 Sieve (%)	Passing #200 Sieve (%)	Liquid Limit (NV=No Value)	Plasticity Index (NP=No Plasticity)	Other Tests/ Remarks
		1											
		2		BC=16 25 27			8.0	125					Expansion Index (54)
380	5	3		BC=18 26 36									
375	10	4		BC=10 10 15									
370	15	5		BC=18 41 50			8.0	127					
365	20	6		BC=10 18 22									
360	25	7		BC=10 18 26			16.0	115					
355	30	8		BC=10 17 22									

Artificial Fill
Silty SAND (SM): fine to coarse grained, non-plastic fines, gray, moist

Clayey SAND (SC): fine to coarse grained, non-plastic fines, gray, moist, dense

Silty SAND (SM): trace clay, fine to coarse grained, non-plastic fines, gray, moist, very dense

Non-plastic fines, gray, moist, medium dense

Non-plastic fines, gray, moist, very dense, decrease in Clay content, increase in Sand content, isolated chuncks of Clay

Non-plastic fines, gray, moist, dense, becomes coarser grained Sand

Sandy CLAY (CL): fine to medium grained, low plasticity fines, light brown to light gray, moist, firm, intermixed chunks of firm to hard Clay

Low plasticity fines, light brown to light gray, moist, firm, 4-inch thick SM lense within sample

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REVISED:	

BORING LOG B-1

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

PLATE
A-1

Date Begin - End: 4/25/12 **Drill Company:** Scott's Drilling

BORING LOG B-1

Logged By: E. Koprulu **Drill Crew:**

Hor.-Vert. Datum: NAD83 - NAD83 **Drill Equipment:** CME-55 **Hammer Type - Drop:** 140 lb. Automatic - 30"

Angle from Vert.: 0 degrees **Exploration Method:** Hollow Stem Auger

Weather: Overcast **Auger Diameter:** 8 inches

FIELD EXPLORATION | LABORATORY RESULTS

Latitude: 33.21237° N
Longitude: 117.29526° W
Approximate Surface Elevation (ft): 385.0

Surface Condition: Bare Earth and Grass

Approximate Elevation (feet)	Depth (feet)	Graphical Log	Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. blows/6 in	Recovery	USCS Symbol	Moisture Content (%)	Dry Density (pcf)	Passing No.4 Sieve (%)	Passing #200 Sieve (%)	Liquid Limit (NV=No Value)	Plasticity Index (NP=No Plasticity)	Other Tests/ Remarks
			Sandy Lean to Fat CLAY (CL-CH): fine grained, medium plasticity fines, dark brown to black, strong organic smell odor, moist, very hard, some rootlets	9		BC=22 50			6.0	122					
345	40		**Sandy CLAY (CL)**: fine grained, low plasticity fines, light brown, moist, hard	10		BC=9 17 21									
340	45		Low plasticity fines, light brown to white, moist, very hard, caliche	11		BC=15 27 28									
335	50		**Sandy Lean CLAY (CL)**: trace gravel, fine to coarse grained, low plasticity fines, gray, moist, hard	12		BC=9 13 17			32.0						
			Santiago Formation												
330	55		**Sandy CLAY (CL)**: fine to coarse grained, low plasticity fines, brown, moist, very hard	13		BC=10 22 37									
325	60														
320	65		Fine grained, low plasticity fines, grayish brown, moist, very hard, moderately cemented	14		BC=28 50/3"									

The boring was terminated at approximately 66 feet below ground surface. Boring was backfilled with bentonite on April 25, 2012.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling.
GENERAL NOTES:
The boring location and elevation are approximate and were estimated by BHA, Inc.
A Garmin etrex GPS unit was used to locate the boring with an accuracy of 5 to 10 feet.

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BORING LOG B-1

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

PLATE
A-2

Date Begin - End:	4/25/12	**Drill Company:**	Scott's Drilling	**BORING LOG B-2**	
Logged By:	E. Koprulu	**Drill Crew:**			
Hor.-Vert. Datum:	NAD83 - NAD83	**Drill Equipment:**	CME-55	**Hammer Type - Drop:**	140 lb. Automatic - 30"
Angle from Vert.:	0 degrees	**Exploration Method:**	Hollow Stem Auger		
Weather:	Overcast	**Auger Diameter:**	8 inches		

Latitude: 33.21187° N
Longitude: 117.29539° W
Approximate Surface Elevation (ft): 386.0

Surface Condition: Bare Earth and Grass

Approx. Elevation (ft)	Depth (ft)	Graphical Log	Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. blows/6 in	Recovery	USCS Symbol	Moisture Content (%)	Dry Density (pcf)	Passing No.4 Sieve (%)	Passing #200 Sieve (%)	Liquid Limit (NV=No Value)	Plasticity Index (NP=No Plasticity)	Other Tests/ Remarks
385	0		**Artificial Fill**												
			Clayey SAND (SC): fine to coarse grained, non-plastic fines, gray, moist, predominantly coarse grained Sand												
	5		Fine to coarse grained, non-plastic fines, moist, dense	1		BC=12 18 22			10.0	115					
380															
	10		**Sandy CLAY (CL)**: fine grained, low plasticity fines, gray to dark gray, moist, very hard	2		BC=22 25 37			11.0	121					
375															
	15														
370															
	20		**Clayey SAND (SC)**: fine to coarse grained, non-plastic fines, gray, moist, firm	3		BC=8 12 12									
365															
	25														
360			**Sandy CLAY (CL)**: fine to coarse grained, low plasticity fines, gray, moist, very hard												
	30			4		BC=9 22 50			9.0	124					
355															

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BORING LOG B-2

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

PLATE

A-3

Date Begin - End: 4/25/12 **Drill Company:** Scott's Drilling

BORING LOG B-2

Logged By: E. Koprulu **Drill Crew:**

Hor.-Vert. Datum: NAD83 - NAD83 **Drill Equipment:** CME-55 **Hammer Type - Drop:** 140 lb. Automatic - 30"

Angle from Vert.: 0 degrees **Exploration Method:** Hollow Stem Auger

Weather: Overcast **Auger Diameter:** 8 inches

Approximate Elevation (feet)	Depth (feet)	Graphical Log	FIELD EXPLORATION	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. blows/6 in	Recovery	LABORATORY RESULTS: USCS Symbol	Moisture Content (%)	Dry Density (pcf)	Passing No.4 Sieve (%)	Passing #200 Sieve (%)	Liquid Limit (NV=No Value)	Plasticity Index (NP=No Plasticity)	Other Tests/ Remarks
			Latitude: 33.21187° N Longitude: 117.29539° W Approximate Surface Elevation (ft): 386.0 Surface Condition: Bare Earth and Grass												
350			**Sandy CLAY (CL)**: fine to coarse grained, low plasticity fines, gray, moist, very hard *(continued)*												
			Santiago Formation												
	40		**Sandy Lean CLAY (CL)**: fine grained, low plasticity fines, light brown, moist, very hard	5		BC=9 25 39			12.0						
345															
	45		Medium plasticity fines, grayish brown to gray, moist, very hard, fissured, iron-oxide staining	6		BC=14 27 38			14.0						
340															
	50		Medium plasticity fines, grayish brown, moist, very hard	7		BC=23 50									
335															

The boring was terminated at approximately 51 feet below ground surface. Boring was backfilled with bentonite on April 25, 2012.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling.

GENERAL NOTES:
The boring location and elevation are approximate and were estimated by BHA, Inc.
A Garmin etrex GPS unit was used to locate the boring with an accuracy of 5 to 10 feet.

55
330
60
325
65
320

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BORING LOG B-2

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

PLATE
A-4

Date Begin - End:	4/26/12 - 4/27/12	**Drill Company:**	Scott's Drilling	**BORING LOG B-3**	
Logged By:	E. Koprulu	**Drill Crew:**			
Hor.-Vert. Datum:	NAD83 - NAD83	**Drill Equipment:**	CME-55	**Hammer Type - Drop:**	140 lb. Automatic - 30"
Angle from Vert.:	0 degrees	**Exploration Method:**	Hollow Stem Auger		
Weather:	Sunny	**Auger Diameter:**	8 inches		

FIELD EXPLORATION

Latitude: 33.21081° N
Longitude: 117.29389° W
Approximate Surface Elevation (ft): 367.0

Surface Condition: Bare Earth and Grass

Approximate Elevation (feet)	Depth (feet)	Graphical Log	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. blows/6 in	Recovery
365	0					
	5					
360						
	10		1		BC=17 32 44	
355						
	15					
350						
	20		2		BC=13 27 40	
345						
	25					
340						
	30		3		BC=20 30 50/5"	
335						

Artificial Fill
Clayey SAND (SC): fine to coarse grained, non-plastic fines, gray, moist

Sandy CLAY (CL): fine to medium grained, medium plasticity fines, gray to brown, moist, very hard

Fine to coarse grained, low plasticity fines, gray, moist, very hard

Fine to medium grained, medium plasticity fines, grayish brown, moist, very hard, decrease in grain size

LABORATORY RESULTS

USCS Symbol	Moisture Content (%)	Dry Density (pcf)	Passing No.4 Sieve (%)	Passing #200 Sieve (%)	Liquid Limit (NV=No Value)	Plasticity Index (NP=No Plasticity)	Other Tests/ Remarks

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BORING LOG B-3

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

PLATE

A-5

Date Begin - End:	4/26/12 - 4/27/12	**Drill Company:**	Scott's Drilling	**BORING LOG B-3**	
Logged By:	E. Koprulu	**Drill Crew:**			
Hor.-Vert. Datum:	NAD83 - NAD83	**Drill Equipment:**	CME-55	**Hammer Type - Drop:**	140 lb. Automatic - 30"
Angle from Vert.:	0 degrees	**Exploration Method:**	Hollow Stem Auger		
Weather:	Sunny	**Auger Diameter:**	8 inches		

Approximate Elevation (feet)	Depth (feet)	Graphical Log	FIELD EXPLORATION Latitude: 33.21081° N Longitude: 117.29389° W Approximate Surface Elevation (ft): 367.0 Surface Condition: Bare Earth and Grass	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. blows/6 in	Recovery	LABORATORY RESULTS USCS Symbol	Moisture Content (%)	Dry Density (pcf)	Passing No.4 Sieve (%)	Passing #200 Sieve (%)	Liquid Limit (NV=No Value)	Plasticity Index (NP=No Plasticity)	Other Tests/ Remarks
330			**Sandy CLAY (CL)**: fine to medium grained, medium plasticity fines, gray to brown, moist, very hard *(continued)*												
	40		Fine to coarse grained, low plasticity fines, moist, very hard, intermixed color from light gray - dark brown to reddish brown, some scattered sand lenses	4		BC=13 18 24									
325															
	45														
320															
	50		Fine to medium grained, medium plasticity fines, moist, very hard, intermixed color from light gray to reddish brown, some brown lenses of sand	5		BC=21 25 35									
315															
	55														
310															
	60		**Santiago Formation** **Sandy CLAY (CL)**: fine grained, medium plasticity fines, gray, moist, very hard												
305															
	65														
300															

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BORING LOG B-3

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

PLATE
A-6

Date Begin - End:	4/26/12 - 4/27/12	**Drill Company:**	Scott's Drilling	**BORING LOG B-3**	
Logged By:	E. Koprulu	**Drill Crew:**			
Hor.-Vert. Datum:	NAD83 - NAD83	**Drill Equipment:**	CME-55	**Hammer Type - Drop:**	140 lb. Automatic - 30"
Angle from Vert.:	0 degrees	**Exploration Method:**	Hollow Stem Auger		
Weather:	Sunny	**Auger Diameter:**	8 inches		

FIELD EXPLORATION

Latitude: 33.21081° N
Longitude: 117.29389° W
Approximate Surface Elevation (ft): 367.0

Surface Condition: Bare Earth and Grass

Approximate Elevation (feet)	Depth (feet)	Graphical Log	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. blows/6 in	Recovery	USCS Symbol	Moisture Content (%)	Dry Density (pcf)	Passing No.4 Sieve (%)	Passing #200 Sieve (%)	Liquid Limit (NV=No Value)	Plasticity Index (NP=No Plasticity)	Other Tests/ Remarks
295			6		BC=28 45 50/4"									
	75													
290														
	80													
285														
	85													
280														
	90													
275														
	95													
270														
	100													
265														

Santiago Formation *(continued)*
Sandy CLAY (CL): fine grained, medium plasticity fines, gray, moist, very hard, iron-oxide staining

The boring was terminated at approximately 71.5 feet below ground surface. The Boring was backfilled with bentonite on April 27, 2012.

LABORATORY RESULTS

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling.

GENERAL NOTES:
The boring location and elevation are approximate and were estimated by BHA, Inc.
A Garmin etrex GPS unit was used to locate the boring with an accuracy of 5 to 10 feet.

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BORING LOG B-3

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OCEANSIDE, CALIFORNIA

PLATE
A-7

Date Begin - End:	4/24/12	**Drill Company:**	Scott's Drilling	**BORING LOG B-4**	
Logged By:	E. Koprulu	**Drill Crew:**			
Hor.-Vert. Datum:	NAD83 - NAD83	**Drill Equipment:**	CME-55	**Hammer Type - Drop:**	140 lb. Automatic - 30"
Angle from Vert.:	0 degrees	**Exploration Method:**	Hollow Stem Auger		
Weather:	Sunny	**Auger Diameter:**	8 inches		

FIELD EXPLORATION

Latitude: 33.21102° N
Longitude: 117.29288° W
Approximate Surface Elevation (ft): 374.0

Surface Condition: Bare Earth and Grass

Approximate Elevation (feet)	Depth (feet)	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. blows/6 in	Recovery	Description
370	0					**Artificial Fill**
		1				**Silty SAND (SM)**: fine to coarse grained, non-plastic fines, gray, moist, dense
		2		BC=9 20 28		Trace Clay
	5					Increase in Clay content
		3		BC=14 26 40		**Clayey SAND (SC)**: fine to coarse grained, non-plastic fines, dark gray, moist, dense
365						
	10	4		BC=12 31 42		Fine to coarse grained, low plasticity fines, dark gray, moist, very dense, some lenses of dark brown Lean Clay
360						
	15	5		BC=18 32 42		**Sandy CLAY (CL)**: fine to medium grained, low plasticity fines, moist, very hard, intermixed color from light gray to light tan, some lenses of dark brown Lean Clay
355						
	20	6		BC=18 35 50/5.5"		Fine grained, medium plasticity fines, light yellowish brown to light gray, moist, very hard, increase in clay content, decrease in sand content, lenses of Sand
350						
	25	7		BC=16 35 42		Fine to coarse grained, low plasticity fines, gray to brown, trace organic smell odor, moist, very hard, lenses of Sand throughout, dark brown to black lenses of old Top Soil
345						
	30	8		BC=12 31 48		Fine grained, medium plasticity fines, gray to dark brown, trace organic smell odor, moist, very hard, black lenses of old Top Soil
340						

LABORATORY RESULTS

USCS Symbol	Moisture Content (%)	Dry Density (pcf)	Passing No.4 Sieve (%)	Passing #200 Sieve (%)	Liquid Limit (NV=No Value)	Plasticity Index (NP=No Plasticity)	Other Tests/ Remarks

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BORING LOG B-4

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

PLATE

A-8

Date Begin - End: 4/24/12 | **Drill Company:** Scott's Drilling | **BORING LOG B-4**

Logged By: E. Koprulu | **Drill Crew:**

Hor.-Vert. Datum: NAD83 - NAD83 | **Drill Equipment:** CME-55 | **Hammer Type - Drop:** 140 lb. Automatic - 30"

Angle from Vert.: 0 degrees | **Exploration Method:** Hollow Stem Auger

Weather: Sunny | **Auger Diameter:** 8 inches

FIELD EXPLORATION | LABORATORY RESULTS

Latitude: 33.21102° N
Longitude: 117.29288° W
Approximate Surface Elevation (ft): 374.0

Surface Condition: Bare Earth and Grass

Approximate Elevation (feet)	Depth (feet)	Graphical Log	Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. blows/6 in	Recovery	USCS Symbol	Moisture Content (%)	Dry Density (pcf)	Passing No.4 Sieve (%)	Passing #200 Sieve (%)	Liquid Limit (NV=No Value)	Plasticity Index (NP=No Plasticity)	Other Tests/ Remarks
			Silty SAND (SM): fine grained, non-plastic fines, gray, moist, very dense	9		BC=20 40 50/5"									
335	40		**Clayey SAND (SC)**: fine grained, low plasticity fines, white to light brown, moist, very dense, caliche	10		BC=17 42 50									
330	45		**Sandy CLAY (CL)**: fine grained, medium plasticity fines, dark gray to black, moist, very hard	11		BC=19 38 50									
325	50		Fine grained, low plasticity fines, dark gray, moist, very hard, increase in Sand content, reddish brown and gray sand lenses	12		BC=15 29 46									
320	55		Fine to medium grained, low plasticity fines, gray, moist, hard, black colored CL-CH at shoe of sampler	13		BC=12 26 28									
315	60		**Lean to Fat CLAY (CL-CH)**: fine grained, medium plasticity fines, dark gray to black, moist, hard	14		BC=16 22 34									
310	65		Fine grained, medium plasticity fines, dark gray to black, moist, very hard, increase in sand content	15		BC=19 30 40									
305															

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BORING LOG B-4

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

PLATE
A-9

Date Begin - End:	4/24/12	**Drill Company:**	Scott's Drilling	**BORING LOG B-4**	
Logged By:	E. Koprulu	**Drill Crew:**			
Hor.-Vert. Datum:	NAD83 - NAD83	**Drill Equipment:**	CME-55	**Hammer Type - Drop:**	140 lb. Automatic - 30"
Angle from Vert.:	0 degrees	**Exploration Method:**	Hollow Stem Auger		
Weather:	Sunny	**Auger Diameter:**	8 inches		

FIELD EXPLORATION

Latitude: 33.21102° N
Longitude: 117.29288° W
Approximate Surface Elevation (ft): 374.0

Surface Condition: Bare Earth and Grass

Approximate Elevation (feet)	Depth (feet)	Graphical Log	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. blows/6 in	Recovery	USCS Symbol	Moisture Content (%)	Dry Density (pcf)	Passing No.4 Sieve (%)	Passing #200 Sieve (%)	Liquid Limit (NV=No Value)	Plasticity Index (NP=No Plasticity)	Other Tests/ Remarks
			16		BC=15 32 40									
300	75		17		BC=18 37 50									CONSOL
295	80		18		BC=39 50/4"									
290	85													
285	90													
280	95													
275	100													
270														

Alluvium
Fat CLAY (CH): fine grained, high plasticity fines, black, moist, very hard *(continued)*

Fine grained, high plasticity fines, black, moist, very hard

Santiago Formation
Sandy CLAY (CL): fine to medium grained, low plasticity fines, gray, moist, very hard

The boring was terminated at approximately 81 feet below ground surface. Boring was backfilled with bentonite on April 24, 2012.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling.
GENERAL NOTES:
The boring location and elevation are approximate and were estimated by BHA, Inc.
A Garmin etrex GPS unit was used to locate the boring with an accuracy of 5 to 10 feet.

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BORING LOG B-4

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

PLATE
A-10

Date Begin - End:	4/24/12 - 4/25/12	**Drill Company:**	Scott's Drilling	**BORING LOG B-5**	
Logged By:	E. Koprulu	**Drill Crew:**			
Hor.-Vert. Datum:	NAD83 - NAD83	**Drill Equipment:**	CME-55	**Hammer Type - Drop:**	140 lb. Automatic - 30"
Angle from Vert.:	0 degrees	**Exploration Method:**	Hollow Stem Auger		
Weather:	Sunny	**Auger Diameter:**	8 inches		

FIELD EXPLORATION

Latitude: 33.21074° N
Longitude: 117.29347° W
Approximate Surface Elevation (ft): 372.0

Surface Condition: Bare Earth and Grass

Approximate Elevation (feet)	Depth (feet)	Graphical Log	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. blows/6 in	Recovery
370	0					
	5		1		BC=15 24 29	
365						
	10		2		BC=18 28 38	
360						
	15					
355						
	20		3		BC=10 12 13	
350						
	25					
345						
	30		4		BC=8 11 13	
340						

Artificial Fill
Silty SAND (SM): fine to coarse grained, non-plastic fines, gray, moist, dense

Fine to coarse grained, non-plastic fines, gray, moist, dense, increase in grain size

Clayey SAND (SC): fine to coarse grained, non-plastic fines, gray to dark gray, moist, very dense

Fine grained, low plasticity fines, gray to dark gray, moist, medium dense, increase in Clay content

Sandy CLAY (CL): fine grained, low plasticity fines, light brown to light gray, moist, firm

LABORATORY RESULTS

USCS Symbol	Moisture Content (%)	Dry Density (pcf)	Passing No.4 Sieve (%)	Passing #200 Sieve (%)	Liquid Limit (NV=No Value)	Plasticity Index (NP=No Plasticity)	Other Tests/ Remarks

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BORING LOG B-5

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

PLATE

A-11

Date Begin - End:	4/24/12 - 4/25/12	**Drill Company:**	Scott's Drilling	**BORING LOG B-5**	
Logged By:	E. Koprulu	**Drill Crew:**			
Hor.-Vert. Datum:	NAD83 - NAD83	**Drill Equipment:**	CME-55	**Hammer Type - Drop:**	140 lb. Automatic - 30"
Angle from Vert.:	0 degrees	**Exploration Method:**	Hollow Stem Auger		
Weather:	Sunny	**Auger Diameter:**	8 inches		

FIELD EXPLORATION | LABORATORY RESULTS

Latitude: 33.21074° N
Longitude: 117.29347° W
Approximate Surface Elevation (ft): 372.0

Surface Condition: Bare Earth and Grass

Approximate Elevation (feet)	Depth (feet)	Graphical Log	Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. blows/6 in	Recovery	USCS Symbol	Moisture Content (%)	Dry Density (pcf)	Passing No.4 Sieve (%)	Passing #200 Sieve (%)	Liquid Limit (NV=No Value)	Plasticity Index (NP=No Plasticity)	Other Tests/ Remarks
335															
	40		Fine to medium grained, low plasticity fines, light gray to reddish brown, moist, hard, trace caliche, 3-inch thick lense of Sand	5		BC=10 15 21									
330															
	45														
325															
	50		**CALICHE**: dense, entire sample Caliche	6		BC=23 19 15									
320															
	55														
315															
	60		Fine to coarse grained, low plasticity fines, light gray to brown, moist, hard, some rootlets	7		BC=8 13 15									
310															
			Alluvium **Fat CLAY (CH)**: high plasticity fines, black, organic odor, moist, hard												
	65														
305															

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BORING LOG B-5

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PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

PLATE

A-12

Date Begin - End:	4/24/12 - 4/25/12	**Drill Company:**	Scott's Drilling	**BORING LOG B-5**	
Logged By:	E. Koprulu	**Drill Crew:**			
Hor.-Vert. Datum:	NAD83 - NAD83	**Drill Equipment:**	CME-55	**Hammer Type - Drop:**	140 lb. Automatic - 30"
Angle from Vert.:	0 degrees	**Exploration Method:**	Hollow Stem Auger		
Weather:	Sunny	**Auger Diameter:**	8 inches		

Approximate Elevation (feet)	Depth (feet)	Graphical Log	FIELD EXPLORATION: Latitude: 33.21074° N, Longitude: 117.29347° W, Approximate Surface Elevation (ft): 372.0, Surface Condition: Bare Earth and Grass	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. blows/6 in	Recovery	LABORATORY RESULTS: USCS Symbol	Moisture Content (%)	Dry Density (pcf)	Passing No.4 Sieve (%)	Passing #200 Sieve (%)	Liquid Limit (NV=No Value)	Plasticity Index (NP=No Plasticity)	Other Tests/ Remarks
				8		BC=15 50/3"									
300			**Santiago Formation** **Sandy CLAY (CL)**: fine grained, medium plasticity fines, gray, moist, very hard, strongly cemented												
	75		The boring was terminated at approximately 71 feet below ground surface. The Boring was backfilled with bentonite on April 25, 2012.												
295															
	80														
290															
	85														
285															
	90														
280															
	95														
275															
	100														
270															

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling.

GENERAL NOTES:
The boring location and elevation are approximate and were estimated by BHA, Inc.
A Garmin etrex GPS unit was used to locate the boring with an accuracy of 5 to 10 feet.

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BORING LOG B-5

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OCEANSIDE, CALIFORNIA

PLATE
A-13

Date Begin - End:	4/26/12	**Drill Company:**	Scott's Drilling	**BORING LOG B-6**	
Logged By:	E. Koprulu	**Drill Crew:**			
Hor.-Vert. Datum:	NAD83 - NAD83	**Drill Equipment:**	CME-55	**Hammer Type - Drop:**	140 lb. Automatic - 30"
Angle from Vert.:	0 degrees	**Exploration Method:**	Hollow Stem Auger		
Weather:	Sunny	**Auger Diameter:**	8 inches		

Latitude: 33.21047° N
Longitude: 117.29423° W
Approximate Surface Elevation (ft): 366.0

Surface Condition: Bare Earth and Grass

Approximate Elevation (feet)	Depth (feet)	Graphical Log	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. blows/6 in	Recovery	USCS Symbol	Moisture Content (%)	Dry Density (pcf)	Passing No.4 Sieve (%)	Passing #200 Sieve (%)	Liquid Limit (NV=No Value)	Plasticity Index (NP=No Plasticity)	Other Tests/ Remarks
365	0													**Artificial Fill** **Clayey SAND (SC)**: fine to coarse grained, non-plastic fines, gray, moist, dense
360	5		1		BC=16 24 42									Fine to coarse grained, non-plastic fines, gray, moist, very dense
355	10		2		BC=16 37 45									Coarse grained, non-plastic fines, gray, moist, very dense, decrease in fines content, predominantly coarse grained sand
350	15													
345	20		3		BC=16 25 39									Coarse grained, non-plastic fines, gray, moist, very dense
340	25		4		BC=20 30 38									**Sandy CLAY (CL)**: fine to coarse grained, low plasticity fines, grayish brown, moist, very hard
335	30		5		BC=23 47 50									Fine grained, low plasticity fines, light brown, moist, very hard, gray colored Sand lenses throughout

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PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

PLATE

A-14

Date Begin - End:	4/26/12	**Drill Company:**	Scott's Drilling	**BORING LOG B-6**	
Logged By:	E. Koprulu	**Drill Crew:**			
Hor.-Vert. Datum:	NAD83 - NAD83	**Drill Equipment:**	CME-55	**Hammer Type - Drop:**	140 lb. Automatic - 30"
Angle from Vert.:	0 degrees	**Exploration Method:**	Hollow Stem Auger		
Weather:	Sunny	**Auger Diameter:**	8 inches		

FIELD EXPLORATION

Latitude: 33.21047° N
Longitude: 117.29423° W
Approximate Surface Elevation (ft): 366.0

Surface Condition: Bare Earth and Grass

Approximate Elevation (feet)	Depth (feet)	Graphical Log	Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. blows/6 in	Recovery
330			**Sandy CLAY (CL)**: fine to coarse grained, low plasticity fines, grayish brown, moist, very hard *(continued)*				
325	40		Fine grained, low plasticity fines, light brown to white, moist, very hard, abundant caliche	6		BC=8 15 19	
			Pieces of debris (metal pieces) observed in soil cuttings				
320	45		**Fat CLAY (CH)**: high plasticity fines, dark brown to black, trace organic odor, moist, hard, some reddish brown to gray colored Sand lenses, some rootlets	7		BC=8 11 18	
315	50		**Sandy CLAY (CL)**: fine grained, medium plasticity fines, grayish brown, moist, hard	8		BC=13 25 35	
310	55		Soil cuttings indcate black colored Clay with strong organic smell from approximately 50 to 58 feet				
305	60		Fine grained, low plasticity fines, grayish brown, moist, very hard	9		BC=17 18 28	
300	65		Becomes firm to hard	10		BC=6 10 14	
			Alluvium **Fat CLAY (CH)**: trace fine grained, high plasticity fines, black, organic smell odor, moist, firm to hard				

LABORATORY RESULTS

USCS Symbol	Moisture Content (%)	Dry Density (pcf)	Passing No.4 Sieve (%)	Passing #200 Sieve (%)	Liquid Limit (NV=No Value)	Plasticity Index (NP=No Plasticity)	Other Tests/ Remarks

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PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

PLATE

A-15

Date Begin - End:	4/26/12	**Drill Company:**	Scott's Drilling	**BORING LOG B-6**	
Logged By:	E. Koprulu	**Drill Crew:**			
Hor.-Vert. Datum:	NAD83 - NAD83	**Drill Equipment:**	CME-55	**Hammer Type - Drop:**	140 lb. Automatic - 30"
Angle from Vert.:	0 degrees	**Exploration Method:**	Hollow Stem Auger		
Weather:	Sunny	**Auger Diameter:**	8 inches		

FIELD EXPLORATION

Latitude: 33.21047° N
Longitude: 117.29423° W
Approximate Surface Elevation (ft): 366.0

Surface Condition: Bare Earth and Grass

Approximate Elevation (feet)	Depth (feet)	Graphical Log	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. blows/6 in	Recovery	USCS Symbol	Moisture Content (%)	Dry Density (pcf)	Passing No.4 Sieve (%)	Passing #200 Sieve (%)	Liquid Limit (NV=No Value)	Plasticity Index (NP=No Plasticity)	Other Tests/ Remarks
295														
	75													
290			11		BC=16 24 31									CONSOL
	80													
285			12		BC=18 50/5"									
	85													
280														
	90													
275														
	95													
270														
	100													
265														

Alluvium
Fat CLAY (CH): trace fine grained, high plasticity fines, black, organic smell odor, moist, firm to hard *(continued)*

Sandy CLAY (CL): fine grained, medium plasticity fines, brown, moist, very hard

Santiago Formation

Sandy CLAY (CL): fine grained, low plasticity fines, gray, moist, very hard, iron-oxide staining

The boring was terminated at approximately 81 feet below ground surface. Boring was backfilled with bentonite on April 26, 2012.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling.
GENERAL NOTES:
The boring location and elevation are approximate and were estimated by BHA, Inc.
A Garmin etrex GPS unit was used to locate the boring with an accuracy of 5 to 10 feet.

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BORING LOG B-6

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OCEANSIDE, CALIFORNIA

PLATE
A-16

Date Begin - End: 4/23/12 | **Excavation Co.:** Cut N Core

Logged By: E. Koprulu | **Excavation Crew:**

Hor.-Vert. Datum: NAD83 - NAD83 | **Excavation Equip.:** CAT 430E Backhoe

Angle from Vert.: 0 degrees | **Excav. Dimensions:** 36 inches

Weather: Sunny

TEST PIT LOG TP-1

Approximate Elevation (feet)	Depth (feet)	Graphical Log	FIELD EXPLORATION	Sample Number	Sample Type	LABORATORY RESULTS: USCS Symbol	Moisture Content (%)	Dry Density (pcf)	Passing No.4 Sieve (%)	Passing #200 Sieve (%)	Liquid Limit (NV=No Value)	Plasticity Index (NP=No Plasticity)	Other Tests/ Remarks
			Latitude: 33.21286° N Longitude: 117.29625° W Approximate Surface Elevation (ft): 384.0 Surface Condition: Bare Earth and Grass										
380	5		**Santiago Formation** **Clayey SAND (SC)**: fine to coarse grained, low plasticity fines, gray, moist, dense, homogeneous, weakly to moderately cemented, some Clay inseams	1									Expansion Index (5)
375	10												
370	15												
365	20												
360	25												
355	30												
350													

The test pit was terminated at approximately 5 feet below ground surface. Test Pit was backfilled with excavated material on April 23, 2012.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during excavation.

GENERAL NOTES:
The test pit location and elevation are approximate and were estimated by BHA, Inc.
A Garmin etrex GPS unit was used to locate the test pit with an accuracy of 5 to 10 feet.
There was no shoring used for the test pit exploration.

TP-1

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TEST PIT LOG TP-1

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PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

PLATE

A-17

Date Begin - End:	4/23/12	**Excavation Co.:**	Cut N Core	**TEST PIT LOG TP-2**
Logged By:	E. Koprulu	**Excavation Crew:**		
Hor.-Vert. Datum:	NAD83 - NAD83	**Excavation Equip.:**	CAT 430E Backhoe	
Angle from Vert.:	0 degrees	**Excav. Dimensions:**	36 inches	
Weather:	Sunny			

Approximate Elevation (feet)	Depth (feet)	Graphical Log	FIELD EXPLORATION Latitude: 33.21283° N Longitude: 117.29574° W Approximate Surface Elevation (ft): 382.0 Surface Condition: Bare Earth and Grass	Sample Number	Sample Type	LABORATORY RESULTS USCS Symbol	Moisture Content (%)	Dry Density (pcf)	Passing No.4 Sieve (%)	Passing #200 Sieve (%)	Liquid Limit (NV=No Value)	Plasticity Index (NP=No Plasticity)	Other Tests/ Remarks
380	0		**Santiago Formation** **Clayey SAND (SC)**: fine to coarse grained, low plasticity fines, gray, moist, very dense, fissured, moderately cemented	1									Expansion Index (29)
375	5		**CLAYSTONE (CL-CH)**: fine grained, medium to high plasticity fines, brown to reddish brown, moist, very hard, blocky, strongly cemented	2									
370	10												
365	15												
360	20												
355	25												
350	30												

The test pit was terminated at approximately 8 feet below ground surface. Test Pit was backfilled with excavated material on April 23, 2012.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during excavation.
GENERAL NOTES:
The test pit location and elevation are approximate and were estimated by BHA, Inc.
A Garmin etrex GPS unit was used to locate the test pit with an accuracy of 5 to 10 feet.
There was no shoring used for the test pit exploration.

TP-2

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TEST PIT LOG TP-2

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PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

PLATE
A-18
PAGE: 1 of 1

TEST PIT LOG TP-3

Date Begin - End:	4/23/12	**Excavation Co.:**	Cut N Core
Logged By:	E. Koprulu	**Excavation Crew:**	
Hor.-Vert. Datum:	NAD83 - NAD83	**Excavation Equip.:**	CAT 430E Backhoe
Angle from Vert.:	0 degrees	**Excav. Dimensions:**	36 inches
Weather:	Sunny		

Approximate Elevation (feet)	Depth (feet)	Graphical Log	FIELD EXPLORATION	Sample Number	Sample Type	LABORATORY RESULTS: USCS Symbol	Moisture Content (%)	Dry Density (pcf)	Passing No.4 Sieve (%)	Passing #200 Sieve (%)	Liquid Limit (NV=No Value)	Plasticity Index (NP=No Plasticity)	Other Tests/ Remarks
			Latitude: 33.21221° N Longitude: 117.29648° W Approximate Surface Elevation (ft): 386.0 Surface Condition: Bare Earth and Grass										
385			**Santiago Formation** **Clayey SAND (SC)**: fine to coarse grained, low plasticity fines, gray, moist, very dense, blocky, moderately cemented	1									
	5		**CLAYSTONE (CL-CH)**: fine grained, medium to high plasticity fines, brown to reddish brown, moist, very hard, blocky, strongly cemented	2									
380													
	10												
375													
	15												
370													
	20												
365													
	25												
360													
	30												
355													

The test pit was terminated at approximately 6 feet below ground surface. Test Pit was backfilled with excavated material on April 23, 2012.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during excavation.
GENERAL NOTES:
The test pit location and elevation are approximate and were estimated by BHA, Inc.
A Garmin etrex GPS unit was used to locate the test pit with an accuracy of 5 to 10 feet.
There was no shoring used for the test pit exploration.

TP-3

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TEST PIT LOG TP-3

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

PLATE
A-19

TEST PIT LOG TP-4

Date Begin - End:	4/23/12	**Excavation Co.:**	Cut N Core
Logged By:	E. Koprulu	**Excavation Crew:**	
Hor.-Vert. Datum:	NAD83 - NAD83	**Excavation Equip.:**	CAT 430E Backhoe
Angle from Vert.:	0 degrees	**Excav. Dimensions:**	36 inches
Weather:	Sunny		

Approximate Elevation (feet)	Depth (feet)	Graphical Log	FIELD EXPLORATION	Sample Number	Sample Type	LABORATORY RESULTS: USCS Symbol	Moisture Content (%)	Dry Density (pcf)	Passing No.4 Sieve (%)	Passing #200 Sieve (%)	Liquid Limit (NV=No Value)	Plasticity Index (NP=No Plasticity)	Other Tests/ Remarks
			Latitude: 33.21125° N Longitude: 117.29421° W Approximate Surface Elevation (ft): 368.0 Surface Condition: Bare Earth and Grass										
			Artificial Fill **Clayey SAND (SC)**: fine to coarse grained, low plasticity fines, light brown, moist, dense, chunks of clay throughout	1									
365			**Santiago Formation** **Clayey SAND (SC)**: fine to coarse grained, low plasticity fines, gray, moist, dense	2									
	5												
360													
	10												
355													
	15												
350													
	20												
345													
	25												
340													
	30												
335													

The test pit was terminated at approximately 6 feet below ground surface. Test Pit was backfilled with excavated material on April 23, 2012.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during excavation.
GENERAL NOTES:
The test pit location and elevation are approximate and were estimated by BHA, Inc.
A Garmin etrex GPS unit was used to locate the test pit with an accuracy of 5 to 10 feet.
There was no shoring used for the test pit exploration.

TP-4

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TEST PIT LOG TP-4

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

PLATE
A-20

TEST PIT LOG TP-5

Date Begin - End:	4/23/12	**Excavation Co.:**	Cut N Core
Logged By:	E. Koprulu	**Excavation Crew:**	
Hor.-Vert. Datum:	NAD83 - NAD83	**Excavation Equip.:**	CAT 430E Backhoe
Angle from Vert.:	0 degrees	**Excav. Dimensions:**	36 inches
Weather:	Sunny		

Approximate Elevation (feet)	Depth (feet)	Graphical Log	FIELD EXPLORATION Latitude: 33.21126° N Longitude: 117.29373° W Approximate Surface Elevation (ft): 368.0 Surface Condition: Bare Earth and Grass	Sample Number	Sample Type	LABORATORY RESULTS USCS Symbol	Moisture Content (%)	Dry Density (pcf)	Passing No.4 Sieve (%)	Passing #200 Sieve (%)	Liquid Limit (NV=No Value)	Plasticity Index (NP=No Plasticity)	Other Tests/ Remarks
365	0		**Artificial Fill** **Sandy CLAY (CL)**: fine to coarse grained, low plasticity fines, light brown, moist, dense, chunks of clay throughout	1									
	5		**Santiago Formation** **Silty SAND (SM)**: fine to coarse grained, low plasticity fines, gray, moist, dense, pockets of dark gray Clay, concreteion observed at approximately 5.5 feet	2									
360	10												
355	15												
350	20												
345	25												
340	30												
335													

The test pit was terminated at approximately 6 feet below ground surface. Test Pit was backfilled with excavated material on April 23, 2012.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during excavation.
GENERAL NOTES:
The test pit location and elevation are approximate and were estimated by BHA, Inc.
A Garmin etrex GPS unit was used to locate the test pit with an accuracy of 5 to 10 feet.
There was no shoring used for the test pit exploration.

TP-5

KLEINFELDER
Bright People. Right Solutions.
5015 Shoreham Place
San Diego, CA 92122
www.kleinfelder.com PH. 858-320-2000 FAX. 858-320-2001

PROJECT NO.	124202
DRAWN BY:	EK
CHECKED BY:	DH
DATE:	5/7/2012
REVISED:	

TEST PIT LOG TP-5

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

PLATE
A-21
PAGE: 1 of 1

TEST PIT LOG TP-6

Date Begin - End:	4/23/12	**Excavation Co.:**	Cut N Core
Logged By:	E. Koprulu	**Excavation Crew:**	
Hor.-Vert. Datum:	NAD83 - NAD83	**Excavation Equip.:**	CAT 430E Backhoe
Angle from Vert.:	0 degrees	**Excav. Dimensions:**	36 inches
Weather:	Sunny		

Approximate Elevation (feet)	Depth (feet)	Graphical Log	FIELD EXPLORATION	Sample Number	Sample Type	LABORATORY RESULTS: USCS Symbol	Moisture Content (%)	Dry Density (pcf)	Passing No.4 Sieve (%)	Passing #200 Sieve (%)	Liquid Limit (NV=No Value)	Plasticity Index (NP=No Plasticity)	Other Tests/ Remarks
			Latitude: 33.21125° N Longitude: 117.29333° W Approximate Surface Elevation (ft): 374.0 Surface Condition: Bare Earth and Grass										
			Artificial Fill **Clayey SAND (SC)**: trace gravel, fine to coarse grained, non-plastic fines, light brown, moist, dense	1									
370	5		**Silty SAND (SM)**: fine to coarse grained, non-plastic fines, gray, moist, dense, weakly cemented chunks mixed	2									
365	10												
360	15												
355	20												
350	25												
345	30												
340													

The test pit was terminated at approximately 9.5 feet below ground surface. Test Pit was backfilled with excavated material on April 23, 2012.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during excavation.
GENERAL NOTES:
The test pit location and elevation are approximate and were estimated by BHA, Inc.
A Garmin etrex GPS unit was used to locate the test pit with an accuracy of 5 to 10 feet.
There was no shoring used for the test pit exploration.

TP-6

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PROJECT NO.	124202
DRAWN BY:	EK
CHECKED BY:	DH
DATE:	5/7/2012
REVISED:	

TEST PIT LOG TP-6

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

PLATE
A-22
PAGE: 1 of 1

TEST PIT LOG TP-7

Date Begin - End:	4/23/12	**Excavation Co.:**	Cut N Core
Logged By:	E. Koprulu	**Excavation Crew:**	
Hor.-Vert. Datum:	NAD83 - NAD83	**Excavation Equip.:**	CAT 430E Backhoe
Angle from Vert.:	0 degrees	**Excav. Dimensions:**	36 inches
Weather:	Sunny		

FIELD EXPLORATION

Latitude: 32.21111° N
Longitude: 117.29319° W
Approximate Surface Elevation (ft): 373.0

Surface Condition: Bare Earth and Grass

Approximate Elevation (feet)	Depth (feet)	Graphical Log	Sample Number	Sample Type	USCS Symbol	Moisture Content (%)	Dry Density (pcf)	Passing No.4 Sieve (%)	Passing #200 Sieve (%)	Liquid Limit (NV=No Value)	Plasticity Index (NP=No Plasticity)	Other Tests/ Remarks
370	0		1									**Artificial Fill**
			2									**Clayey SAND (SC)**: fine to coarse grained, non-plastic fines, light brownish gray, moist, dense
												Silty SAND (SM): fine to medium grained, non-plastic fines, light gray, moist, dense
			3									**Silty SAND (SM)**: coarse grained, non-plastic fines, gray, moist, dense
365	5		4									**Clayey SAND (SC)**: fine to coarse grained, non-plastic fines, gray, moist, dense
360	10											
355	15											
350	20											
345	25											
340	30											

The test pit was terminated at approximately 8 feet below ground surface. Test Pit was backfilled with excavated material on April 23, 2012.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during excavation.
GENERAL NOTES:
The test pit location and elevation are approximate and were estimated by BHA, Inc.
A Garmin etrex GPS unit was used to locate the test pit with an accuracy of 5 to 10 feet.
There was no shoring used for the test pit exploration.

TP-7

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PROJECT NO.	124202
DRAWN BY:	EK
CHECKED BY:	DH
DATE:	5/7/2012
REVISED:	

TEST PIT LOG TP-7

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

PLATE
A-23

APPENDIX B

LABORATORY TESTRESULTS

APPENDIX B
LABORATORY TEST RESULTS

GENERAL

Laboratory tests were performed on selected, representative samples as an aid in classifying the soils and to evaluate the condition of the existing soils and physical properties of the soils that may affect foundation design and construction procedures. A description of our laboratory testing program is presented below.

CLASSIFICATION

Soils were visually and texturally classified in accordance with the Unified Soil Classification System (USCS) in general accordance with ASTM D 2488. Soil classifications are indicated on the Boring Log and Test Pit excavation sheets in Appendix A.

MOISTURE CONTENT AND DRY UNIT WEIGHT

Natural moisture content and dry unit weight tests were performed on eleven drive samples collected from the borings in accordance with ASTM D 2216 and D 2937, respectively. The results of these tests are presented on the Logs of Borings in Appendix A.

EXPANSION INDEX TEST

Three expansion index (EI) tests were performed on select samples obtained during our investigation. The tests were performed in general accordance with ASTM D4829. The corrected expansion index for the samples are presented in Table B1. The test results indicate a very low to medium expansion potential when compared to Table B2 to qualitatively evaluate the expansion potential of the site soils.

Table B1
Expansion Index Test Results

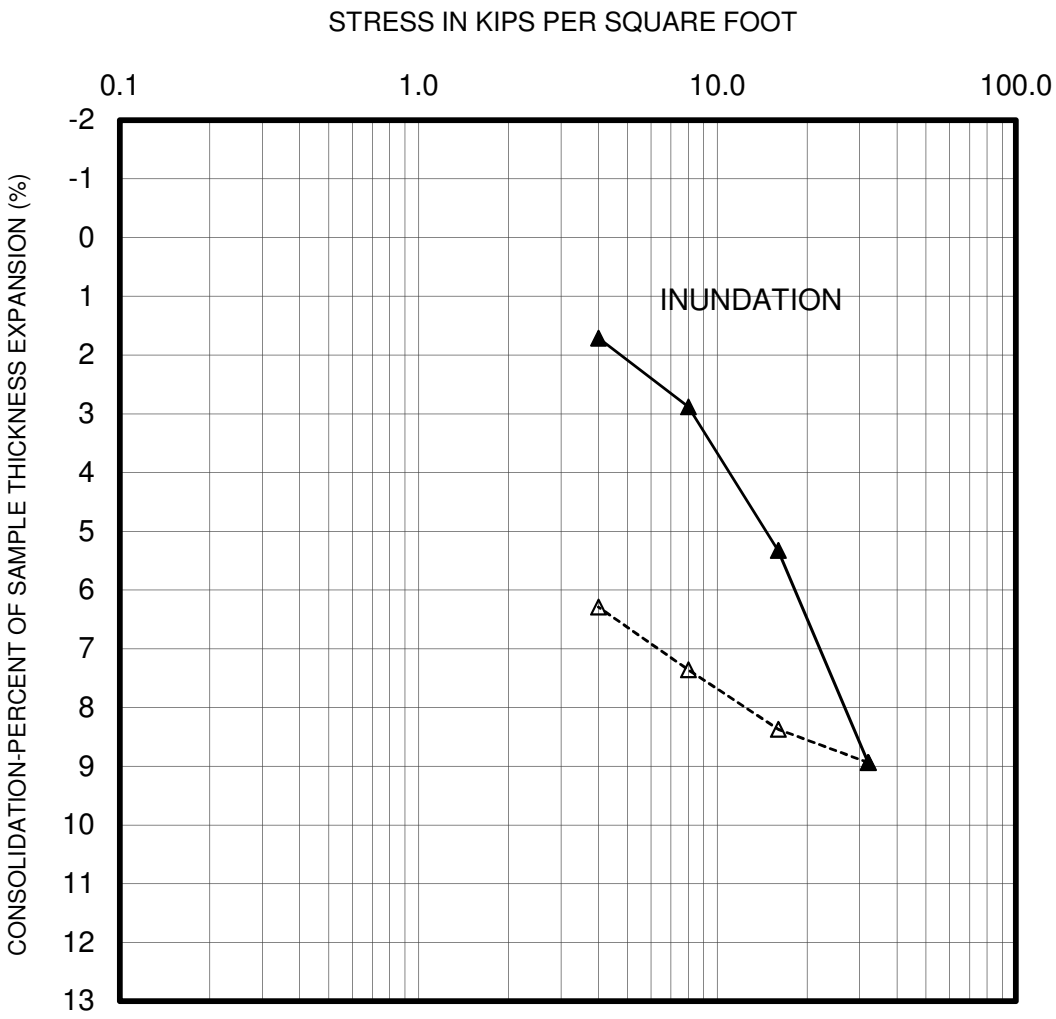
Boring	Depth (ft)	Soil Type	EI
B-1	0.5-4	Clayey Sand	54
TP-1	0-5	Silty Sand	5
TP-3	0-3	Clayey Sand	29

Table B2
ASTM D 4829 Expansion Index and Potential

Expansion Index	Potential Expansion
0-20	Very Low
21-50	Low
51-90	Medium
91-130	High
Above 130	Very High

CONSOLIDATION TEST

Two consolidation tests were performed on soils samples of the alluvium / colluvium to aid in evaluating the compressibility of the soils when subjected to new loads. The tests were performed in general accordance with ASTM Test Method D 2435. The results of the test are presented on Plates B1 and B2.



Seating Cycle
Loading Prior to Inundation
Loading After Inundation
Rebound Cycle

Boring No.	**B4**
Sample No.	**17**
Depth	**75'-76.5'**
Sample Description	very dark brown clay

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

KLEINFELDER
Bright People. Right Solutions.

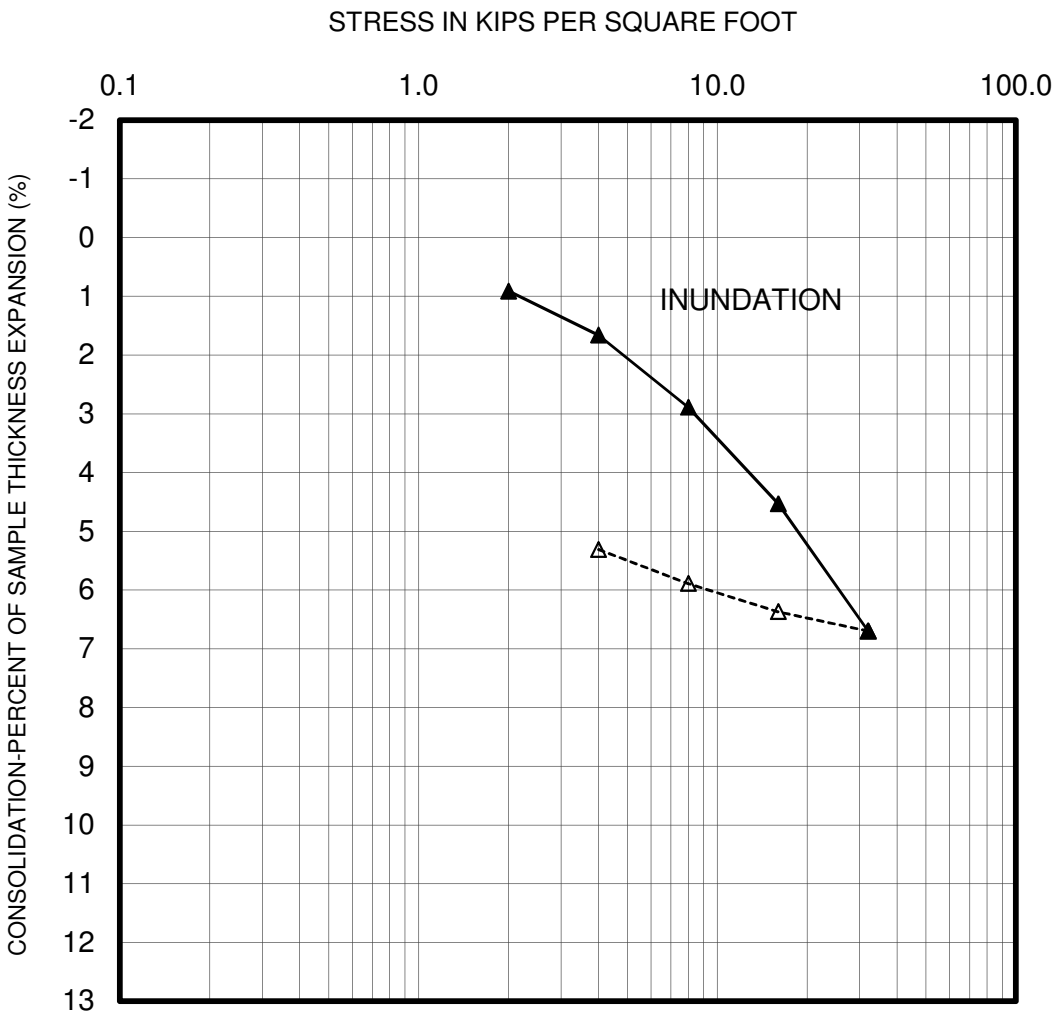
Checked by:		Tech	Uly
Project No.	124202	Date:	5/24/2012

CONSOLIDATION TEST

SDG&E Ocean Ranch Substation
Pacific Coast Business Park
Oceanside, California

Plate

B1



Seating Cycle
Loading Prior to Inundation
Loading After Inundation
Rebound Cycle

Boring No. B6
Sample No. 11
Depth 75'-76.5'
Sample Description dark yellowish brown sandy clay

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

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Checked by:		Tech	Uly
Project No.	124202	Date:	5/24/2012

CONSOLIDATION TEST

SDG&E Ocean Ranch Substation
Pacific Coast Business Park
Oceanside, California

Plate

B2

APPENDIX C

AS-BUILT GRADING PLANS (2008)

SEE SHEET 11

SEE SHEET 12

STREET "A"

STREET "C"

AVENIDA DEL ORO

PARCEL 7

PARCEL 14

EL 5

P C L 16

LIMITS OF GRADING UNTIL PERMISSION IS GRANTED FROM ADJACENT OWNER TO OFFSITE PROPERTY

PROPOSED 36" PUBLIC STORM DRAIN PER R-13795, STORM DRAIN LINE "C"

BASIN 7 BOTTOM ELEV=378.50 SEE DETAIL ON SHEET 2

EXISTING ACCESS AND UTILITY SDG&E EASEMENT PER PER BOOK 5443, PG 125 OF OFFICIAL RECORDS

TYPE C-4 MASONRY RETAINING WALL BY SEPARATE PERMIT

EXIST SUBDRAIN

PROPOSED 3" SEE WATER IN PLAN W-2160

BASIN 14 BOTTOM ELEV=373.60 SEE DETAIL ON SHEET

PROPOSED 4' SDG&E EASEMENT PER DOC. 2007-0073670 Rec. 2-1-07

RELOCATE EXISTING SDG&E 69KV OVERHEAD POWER LINE

SDG&E EASEMENT RECORDED JULY 26, 1950 IN BOOK 3711, PAGE 430 OF OFFICIAL RECORDS TO BE QUIT CLAIMED

TYPE "C" TERRACE SWALE PER DETAIL SHEET 2

PROPOSED GUY WIRE

LIMITS OF GRADING

PROP. SUBDRAIN

PROPOSED 24' SDG&E EASEMENT PER DOC. 2007-0073670 Rec. 2-1-07

PROPOSED RELOCATION OF SDG&E 69KV OVERHEAD POWER LINE

PROPOSED 48" PUBLIC STORM DRAIN PER R-13795 STORM DRAIN LINE "B"

PROPOSED 68' PUB ROAD AND UTILITY EASEMENT PER PARCEL MAP NO. 20306

PROPOSED 54" STORM DRAIN PER 13795 STORM "B"

PRIVATE STORM EASEMENT PER PARCEL MAP NO. 20306

BASIN 16 BOTTOM ELEV=366.90 SEE DETAIL ON SHEET 2

PER PARCEL MAP NO. 20306

DRAIN. EASEM

SUBDIVISION BOUNDARY

LIMITS OF GRADING

SDG&E POLE #118783

SDG&E POLE #123102

SDG&E POLE #123103

SDG&E POLE #123105

SDG&E POLE #123

LOT 6 MAP 14201 A.P.N. 166-677-24

AS-BUILT	APPROVED CHANGES			
	NO.	DESCRIPTION	APPV'D	
	1	PAVE STREET "C"	ME	10/07
		A B LT	SR	2-08

BENCH MARK

CITY OF OCEANSIDE D 23 A CHISELED SQUARE IN THE TOP

FROM: CI NSIDE LEVEL US A E 2

HA planning, engineering, surveying

SHEET 15 — CITY OF OCEANSIDE ENGINEERING DEPARTMENT — 19 SHEETS

PACIFIC COAST BUSINESS PARK PARCELS 7 & 14 - 16

PETER A. WEISS – RCE 43161 — CITY ENGINEER

ENGINEER OF WORK: RONALD L. HOLLOWAY R.C.E. 29271

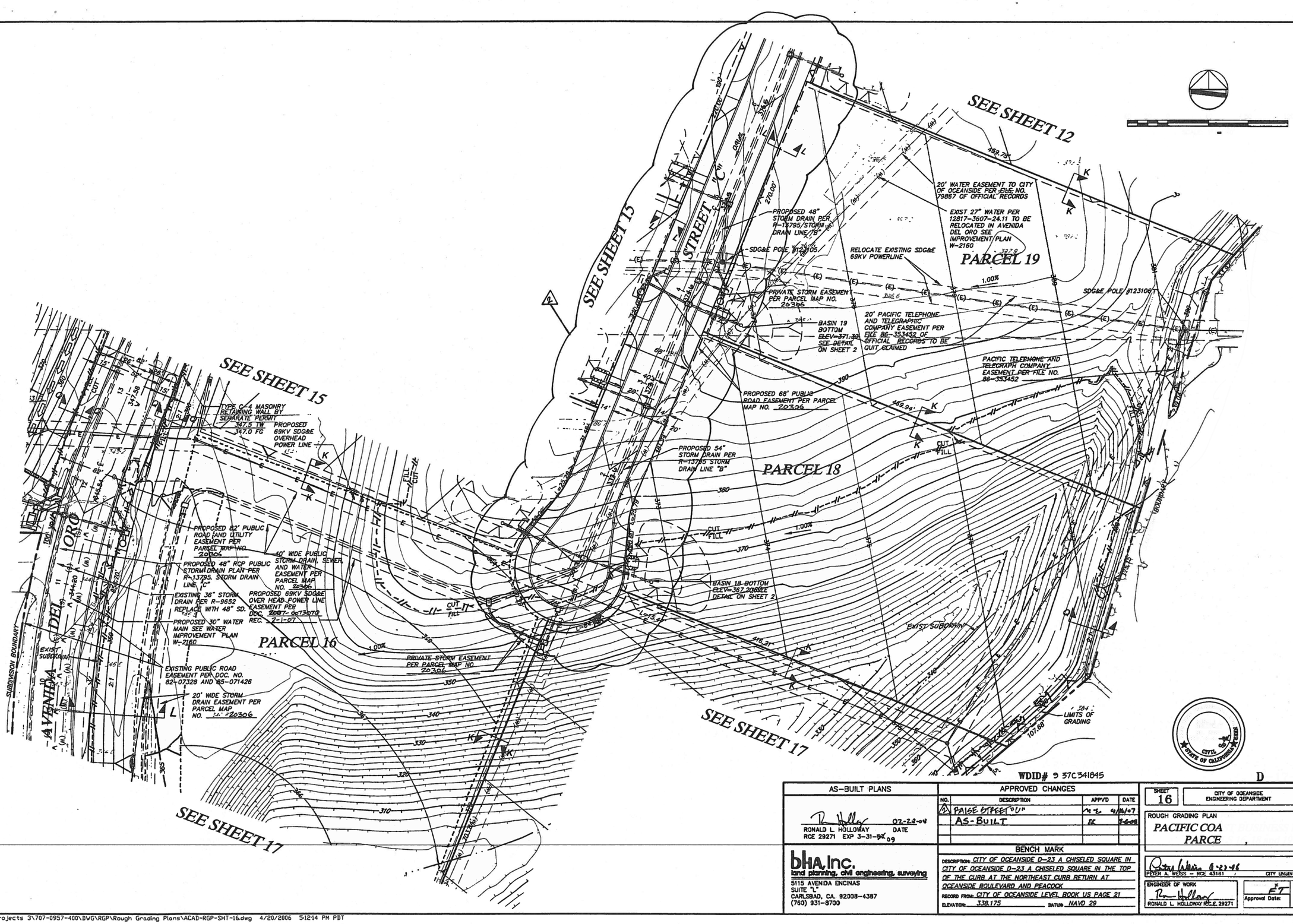
Checked By: ET — Approval

PLAN NUMBER 2597

40 20 0 40 80 120

SCALE: 1" = 40'

K:\Land Projects 3\707-0957-400\DWG\RGP\Rough Grading Plans\ACAD-RGP-SHT-15.dwg 4/20/2006 5:09:06 PM PDT



WDID# 9 37C341045

D ( )

AS-BUILT PLANS	APPROVED CHANGES				SHEET 16	CITY OF OCEANSIDE ENGINEERING DEPARTMENT	19 SHEETS
	NO.	DESCRIPTION	APPVD	DATE	ROUGH GRADING PLAN		
	1	PAIGE STREET "D"		4/16/07	PACIFIC COA PARCE		
		AS-BUILT		7-6-08			
RONALD L. HOLLOWAY DATE 07-2-08 RCE 29271 EXP 3-31-09					PETER A. WEISS - RCE 43181 CITY ENGINEER		
bHA, Inc. land planning, civil engineering, surveying 5115 AVENIDA ENCINAS SUITE "L" CARLSBAD, CA. 92008-4387 (760) 931-8700	BENCH MARK: DESCRIPTION: CITY OF OCEANSIDE D-23 A CHISELED SQUARE IN CITY OF OCEANSIDE D-23 A CHISELED SQUARE IN THE TOP OF THE CURB AT THE NORTHEAST CURB RETURN AT OCEANSIDE BOULEVARD AND PEACOCK. RECORD FROM: CITY OF OCEANSIDE LEVEL BOOK US PAGE 21. ELEVATION: 338.175 DATUM: NAVD 29				ENGINEER OF WORK RONALD L. HOLLOWAY RCE 29271	Approval Date: ET	PLAN NUMBER 2597

K:\Land Projects 3\707-0957-400\DWG\RGP\Rough Grading Plans\ACAD-RGP-SHT-16.dwg 4/20/2006 5:12:14 PM PDT

2597 (16)

SEE SHEET 15

SEE SHEET 16

SEE SHEET 18

EXISTING 10" SEWER PER R-9652

EXISTING 10" WATER PER R-9652

EXISTING 36" PUBLIC SD PER R-9652 REPLACE WITH 48" STORM DRAIN LINE "C"

EXIST SUBDRAIN

SUBDIVISION BOUNDARY

EXISTING 18" PUBLIC STORM DRAIN PER R-9652

EXISTING 24" PUBLIC STORM DRAIN PER R-9652

EXISTING 70' PUBLIC ROAD EASEMENT PER DOC. NO. 82-07328 AND 85-061426

ABANDON EXISTING 30" PUBLIC STORM DRAIN PER R-4290

EXISTING 48" PUBLIC STORM DRAIN PER R-4290

EXISTING 48" PUBLIC STORM DRAIN PER R-4283 STORM DRAIN LINE "A-1" PER KEY MAP

40' PUBLIC STORM DRAIN EASEMENT PER MAP NO. 16852

PROPOSED 24" PUBLIC STORM DRAIN PER R-13795. STORM DRAIN LINE "A"

EXIST SUBDRAIN

EXISTING 12" SEWER PER R-9654

PROPOSED 24" RCP PUBLIC STORM DRAIN PLAN PER R-13795. STORM DRAIN LINE "K"

EXISTING 10" WATER PER R-9652.

TRANSITION BROW DITCH INTO MODIFIED TYPE 'A' CURB OUTLET

2+39.74 MODIFIED TYPE 'A' CURB OUTLET 359.39 E 359.89 TC

EXISTING FIRE HYDRANT PER R-9652

PROPOSED 30" WATER MAIN SEE WATER IMPROVEMENT W-2167

PROPOSED 24" STORM DRAIN PER R-13795. STORM DRAIN LINE "B"

PROPOSED 20' WIDE STORM DRAIN EASEMENT PER PARCEL MAP NO.

BASIN 16 BOTTOM ELEV=357.20 SEE DETAIL ON SHEET 2

EXISTING 12" ACP STORM DRAIN

PROP. SUBDRAIN

PARCEL 16

EXPOSE EXIST SUBDRAIN AND CONNECT TO PROPOSED SUBDRAIN

REMOVE RISER AND PLUG EXIST STORM DRAIN W/ CONCRETE

PRIVATE STORM EASEMENT PER PARCEL MAP NO.

REMOVE EXISTING INLET AND 18" STORM DRAIN PER R-4290

EXISTING F/H PER R-9652

PROPOSED 24" RCP PUBLIC STORM DRAIN PER R-13795. STORM DRAIN LINE "K-1"

TYPE 'A' BROW DITCH

PRIVATE PRIVATE STORM DRAIN AND SEWER EASEMENT PER PARCEL MAP NO. 20306

PROPOSED SDG&E FACILITY AND EASEMENT

REMOVE AND REBUILD EXISTING FENCE AS NECESSARY TO CONSTRUCT BROW DITCH

EXISTING 27" WATER PER W-614

SEE SECTION A-A THIS SHEET FOR DETAIL OF MODIFIED TYPE 'A' OUTLET.

PRIVATE STORM EASEMENT PER PARCEL MAP NO.

PROPOSED 69KV SDG&E OVERHEAD POWER LINE

PROPOSED 69KV SDG&E OVER HEAD POWER LINE EASEMENT PER DOC 2007-0073470 REC 2-1-07

PARCEL 17

EXIST SUBDRAIN

LIMITS OF GRADING

20' WATER EASEMENT TO CITY OF OCEANSIDE PER FILE NO. 79867 OF OFFICIAL RECORDS

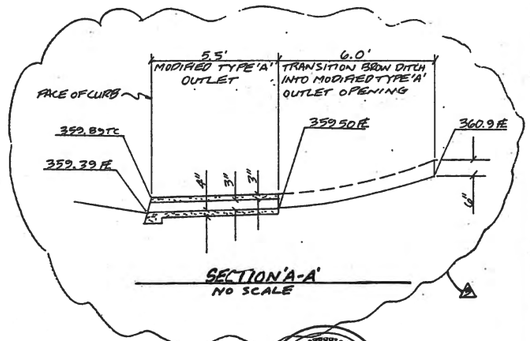
EXIST 42" WATER PER 12817-3607-24,1 TO BE RELOCATED IN AVENIDA DEL ORO SEE PLAN W-2167

BASIN 17 BOTTOM ELEV=363.80 SEE DETAILS ON SHEET 2

SUBDIVISION BOUNDARY

AVENIDA DEL ORO

PEACOCK BLVD



SECTION A-A
NO SCALE

40 20 0 40 80 120
SCALE: 1" = 40'

REGISTERED PROFESSIONAL ENGINEER
RONALD L HOLLOWAY
NO. 29271
EXP. 3-31-09
CIVIL
STATE OF CALIFORNIA

D-17-04(1)

WDID# 9 37C341815

AS-BUILT PLANS	APPROVED CHANGES			SHEET 17	CITY OF OCEANSIDE ENGINEERING DEPARTMENT	19 SHEETS
RONALD L HOLLOWAY DATE 07-29-08 RCE 29271 EXP 3-31-09	NO.	DESCRIPTION	APP'D DATE	ROUGH GRADING PLAN FOR: PACIFIC COAST BUSINESS PARK PARCEL 16 & 17		
	1	RAISE STREET "C"	M.G. 9/18/07			
	2	ADD BROW DITCH AND CURB OUTLET	M.G. 11/8/07			
		AS-BUILT	SR 7-08			

bHA, Inc.
land planning, civil engineering, surveying
5115 AVENIDA ENCINAS
SUITE "L"
CARLSBAD, CA. 92008-4387
(760) 931-8700

BENCH MARK
DESCRIPTION: CITY OF OCEANSIDE D-23 A CHISELED SQUARE IN CITY OF OCEANSIDE D-23 A CHISELED SQUARE IN THE TOP OF THE CURB AT THE NORTHEAST CURB RETURN AT OCEANSIDE BOULEVARD AND PEACOCK
RECORD FROM: CITY OF OCEANSIDE LEVEL BOOK US PAGE 21
ELEVATION: 338.175 DATUM: NAVD 29

Peter A. Weiss 6-23-08
PETER A. WEISS - RCE 43161 CITY ENGINEER

ENGINEER OF WORK
RONALD L. HOLLOWAY R.C.E. 29271

Checked By: ET
Approval Date:

PLAN NUMBER 2597

2597(17)

.Land Projects 3\707-09S7-400\DWG\RGP\Rough Grading Plans\ACAD-RGP-SHT-17.dwg 2/14/2006 8:45:57 AM PST

APPENDIX D

ASFE INSERT

Important Information about Your

Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you* — should apply the report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final,* because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; ***none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.***

Rely on Your ASFE-Member Geotechncial Engineer for Additional Assistance

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Geotechnical Study
2015

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November 12, 2015
Project No. 20154777.001A

Ms. Sarah Marijana
San Diego Gas & Electric
Civil/Structural Engineering
8316 Century Park Court, CP-52G
San Diego, California 90123

Subject: **Geotechnical Study**
SDG&E Ocean Ranch Substation
Pacific Coast Business Park
Oceanside, California

Dear Ms. Marijana:

Kleinfelder is pleased to present this geotechnical study for the proposed Ocean Ranch Substation project. The site is located at the southerly terminus of Rocky Point Drive and northeast of Avenida del Oro, within Parcels 16 and 17 of the existing Pacific Coast Business Park in Oceanside, California. The purpose of our geotechnical study was to evaluate subsurface soil conditions beneath the site and to provide geotechnical recommendations for design and construction. The conclusions and recommendations presented in this report are subject to the limitations presented in Section 6.

We appreciate the opportunity to provide geotechnical engineering services to you on this project. If you have any questions regarding this report or if we can be of further service, please do not hesitate to contact us at (619) 831-4600.

Respectfully submitted,

KLEINFELDER

Trampus Grindstaff
Project Engineer

Scott Rugg, PG, CEG
Senior Engineering Geologist

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GEOTECHNICAL STUDY
SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA
20154777.001A

NOVEMBER 12, 2015

A Report Prepared for:

Ms. Sarah Marijana
San Diego Gas & Electric
Civil/Structural Engineering
8316 Century Park Court, CP-52G
San Diego, California 90123

GEOTECHNICAL STUDY
SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

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November 12, 2015
20154777.001A

TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

1 INTRODUCTION

This report presents the results of our geotechnical study for the proposed San Diego Gas and Electric (SDG&E) Ocean Ranch Substation located in Oceanside, California. The approximate location of the project site is presented on Figure 1, Site Vicinity Map. The purpose of our geotechnical study was to evaluate subsurface soil conditions beneath the site and provide geotechnical recommendations for design and construction. The scope of our services was presented in our proposal titled, "Proposal for Update Geotechnical Study, Proposed Ocean Ranch Substation, Pacific Coast Business Park – Parcels 16 and 17, Oceanside, California," dated February 3, 2015. Our services were performed under our master services agreement with Richard Brady & Associates, Inc. (Brady) as part of SDG&E Master Services Agreement (MSA) 6360040035.

Our report includes a description of the work performed, a discussion of the general geotechnical conditions observed at the site, and recommendations developed from our engineering analyses of field and laboratory data.

1.1 SITE AND PROJECT DESCRIPTION

1.1.1 1.1.1 Site Description

Kleinfelder understands SDG&E plans to construct a new 69/12kV substation within Parcels 16 and 17 of the existing Pacific Coast Business Park. The site is also being considered for a new 138kV substation. The proposed configuration based on an ultimate arrangement plan for the 69/12KV station is presented in Figure 2, Boring Location Map.

The site is triangular in shape and has a common property boundary directly south and inline of Rocky Point Drive, which previously separated the parcels. At the time of our siting study in 2012, the parcels were moderately to densely vegetated with native grasses and bushes. However, recent clearing of vegetation was performed at Parcel 16 in the general area where the majority substation improvements will be constructed. The graded area is now covered with both 3/4- and 3-inch sized gravel.

The site has gentle to moderately sloping topography with a gradient that generally slopes to the southwest. An approximate 4- to 7-foot high slope with small trees splits the two parcels. The existing site elevations range from approximately 364 feet MSL at Parcel 16 to about 375 feet MSL at Parcel 17. Existing slopes located on the southern portion of the site appear to have inclinations of about 2H:1V. Two 40- to 50-foot diameter stormwater desilting basins are located

within the southern portion of the site. These desilting basins have corrugated steel stand pipes within the deepest portion. During our site visit we observed erosion gullies on the side slopes on the order of 1 to 3 feet in depth.

The latitude and longitude coordinates for the approximate center of the site are listed below, and the site and vicinity are shown on Figure 1.

Latitude: 33.21071 N

Longitude: -117.29378 W

1.1.2 Project Description

The proposed construction will be primarily situated on Parcel 16 of the existing Pacific Coast Business Park, with future expansion area proposed to the east on Parcel 17. Proposed improvements will consist of transformers, switch stands, circuit breakers, capacitor banks, switchgear, single-story concrete masonry control shelter, and access improvements including new concrete asphalt paved drive lanes. The entire substation pad area will be secured with a 6-foot high privacy wall with gates at several perimeter locations. Other general site improvements will consist of concrete headwalls at two locations and new attenuation/bioretention basins. Based on the referenced civil development plan, the existing western desilting basin will be filled as part of the station pad grading and the existing eastern basin will be modified into a biotention facility.

The proposed finish pad elevations will range from 370 feet at the southwest corner to 375 feet MSL at the northeast side. Grading for the substation pad will mainly consist of placing fill soils across the site, creating fill slopes up to about 10 feet high at the southwest corner of the pad. The site will be accessed from the cul-de-sac area at the south end of Rocky Point Drive via two separate drives entries. An additional access point will be constructed off of Avenida Del Oro to the southwest corner of the pad where cuts up to approximately 10 feet will be required to meet existing elevations along the roadway. Proposed cut and fill slopes will be graded to an inclination of 2:1 (horizontal to vertical).

1.2 SCOPE OF SERVICES

The purpose of our investigation was to evaluate the surface and subsurface soil and geologic conditions at the currently proposed substation and access road area, and to provide geotechnical information and recommendations to facilitate design of the project development.

The scope of our services for this phase of the project consisted of:

- Review of our 2012 preliminary investigation which included four borings and four test pit excavations within the proposed site.
- Field exploration of the subsurface conditions by drilling ten borings;
- Laboratory testing of selected samples of soil and geologic materials;
- Engineering analysis of field and laboratory data; and
- Preparation of this report presenting our compiled findings, conclusions, and recommendations.

The recommendations contained within this report are subject to the limitations presented in Section 6.0. An information sheet prepared by ASFE (the Association of Engineering Firms Practicing in the Geosciences) is also included in Appendix D. We recommend that all individuals using this report read the limitations along with the attached document.

2 METHODS OF STUDY

2.1 BACKGROUND DATA REVIEW

Task 1 – Background Data Review. We reviewed readily-available published and unpublished geologic literature and aerial photographs in our files and the files of public agencies. In addition, we reviewed previous geotechnical and as-graded reports provided by SDG&E, and our prior studies. The documents reviewed are presented in Section 7, References.

2.2 FIELD INVESTIGATION

Task 2 – Field Exploration. Subsurface conditions at the site were recently explored by drilling ten geotechnical borings. The borings were drilled to depths of approximately 6½ to 91½ feet below the existing ground surface (bgs) using a truck-mounted drill rig equipped with 6-inch-diameter hollow-stem augers. As part of our prior substation siting study, additional explorations were completed between April 24 and April 26, 2012. Those explorations consisted of three borings to depths ranging between approximately 50 to 80 feet bgs and four test pits ranging from about 5 to 10 feet. The approximate locations of the current and previous borings and test pits are presented on Figure 2, Boring Location Map. A summary of our field investigations are presented in Appendix A and A-1.

2.3 GEOTECHNICAL LABORATORY TESTING

Laboratory testing was performed on selected bulk and drive samples to substantiate field classifications and to provide engineering parameters for geotechnical design. Laboratory testing consisted of in-situ moisture content and dry unit weight, sieve analysis, #200 wash sieve, Atterberg limits, direct shear, R-value, and corrosivity (pH, electrical resistivity, water-soluble sulfates, and water-soluble chlorides). A description of the testing performed and the results are presented in Appendix B.

2.4 GEOTECHNICAL ANALYSES

Field and laboratory data were analyzed in conjunction with the proposed finished grades, structures layout, and estimated structural loads to provide geotechnical recommendations for design and construction. We evaluated foundation systems, lateral earth pressures for retaining structures, pavement design, and earthwork. Potential geologic hazards, including ground shaking, liquefaction potential, flood hazard, fault rupture hazard, and seismically-induced

settlement were also evaluated. Seismic design parameters in accordance with the 2013 California Building Code (CBC) are also presented.

2.5 REPORT PREPARATION

This report summarizes the work performed, data acquired, and our findings, conclusions, and geotechnical recommendations for the design and construction of the proposed substation. Our report includes the following items:

- Vicinity map and location plan showing the approximate boring locations and locations of the geologic cross sections;
- Logs of borings (Appendix A and A-1);
- Results of laboratory tests (Appendix B);
- Discussion of general site conditions;
- Discussion of general subsurface conditions as encountered in our field exploration;
- Discussion of regional and local geology;
- Discussion of geologic and seismic hazards;
- Recommendations for seismic design parameters in accordance with the 2013 CBC;
- Recommendations for shallow foundation design, allowable bearing pressures, and embedment depths;
- Recommendations for drilled pier design, including MFAD parameters, axial capacities and minimum embedment depths;
- Recommendations for site preparation, earthwork, temporary slope inclinations, fill placement and compaction, and excavation characteristics of subsurface soil deposits and formational materials;
- Recommendations for support of concrete slabs-on-grade;
- Recommendations for flexible pavement structural sections; and
- Preliminary evaluation of the corrosion potential of the on-site soils.

3 GEOLOGY AND SOILS

3.1 REGIONAL GEOLOGIC AND GEOTECTONIC SETTING

San Diego County resides within the southern portion of California's Peninsular Ranges Geomorphic Province. This province is characterized as an assemblage of north to northwest trending, high-relief ranges stretching south from the Santa Monica Mountains in Los Angeles, through San Diego County and south into Baja, California. Some of the notable ranges of Southern California include the Santa Ana Mountains, the Laguna Mountains and the Cuyamaca Mountains. The development of this mountain system is closely tied to the transform tectonisim of the San Andreas Fault System.

The County encompasses three geomorphic sub-zones set in a series of north-to-northwest trending belts, roughly parallel to the coastline. From west to east, these zones are comprised of a relatively narrow, low-relief coastal plain; a central high-relief mountainous zone; and a low-lying desert zone. The coastal plain and mountainous zones are part of a more extensive geomorphic province of the Peninsular Ranges. The desert zone is part of a larger geomorphic province known as the Colorado Desert.

Most of the western portion of San Diego County, including the project site is situated within the eastern side coastal subzone near the transition boundary with central mountainous zone. The coastal subzone is characterized by Quaternary to Mesozoic age sedimentary rock material. The sedimentary deposits are configured in a wedge shape mass which thickens to the west across the coastal plain from the edge of the mountainous terrain toward the coastline. The sediments are comprised of a variety of claystones, siltstones, sandstones and conglomerates. Older granitic and metamorphic bedrock occupies the mountainous terrain toward the east and consists of numerous plutonic igneous masses and smaller patches of metamorphic rock into which the granitic rock intruded.

The landscape was eroded during Pleistocene time by a system of generally west flowing large scale drainage systems and associated tributary drainages which resulted in the formation of the canyons/valleys that dominate the regional terrain of San Diego County. These processes also resulted in the accumulation of alluvial soils along drainage pathways and as wedge shape masses along the bottom of eroding hillslopes specifically described as colluvial deposits.

3.2 REGIONAL FAULTING AND SEISMICITY

Southern California straddles the boundary between two global tectonic plates known as the North American Plate (on the east) and the Pacific Plate (on the west). The main plate boundary is represented by the San Andreas fault which stretches northwest from the Gulf of California in Mexico, through the desert region of the Imperial Valley, through the San Bernardino region, and into Northern California where it eventually trends offshore north of San Francisco (Jennings and Bryant, 2010). Within Southern California, the San Andreas fault is a complex system of numerous faults known as the San Andreas Fault System (SAFS) that span a 150-mile wide zone from the main San Andreas fault in the Imperial Valley westward to offshore of San Diego (Powell et. al., 1993; Wallace, 1990). The major faults east of the San Diego region (from east to west) include the San Andreas Fault, the San Jacinto fault, and the Elsinore fault. Major faults west of San Diego include the Palos Verdes-Coronado Bank fault, the San Diego Trough fault, and the San Clemente fault.

The most dominant zone of faulting within the San Diego region are several faults associated with the Rose Canyon Fault Zone (RCFZ), as presented in Figure 4, Regional Fault Map and Earthquake Epicenters. The site is located between the RCFZ approximately 9¼ miles to the southwest and the Elsinore Fault Zone (EFZ) located approximately 18½ miles to the northeast. Although activity on any of the known and unknown faults within the SAFS affect the seismicity of the San Diego region, activity within both the RCFZ and the EFZ dominates most aspects of the seismic hazard at the project site.

Most of the seismic energy and associated fault displacement within the SAFS occurs along the fault structures closest to the plate boundary (i.e., on the Elsinore, San Jacinto, and San Andreas faults) (Powell, et. al. 1993). Approximately 49 millimeters per year (mm/yr) (1.9 inches/year) of overall lateral displacement have been measured geodetically and as fault slip across the plate boundary. Combined, the Elsinore, San Jacinto, and San Andreas faults account for up to 41 mm/yr (1.6 inches/year) of the total plate displacement (84 percent), meaning that the remaining 8 mm/yr (0.3 inch) (16 percent) is accommodated across the faults to the west (Bennett et al., 1996). At the latitude of San Diego, most of this, about 5-8 mm/yr, is accommodated by the coastal and offshore system of faults, including the Rose Canyon fault. Farther north, a similar amount (6-8 mm/yr) is accommodated east of the San Andreas Fault in the eastern California Shear Zone (Rockwell, 2010).

3.3 SITE GEOLOGY AND SUBSURFACE CONDITIONS

Based on our review of the referenced grading reports by others, the project area prior to grading consisted of a northeast trending ridgeline with two natural drainage features trending along the slope sidewalls. One drainage feature was located on the northwest side of the property trending roughly parallel to Avenida Del Oro. The other drainage trended northeast across the middle of the site from Avenida Del Oro, where it merged with the other drainage, toward the northeast property corner. The drainage flow direction was toward the southwest with elevations of approximately 270 feet above mean sea level (MSL) at Avenida Del Oro up to approximately 315 feet MSL at the northeast corner of the site. The highest elevations on the site were approximately 380 feet MSL at the southern corner and 360 feet on the north.

There have been at least two reported phases of earthwork construction at the site which consisted primarily of infilling of the drainage feature with artificial fill. The first earthwork phase consisted of fill placement along the western side of the site for construction of Avenida Del Oro, and along the southeast side of the site during construction of the adjacent subdivision on Avenida De La Plata. That grading resulted in the formation of an enclosed basin in the central portion of the site with a bottom elevation of approximately 304 feet MSL.A subdrain was reportedly installed which allowed the basin to drain toward the southwest.

Two geologic units underlie the fill. The youngest is an alluvial deposit which consists primarily of material shed down the side slopes of the drainage feature and depositing toward the bottom. This type of alluvial deposit being due primarily to slope runoff is more specifically designated as a young colluvial deposit. The underlying bedrock material is comprised of Eocene age Santiago Formation. Descriptions of these units including the aforementioned artificial fill are provided in Appendix A (Boring Logs and Test Pit Excavations), and generalized descriptions are provided in the subsequent sections. The geometry of the subsurface units are depicted on the geologic cross-sections on Figures 5 and 6.

3.3.1 Artificial Fill (af)

Our review of the subdivision grading report (Christian Wheeler 2007) shows that two phases of earthwork construction occurred at the site, with the most recent during 2006 to 2007. Our review of previous topographic maps and site boring data indicates that up to 83 feet of fill was placed below the project site. Christian Wheeler observed and performed compaction testing during the earthwork operations during this phase of work and reported the fill to be a minimum 90 percent relative compaction based on the ASTM D1557 modified proctor maximum dry density. For fills

below 50 feet, they report compaction data showing a minimum of 95 percent relative compaction per ASTM D1557. Standard Penetration Test (SPT) and California Sampler blow counts for fill soils encountered at the two parcels ranged from 9 to 48 blows per foot, which are generally consistent with the reported levels of compaction. The fills were likely derived from the on-site materials and generally consist of loose to dense, olive gray to very dark gray clayey sand to sandy clay, and olive brown to light gray silty sand. The specified Expansion Index for grading was for a maximum EI of 90 within the upper 5 feet.

Review of Christian Wheeler's test data indicates that overexcavation and recompaction of fill from the first phase grading was performed within the bottom area of the site drainage basin. The depth of removal was taken from a the existing surface elevation of approximately 304 feet MSL at that time down to a maximum depth of approximately 287 feet MSL. This removal area is shown on Figure 5, geologic cross-section A-A'. It appears that other areas of the Phase 1 fill were not reworked during the second phase of earthwork. These fills occur primarily below the western and southeastern side of the property and occur below the dotted line labeled "2007 Pre-grading Surface" on both of the geologic cross-sections. We did not review any documentation with regards to observation and testing of the Phase 1 fill.

3.3.2 Young Colluvial Deposits (Qyc)

Young colluvial deposits were encountered in borings B-4, B-5, and B-6 of the 2012 preliminary borings and boring B-4 from the current study. This material ranged in thickness between 3½ to 11½ feet between a low elevation of approximately 291½ MSL at previous boring B-6 to a high of 305 feet MSL at two of the previous borings, B-4 and B-5, and recent boring B-4. It apparently was removed from the area of the Phase 2 overexcavation work and consists of a dark gray to black fat clay and clay with sand and in hard condition. SPT and California Sampler blow counts for these soils ranged from 19 to 87 blows per foot.

3.3.3 Santiago Formation (Tsa)

Cretaceous-age Santiago Formation has been mapped underlying the subject site (Kennedy and Tan, 2005), was identified by Christian Wheeler during grading, and was encountered in our borings where the fill and young colluvial deposits were penetrated. Based on our borings, trenches and field mapping of slopes on and near the site indicate the Santiago Formation consists primarily of interbedded fine to coarse, light gray to brownish yellow, massively bedded sandstone, clayey siltstone, and claystone. The sandstones vary from very highly cemented with thin concretionary beds to moderately cemented and friable. Siltstones are massive to locally

thinly bedded, and moderately well-cemented. Recorded SPT and California Sampler blow counts for the Santiago Formation were relatively high, having a range of penetration of 2 to 5 inches for 50 blows.

3.3.4 Groundwater

Groundwater was not encountered in any of our borings or test pit excavations during either field investigation. The depth to the regional groundwater table is anticipated to be significantly deeper than anticipated grading depths and proposed construction elevations. The groundwater table may fluctuate with seasonal variations and irrigation. Groundwater is not expected to be a constraint to development the site. The groundwater table may fluctuate with seasonal variations and irrigation. A local rise in the groundwater level, localized zones of perched water, and increased soil moisture content should be anticipated during and following the rainy season. Irrigation of landscaped areas on or adjacent to the site can also cause a fluctuation of local groundwater levels. It should be noted that the borings were completed following several years of below average rainfall and current groundwater levels are likely depressed.

4 SEISMIC AND GEOLOGIC HAZARDS

We have reviewed the site with respect to the presence of potential geologic and/or seismic hazards. These hazards include expansive soils, seismic shaking, liquefaction, seismic compression, fault surface rupture, landslides, and flooding. The following sections discuss these hazards and their potential at this site in more detail.

4.1 EXPANSIVE SOILS

Expansive soils are characterized by their ability to undergo significant volume changes (shrink or swell) due to variations in moisture content. Changes in soil moisture content can result from precipitation, landscape irrigation, utility leakage, roof drainage, perched groundwater, drought, or other factors and may result in unacceptable settlement or heave of structures or concrete slabs supported on grade.

Based on the recommendations provided by Christian Wheeler (2006), selective grading was to be performed for soils placed within the upper 5 feet of the site. The selective grading was recommended to provide a cap of fill material with an expansion index of less than 90. The Christian Wheeler (2007) grading report references an expansion index test result on one sample of fill collected from each parcel. The test results of the samples collected range between 50 and 61, which correspond to low to medium expansion potential. Based on the results of our review, field investigations, and experience with similar materials, the fill soils encountered at the site are expected to have a medium potential for expansive soils. No special mitigation measures for expansive soils are recommended for the site.

4.2 SEISMIC SHAKING/CALIFORNIA BUILDING CODE SEISMIC DESIGN PARAMETERS

The project site, like all Southern California, is a seismically active area and is likely to experience ground shaking as a result of earthquakes on nearby or more distant faults. Our recommendations for seismic design parameters are in accordance with the 2013 California Building Code (CBC) and ASCE 7-10 (July 2013 errata) Minimum Design Loads for Buildings and Other Structures. It should be noted that the seismic provision of the 2013 CBC are based on and refer to (for more requirements) “Minimum Design Loads for Buildings and Other Structures, ASCE Standard 7”.

Based on the soil conditions encountered and the calculated shear wave velocities within the upper 100 feet (Vs30), the project site can be classified as Site Class D. Shear wave velocities within the upper 100 feet are used to determine Site Class D according to ASCE 7-10, Section

20.3.1, Table 20.3-1. Based on our designation of Site Class D, the site is defined as “stiff soil” profile with average shear wave velocities within the upper 100 feet between 600 ft/s (180 m/s) to 1,200 ft/s (360 m/s); average SPT blowcount, 15 < N < 50, blows per foot (bpf); or average undrained shear strength 1,000 < su < 2,000 psf (50 to 100 kPa). Based on the Site Class D designation and on the site location with respect to mapped spectral acceleration parameters SS and S1, Kleinfelder developed seismic design parameters. The recommended seismic design parameters are summarized in Table 1.

Table 1

Recommended 2013 CBC Seismic Design Parameters

DESIGN PARAMETER	SYMBOL	RECOMMENDED VALUE	2013 CBC / (ASCE 7-10) REFERENCE(S)
Site Class	--	D	Section 1613.3.2 (Section 11.4.2)
Mapped MCE_R (5% damped) spectral acceleration for short periods (Site Class B)	S_s	1.053 g	Section 1613.3.1 (Section 11.4.1)
Mapped MCE_R (5% damped) spectral acceleration for a 1-second period (Site Class B)	S_1	0.411 g	Section 1613.3.1 (Section 11.4.1)
Short Period Site Coefficient	F_a	1.079	Table 1613.3.3(1) (Table 11.4-1)
Long Period Site Coefficient (at 1-second period)	F_v	1.589	Table 1613.3.3(2) (Table 11.4-2)
MCE_G Peak Ground Acceleration adjusted for site class effects (S_M at T=0)	PGA_M	0.437 g	N/A
MCE_R (5% damped) spectral response acceleration for short periods adjusted for site class (F_a*S_S)	S_{MS}	1.136 g	Section 1613.3.3 / (Section 11.4.3)
MCE_R (5% damped) spectral response acceleration at 1-second period adjusted for site class (F_v*S_1)	S_{M1}	0.653 g	Section 1613.3.3 / (Section 11.4.3)
Design spectral response acceleration (5% damped) at short periods (2/3*S_{MS})	S_{DS}	0.757 g	Section 1613.3.4 / (Section 11.4.4)
Design spectral response acceleration (5% damped) at 1-second period (2/3*S_{M1})	S_{D1}	0.435 g	Section 1613.3.4 / (Section 11.4.4)

4.3 LIQUEFACTION

Earthquake-induced soil liquefaction can be described as a significant loss of soil strength and stiffness caused by an increase in pore water pressure resulting from cyclic loading during shaking. Liquefaction is most prevalent in loose to medium dense, sandy and gravely soils below the groundwater table. The potential consequences of liquefaction to engineered structures include loss of bearing capacity, buoyancy forces on underground structures, ground oscillations or “cyclic mobility”, increased lateral earth pressures on retaining walls, post liquefaction settlement, lateral spreading and “flow failures” in slopes.

In general, the subject site is underlain by loose to medium dense fill, medium dense to very dense, or hard to very hard, colluvium, and at depth by very dense formational soils. Based on the nature of these deposits, and the absence of shallow groundwater, it is our opinion that the potential for liquefaction across the site is low.

4.4 SEISMIC COMPRESSION

Seismic compression results from the accumulation of contractive volumetric strains in unsaturated soil during earthquake shaking. Loose to medium dense granular material with no fines, or with low plasticity fines, are most susceptible to seismic compression.

Based on the stratigraphy and generally high SPT blow counts in the borings performed at the project site, the seismic related settlement of the soil above groundwater is less than ½ inch. Therefore, no mitigation measures are recommended.

4.5 FAULT SURFACE RUPTURE

Review of readily available geologic and fault maps does not show any active or potentially active fault features passing through or nearby the site. An active fault is one which has undergone displacement within the last approximate 11,000 years. A potentially active fault (aka: Pre-Holocene fault) is one in which movement has occurred at sometime between 1.6 million years and 11,000 years before present. The closest active fault to the site is the Rose Canyon Fault, which is located approximately 9.2 kilometers offshore to the southwest. The site is not located within an Alquist-Priolo Earthquake Fault Zone. The closest potentially active fault is located approximately 0.5 miles to the southeast (Kennedy and Tan 2005). This is small discontinuous structure and does not trend toward the site. Based on these relationships, the hazard with respect to fault rupture is considered low.

4.5.1 Landslides and Slope Stability

Landslides are deep-seated ground failures in which a large section (tens to hundreds of feet deep) of a slope detaches and slides downhill. Landslides are not to be confused with minor surficial slope failures (slumps), which are usually limited to the topsoil zone and can occur on slopes composed of almost any geologic material. Landslides can cause damage to structures both above and below the slide mass. Undermining of foundations can occur to structures above the slide area. Areas below a slide can be damaged by being overridden and crushed by the failed slope material.

Several formations within the San Diego region are particularly prone to landsliding on steep slope surfaces. One of these is the Santiago Formation which underlies the site. These formations generally have high clay content and mobilize when they become saturated with water. However, the previous grading has resulted in a relatively flat-lying surface topography all around the site. No surficial indications of deep-seated landsliding were noted at the site during our field reconnaissance or in topographic maps we reviewed. There were no reported mapped landslides in the geologic literature we reviewed. Due to this low-lying surface condition within and around the site, the hazard with respect to landsliding is considered low.

Kleinfelder performed static and seismic slope stability analyses for the existing fill slopes along areas of the site adjacent to existing slopes as depicted by the two cross-section lines shown on Figure 2, A-A' and B-B'. The external static and seismic factors of safety calculated from the slope stability analyses were above the generally accepted minimum factors of safety of 1.5 and 1.1, respectively. Based on the results of our review, field investigation and engineering evaluations indicating the calculated factors of safety exceed the industry minimum, it is our opinion that the potential for significant large-scale slope instability is considered low.

4.5.2 Tsunami, Seiche and Flooding

Tsunamis are large sea waves that are most often generated by displacement of the ocean floor along submarine faults. They can also develop in response to other events, such as submarine landslides. The State of California through the California Emergency Management Agency, (2009), publishes a set of tsunami inundation maps for the California coastline. Review of the San Luis Rey quadrangle shows the maximum tsunami inundation line closest to the site is approximately 3.4 miles to the southwest at the eastern end of Buena Vista Lagoon.

A seiche is an oscillatory wave that develops in an enclosed or partially enclosed body of water, such as a bay or lake, in response to seismic shaking from an earthquake. The nearest body of water to the site is Guajome Lake which is approximately 2.6 miles to the northeast. Based in this distance, the hazard with respect to seiche inundation is low.

The flood hazard potential at the site was evaluated based on flood hazard maps available through the FEMA Map Service Center Web site. Based on FEMA Map Number, 06073C0758G, the proposed development area of the Ocean Ranch substation site is not located within a mapped flood area. The closest flood area is located approximately 0.5 miles south of the site and is designated as a high flood risk. The project site is well outside of this area and at a significantly higher elevation. Therefore, the hazard with respect to flooding is low.

5 CONCLUSIONS AND RECOMMENDATIONS

5.1 GENERAL

Based on the results of our field exploration, laboratory testing and engineering analyses conducted during this study, it is our professional opinion that the proposed project is geotechnically feasible, provided the recommendations presented in this report are incorporated into the project design and construction. We identified the following key geotechnical considerations during our study.

- The site is mostly underlain by deep fill, colluvium and Santiago formational soils at depth.
- Groundwater was not encountered at the site within any of the exploratory borings or test pits.
- The site is located in the seismically active Southern California area. The structures should be designed in accordance with the American Society of Civil Engineers (ASCE) 113 Substation Structure Design Guide.
- There are no known active or potentially active faults crossing the site. Based on this information it is our opinion that the hazard with respect to fault rupture is low.
- Foundations supporting the proposed improvements should be constructed upon recompacted and engineered fill soils.
- The on-site soils are suitable for re-use as engineered fill, provided highly expansive soils are kept below 3 feet of finished grade elevation, are properly moisture conditioned, and oversize or deleterious material are removed.

The following opinions, conclusions, and recommendations are based on the properties of the materials encountered in the borings, the results of the laboratory-testing program, and our engineering analyses. If the design grades are substantially different than what was assumed in our analyses or the proposed improvements configuration changes, our recommendations will have to be modified accordingly. Final project drawings and specifications should be reviewed by Kleinfelder Inc. prior to the commencement of construction.

5.2 SITE AND SUBGRADE PREPARATION

5.2.1 General

Site preparation and earthwork operations should be performed in general accordance with applicable codes, including SDG&E Specifications for Site Development, County of San Diego Municipal Code, 2013 California Building Code (CBC) and Standard Specifications for Public Works Construction (Greenbook, latest edition). All reference in this report to maximum dry density is established in accordance with American Society for Testing and Materials (ASTM) ASTM D 1557.

5.2.2 Construction Observation

The recommendations presented in this report are based on our understanding of the proposed project and on our evaluation of the data collected. The interpolated subsurface conditions should be evaluated in the field during construction. A representative from our firm should be present during site preparation, fill placement, and foundation construction to evaluate the suitability of the various soils types exposed during excavation, and to evaluate the minimum recommended compaction of the fills is achieved.

5.2.3 Excavation Characteristics

The results of our field exploration program indicate the project site is underlain by fill and colluvium over formational soils at depth. Fill soils should excavate with typical heavy-duty earthwork equipment. Excavations are anticipated for installation of utility lines and the construction of new foundations for the proposed improvements. Most excavations will likely be in the existing and recommended engineered fill.

5.2.4 Site Preparation

Based on the results of our investigation and review of the referenced site improvement plan, foundation excavations for site improvements will be within existing fill soils and or newly placed fill material. Therefore, we recommend that existing fill beneath proposed new fill or improvements be excavated to a minimum depth of 2 feet and be replaced by engineered fill compacted to a minimum relative compaction of 90%. In addition, existing fill soils may require deeper removals where erosion and rutting is present within existing basins.

Proposed fill slopes should be properly keyed and benched into firm materials. Benches should be a minimum of 10 feet in width and spaced at no more than 4-foot vertical height intervals.

Excavations may also be extended deeper for removal and recompaction of existing wash ravines around the basin areas. Additional fill should be placed in order to extend fill depths horizontally, approximately 4 feet to 5 feet. After final grading is completed, the additional fill soils should be trimmed back to expose the newly compacted fill for the finish slope grade.

A representative from our firm should be present during construction to evaluate the suitability of the various soils types exposed during excavation at the site for use as engineered fill, and to evaluate the recommended depth of overexcavation and recompaction.

Prior to placing engineered fill, all surficial vegetation and deleterious material should be stripped and completely removed. The stripping work should include the removal of soil that is dry, compressible, collapsible, or contains significant voids in the judgment of Kleinfelder's geotechnical engineer or geologist.

Man-made structures, including buried pipes, utilities, etc., should be completely removed within the improvement areas. The excavations for removal of any man-made improvements should be backfilled with properly compacted engineered fill per Section 5.2.5. Abandoned utilities (if any) should be completely removed, and the loose backfill removed and replaced. Any trench created by relocating the existing utilities should be backfilled with properly compacted fill.

5.2.5 Engineered Fill

Fill soils within the upper 3 feet below structural foundations should consist of granular material. In general, the onsite fill soils can be reused as materials for placement as compacted fill, provided they have a very low to low expansion index (expansion index of 50 or less), are free of oversized rock, clay clods, organic materials, and deleterious debris.

Material greater than 3 inches in maximum dimension should not be placed within the upper 3 feet of the improvement areas. The onsite soil placed as engineered fill should be moisture conditioned between 0 and 3 percent above optimum moisture content, and compacted to a minimum of 90 percent relative compaction based on ASTM D 1557. The upper 12 inches of subgrade and overlying aggregate base course should be compacted to a minimum of 95 percent.

Although the optimum lift thickness for fill soils will be dependent on the size and type of compaction equipment utilized, fill should generally be placed in uniform lifts not exceeding approximately 8 inches in loose thickness. Oversized material, rocks, or hard clay lumps greater than 6 inches in dimension should not be used in compacted fills.

5.2.6 Import Materials

We recommend that import material consist of granular, very low to low expansive material (expansion index of 50 or less) as evaluated by ASTM D 4829, minimum R-value of 15, no greater than 30 percent of the particles passing the No. 200 sieve, no particles greater than 3 inches in dimension, and with low corrosivity characteristics. Low corrosivity material is defined as having a minimum resistivity of more than 2,000 ohm-cm when tested in accordance with California Test 643, unless defined otherwise by the corrosion consultant. Import material should be evaluated by the geotechnical consultant at the borrow site for its suitability as fill prior to importation to the project site.

5.3 UTILITY TRENCH EXCAVATIONS

5.3.1 Temporary Trench Excavations

We recommend that trenches and excavations be designed and constructed in accordance with Cal-OSHA regulations. These regulations provide trench sloping and shoring design parameters for trenches up to 20 feet deep based on a description of the soil types encountered. For planning purposes, we recommend the OSHA soil Type C be used for fill soils and OSHA Type B for the Santiago Formation.

Temporary excavations should be constructed in accordance with OSHA recommendations. Excavations deeper than 5 feet should be shored or laid back on a slope no steeper than 1.5H:1V (horizontal:vertical). In the case of trench excavations, OSHA requirements regarding personnel safety should be met using appropriate shoring (including trench boxes), or by laying back the slopes in accordance with OSHA requirements. Temporary excavations that encounter seepage should be evaluated in the field by our geologist or engineer to develop suitable recommendation alternatives. On-site safety of personnel is the responsibility of the contractor, and their designated “competent person” should perform regular inspections of all temporary excavations.

Heavy construction loads, such as those resulting from stockpiles and equipment, should be kept a sufficient distance away from the top of the excavation or shoring to prevent unanticipated surcharge loading. All surface water should be diverted away from excavations.

5.3.2 Pipe Bedding and Trench Backfill

Pipe bedding should consist of sand or similar granular material having a sand equivalent (SE) value of 30 or more. The sand should be placed in the pipe zone which extends a minimum of 6 inches below and 12 inches above the pipe for the full trench width. The bedding material should be compacted to a minimum of 90 percent of the maximum dry density. The sand should be brought up evenly on each side of the pipe to avoid unbalanced loads. Onsite silty and clayey sand materials will generally not meet bedding requirements. Compaction by jetting or flooding is not recommended. Trench backfill above pipe zone may consist of approved onsite or import soils placed in lifts no greater than 8 inches loose thickness and compacted to 90 percent of the maximum dry density.

Based on our experience with other substation projects, deep excavations greater than 5 feet may be required for electrical conduit. We understand that conduits may be encased in a cement slurry and that a firm bottom is not needed. However, aggregate base and/or a geotextile filter fabric may be beneficial to provide a firm bottom if soft or unstable soils are encountered to support other construction activity during installation of the conduits. As with many substation sites, a cement slurry is typically used as backfill above the pipe zone to within about 12- to 24-inches of the ground surface and is acceptable fill from a geotechnical perspective.

5.4 SHALLOW FOUNDATION AND SLAB RECOMMENDATIONS

5.4.1 General

The proposed equipment pads for the substation expansion may be supported on shallow spread, mat or continuous footings founded within either engineered fill or undisturbed formational soils. The soils below the improvements should be prepared in accordance with the recommendations in Section 5.2. We have also included parameters for structures to be supported by drilled piers in Section 5.8.

5.4.2 Shallow Foundations

Based on current grading plans, the majority of the proposed structures will be founded on engineered fill. However, any improvement with shallow foundations to be constructed along the most northwestern portion of the site in the area of test pits TP-4 and TP-5 may encounter dense formational material and should be evaluated during construction. We recommend footings founded entirely in compacted fill soils be designed for an allowable soil contact pressure of 3,000 pounds per square foot (psf). This allowable pressure is based on a Safety Factor of 3. The

recommended design bearing value may be increased by 1/3 for transient loading (due to seismic or wind loading). Shallow foundations should contain reinforcing steel as determined by the project structural engineer. Foundations should have a minimum width of 18 inches and a minimum depth of embedment of 12 inches below the lowest adjacent grade.

Resistance to horizontal loadings should be developed by passive earth pressure on the sides of footings and frictional resistance developed along the footing bottoms. Passive resistance to lateral earth pressures may be calculated using an equivalent fluid unit weight of 350 pcf. An allowable frictional coefficient of 0.30 may be used along the footing bottoms. Frictional and passive pressures may be combined without reduction.

Based on our understanding of the proposed improvements and the allowable soil bearing pressure recommendations discussed above, total settlements are expected to be 1/2 inch or less, while differential settlements over a 40-foot span are not expected to exceed 75 percent of the total settlement. Footings may experience a reduction in bearing capacity or an increased potential to settle when located in close proximity to existing or future utility trenches. Furthermore, stresses imposed by the footings on the utility lines may cause cracking, collapse, and/or loss of serviceability of the utility. To reduce this risk, utility excavations should not extend below a 2H:1V plane projected downward from 9 inches above the bottom of the outside edge of the footing. Also, no parallel utility excavations should be made within a lateral distance of 18 inches outside the footing.

Footing excavations should be cleaned of all debris, loose or soft soil, and/or water prior to placing reinforcing steel or concrete. All footing excavations should be observed by a representative of the project geotechnical engineer immediately prior to placement of reinforcing steel and concrete to evaluate the soil bearing conditions and verify that the recommendations contained in this report are implemented during construction.

5.4.3 Exterior Concrete Slabs-On-Grade

Concrete slabs-on-grade can be used for housekeeping pads adjacent to equipment pads or for light equipment pads to support structure improvements. These pads should be supported by a minimum of 18-inches of approved engineered fill. The engineered fill material should be compacted to at least 90 percent of ASTM D 1557. SDG&E housekeeping pads typically omit reinforcing with steel rebar and only utilized fiber within the concrete. Additional reinforcement should be placed as required by the structural engineer.

5.5 INTERIOR CONCRETE SLABS-ON-GRADE

Subgrade soil supporting concrete slabs should be prepared in accordance with the recommendations of Section 5.2 of this report. A subgrade modulus, k, of 150 pounds per cubic inch (pci) may be used for engineered fill soils supporting the slabs. Floor slabs should be designed by the project structural engineer. However, we recommend a minimum thickness of 5 inches and a minimum reinforcement of No. 3 bars at 18-inch spacing in both directions. The reinforcement should be placed near the center of the concrete slab. We strongly recommend that concrete used in slabs-on-grade have a maximum water cement ratio of 0.45. To reduce the effects of cracking, we recommend that expansion relief joints be spaced no greater than 15 feet in both directions. We recommend that all concrete placement, joint spacing, and curing operations be performed in accordance with the recommended guidelines of the American Concrete Institute (ACI).

In cases where the floor may have a vapor/moisture sensitive coverings, may be in a humidity controlled environment, or may likely have one or both of these conditions in the future, we recommend a polyolefin vapor barrier membrane be utilized between the prepared subgrade and the bottom of the floor slab. Based on our experience with other substation structures, proposed switch houses for the substations will not have any floor covering. Thus, a vapor barrier will not be required to reduce moisture vapor transmission through the slab. If moisture protection is desired in selected floor slab areas, an impermeable membrane (minimum 10 mil polyethylene sheeting) should be placed over the compacted subgrade. Care should be taken to properly lap and seal the membrane, particularly around utilities, to provide a uniform barrier.

To promote more uniform curing of the slab and provide protection of the membrane during construction, fine-to-medium-grained clean sand (SP or SW), 2- to 4-inches thick, should be placed on top of the membrane prior to placing slab concrete. This sand should be moistened immediately prior to concrete placement.

5.6 RECOMMENDATIONS FOR RETAINING WALLS

Masonry block barrier/retaining walls may be supported on shallow continuous footings per the foundation recommendations in Section 5.4. Lateral pressures acting against masonry and poured-in-place concrete retaining walls can be calculated using soil equivalent fluid weight (efw). The efw value used for design depends on allowable wall movement. Walls that are free to rotate at least 0.5 percent of the wall height can be designed for the active efw. Retaining walls that are

restrained at the top (such as basement walls), or are sensitive to movement and tilting should be designed for the at-rest efw.

Values given in Table 2 below are in terms of equivalent fluid weight and assume a triangular distribution for fill soils. These values assume that imported, sandy soils (SP, SM, SC) will be used as backfill, and the backfill is well drained. If walls with undrained backfill are to be used, Kleinfelder should be consulted for additional evaluation and recommendations.

Table 2
Equivalent Fluid Weights (efw)
For Calculating Lateral Earth Pressures

CONDITIONS	LEVEL BACKFILL	2:1 SLOPING BACKFILL
At-Rest	55 pcf	80 pcf
Active	30 pcf	55 pcf

Fifty and thirty percent of any uniform areal surcharge placed at the top of the wall may be assumed to act as a uniform horizontal pressure. for the at-rest and active cases, respectively. As a minimum, a traffic surcharge equivalent to 120 psf may be assumed to act as a uniform horizontal pressure over the retained height of the wall, H. We should be contacted where point or line loads are expected so we can provide recommendations for additional wall stresses.

Retaining walls should be designed to resist earthquake loading with the following recommendations. An estimate of lateral pressures due to seismic loading was evaluated using the Mononobe-Okabe method and one-half of the estimated peak ground acceleration. Based on the design peak horizontal ground acceleration of 0.4g discussed in Section 4.2, the resultant seismic force (in pounds) for each linear foot of wall can be estimated as 9*H2 within fill soils with a level backfill, where H is the height of the wall (in feet) above its base. The resultant seismic force acts at H/3 above the wall base.

Allowable bearing pressure values described in previous sections of this report can be increased by one-third when calculating resistance caused by loads of short duration, such as earthquake loads. Restraining passive pressure and friction values should not be increased by this amount, but a lower factor of safety than is normally applied to static loads could be used. The factor of safety for dynamic load conditions should not be less than 1.2.

5.7 WALL DRAINAGE

Drainage should be provided for walls which retain soil to prevent the development of hydrostatic forces behind the wall. Either a geosynthetic composite drainage mat or crushed stone wrapped in filter fabric can be used for drainage. If a geosynthetic composite drainage mat is used, the PVC pipe or composite drainage should be routed to discharge at a suitable location that is protected from erosion. If crushed stone drainage if used, it should consist of a zone of crushed, open-graded, ¾-inch gravel at least 12 inches wide from the base of the wall to within 2 feet of the ground surface. The gravel should be separated from all soil with Mirafi 140N geosynthetic fabric or an approved equivalent. A 4-inch diameter Schedule 40 PVC pipe should be placed at the bottom of the gravel zone and sloped to drain at 1 percent. The pipe should have two rows of 3/8-inch diameter holes spaced at about 6 inches and on an arc of 120 degrees, facing downward. Kleinfelder should be notified to observe the final tie-in of the outlet pipe to its discharge point.

The wall designer should determine the damp proofing requirements.

5.8 DRILLED PIER FOUNDATIONS

Drilled pier lengths should be designed based on downward, uplift and lateral loading. We understand that proposed pier lengths are typically governed by lateral loading and that SDG&E will utilize computer program Moment Foundation Analysis Design (MFAD) for design. The recommended soil values below are based on average soil conditions in the generalized layer and the best fit line in Figures 5-8 and 5-14 of the EPRI Manual on Estimating Soil Parameters for Foundation Design (1990). Due to the wide scatter in correlations of pressuremeter modulus data to SPT blow counts and the limited data collected in our study, designers may consider use of more conservative modulus values than the best fit line. These values are intended for use in computer program MFAD only and should be applicable for all versions of the program.. Design values for other methods of analyses can be provided upon request.

The locations for transmission poles were not specified at the time of this report and the substation limits cover a large area. Due to the variable depth of compacted fill over Santiago Formation, the estimated depth of fill at a specific pole location can be provided by Kleinfelder in and addendum when the location is specified. However, we are providing a range of values for the large substation area based on the conditions depicted on the geologic cross-sections between borings. As shown on Figures 5 and 6 respectively, depths of the fill material within the proposed substation varies between 74 and 83 feet (B5, B5 and B6) along cross-section line A-A’ in a

northwest direction through the substation limits and are between 37 and 80 feet (B2, B3 and B5) along cross-section line B-B' from west to east. The depth of fill likely exceeds the depth of most if not all foundations. We are providing design parameters for both anticipated geologic units.

Table 3

Recommended Soil Parameters for MFAD Analysis

SOIL TYPE	UNIT COHESION (PSF)	FRICTION ANGLE (DEGREES)	UNIT WEIGHT (PCF)	DEFORMATION MODULUS E_{PMT} (KSI)	STRENGTH REDUCTION FACTOR
Fill	0	32	125	1.0	1.0
Santiago Formation	0	38	130	4.0	1.0

Notes: Surficial discount of 2 feet is recommended.

Figures 7 and 8 provide allowable capacity curves for both compression and uplift, respectively. End bearing is included in the provided curves but should be neglected if design lengths encounter groundwater. The potential presence of groundwater may be further addressed in project planning and construction but was not observed during either field investigation for the proposed substation. It should be noted that our borings were completed following several years of drought conditions and could fluctuate if piers are constructed following seasonal precipitation.

5.9 CORROSION POTENTIAL

The subsurface soils that may be in contact with foundations and buried utilities are anticipated to be locally derived fill, however, the majority of the site will receive imported fill to attain proposed finish grade elevations. Laboratory testing was performed to evaluate soluble chloride, soluble sulfate content and pH of soil. Corrosion test results are summarized in Table 4.

Table 4

Soil Corrosion Test Results

BORING / SAMPLE NO.	DEPTH (FEET)	MINIMUM RESISTIVITY (OHM-CM)	PH	SULFATE CONTENT (PPM)	CHLORIDE CONTENT (PPM)
B-3 / 1	0.5 to 5	480	8.7	210	160
B-4 / 1	0.5 to 5	870	8.9	50	50
B-5 / 1	0.5 to 5	550	8.3	70	160

For reference, Caltrans considers a site to be aggressive if one or more of the following conditions exist for the representative soil samples taken at the site: chloride concentration is 500 parts per million (ppm) or greater, sulfate concentration is 2,000 ppm or greater, or the pH is 5.5 or less.

The Portland Cement Association correlates sulfate content to potential sulfate attack as presented on below:

Sulfate Content, ppm	Sulfate Attack Potential
0 to 1,000	Negligible
1,000 to 2,000	Moderate
2,000 to 20,000	Severe
Over 20,000	Very Severe

A commonly accepted correlation between soil resistivity and corrosivity towards unprotected ferrous metals (National Association of Corrosion Engineers (NACE), 1984) is provided below:

Minimum Resistivity, ohm-cm	Corrosion Potential
0 to 1,000	Severely Corrosive
1,000 to 2,000	Corrosive
2,000 to 10,000	Moderately Corrosive
Over 10,000	Mildly Corrosive

Based on the measured minimum resistivities between 480 and 550 ohm-cm, the soils tested at boring locations B-3, B-4 and B-5 are considered severely corrosive to ferrous metals by the

NACE criteria. The soluble sulfate and pH test results did not indicate adverse soil conditions per Caltrans and the Portland Cement Association (PCA) criteria. Based on the laboratory test results, we recommend that Type II or V cement with a maximum water cement ratio of 0.45 should be used for structural concrete structures in contact with soil.

We have performed preliminary laboratory corrosion screening as an initial indicator of soil corrosivity at the site. Performing corrosion engineering is excluded from Kleinfelder's scope. Based on the test results, we recommend that a corrosion engineer be retained to evaluate corrosivity at the site and to provide corrosion resistant design recommendations.

5.10 ASPHALT CONCRETE PAVEMENT

The required asphalt concrete (AC) pavement structural sections will depend on the expected wheel loads, volume of traffic, and subgrade soils. Site specific traffic indices (TI) for the site were not provided, however, we have assumed a TI of 4.5 for interior access roads within the substation and 6.0 for entrance driveways and other heavy traffic areas.

We performed resistance R-value tests on bulk soil samples of the near-surface soils from two boring locations to evaluate pavement support characteristics of the onsite soils. The R value tests were performed in general accordance with ASTM D 2844. The test results for samples collected at Borings B-7 and B-10 were 11 and 9, respectively. Due to the unknown distribution of each material, we recommend that the pavement be designed for and R-value of 9.The pavement thickness may be adjusted during design if the higher values are prevalent and the area can be delineated. Table 5 presents recommended pavement sections based on the described design criteria.

Table 5

Recommended Asphalt Concrete Pavement Sections

TRAFFIC USE	TRAFFIC INDEX, TI	ASPHALT CONCRETE (INCHES*)	AGGREGATE BASE (INCHES*)
Interior Substation	4.5	3.0	8.0
Driveway and Heavy Traffic Areas	6.0	4.0	11.0
		Or 5.0	9.0

* Table values were rounded up to the nearest 1/2 inch.

Flexible pavement sections have been evaluated in general accordance with the Caltrans method for flexible pavement design criteria, design R-value of 9 based on the R-value testing, the calculated Traffic Indices, and a theoretical design life of 20 years. The pavement sections provided above are contingent on the following recommendations being implemented during construction:

- The pavement subgrade should be prepared as recommended in earthwork section of this report.
- Aggregate base materials should be compacted to at least 95 percent relative compaction per ASTM D 1557 (Modified Proctor).
- Adequate drainage (both surface and subsurface) should be provided such that the subgrade soils and aggregate base materials are not allowed to become saturated. This includes sloping pavement surfaces to promote drainage.
- Aggregate base materials should meet current Caltrans specifications for Class 2 aggregate base. Alternatively, the aggregate base course could meet the specifications for untreated base materials (crushed aggregate base or crushed miscellaneous base) as defined in Section 200-2 of the current edition of the Standard Specifications for Public Works Construction (Greenbook).
- Asphalt paving materials and placement methods meet current Caltrans specifications for asphalt concrete or Section 400 of the current edition of the Standard Specifications for Public Works Construction (Greenbook).

Pavement sections provided above are based on the soil conditions encountered during our field investigation, our assumptions regarding final site grades, and limited laboratory testing. A representative of Kleinfelder should be on-site during paving operations to observe and test the subgrade preparation, compaction of the aggregate base, and testing of the asphalt concrete materials.

5.11 WATER INFILTRATION AND PERCOLATION

Per the scope of services for the project, no infiltration testing was performed as part of the field study. Due to the extensive depth of existing fill soils at the site (approximately 80 feet) and potential for inducing hydraulic settlement by water from the site, impermeable liners are recommended for all attenuation/bioretention basin areas.

5.12 SURFACE DRAINAGE

Foundation performance is a function of how well the runoff waters drain from the site. Drainage should be maintained both during construction and over the entire life of the project. Final elevations at the site should be planned so that positive drainage is established around the control house and other future proposed structures. Positive drainage is defined as a slope of 2 percent or more for a distance of 5 feet or more away from structure foundations.

6 LIMITATIONS

This work was performed in a manner consistent with that level of care and skill ordinarily exercised by other members of Kleinfelder's profession practicing in the same locality, under similar conditions and at the date the services are provided. Our conclusions, opinions and recommendations are based on a limited number of observations and data. It is possible that conditions could vary between or beyond the data evaluated. Kleinfelder makes no representation, guarantee or warranty, express or implied, regarding the services, communication (oral or written), report, opinion, or instrument of service provided.

This report may be used only by the Client and the registered design professional in responsible charge and only for the purposes stated for this specific engagement within a reasonable time from its issuance, but in no event later than two (2) years from the date of the report.

The work performed was based on project information provided by Client. If Client does not retain Kleinfelder to review any plans and specifications, including any revisions or modifications to the plans and specifications, Kleinfelder assumes no responsibility for the suitability of our recommendations. In addition, if there are any changes in the field to the plans and specifications, Client must obtain written approval from Kleinfelder's engineer that such changes do not affect our recommendations.

The scope of services was limited to the evaluation of the proposed improvements at the site. It should be recognized that definition and evaluation of subsurface conditions are difficult. Judgments leading to conclusions and recommendations are generally made with incomplete knowledge of the subsurface conditions present due to the limitations of data from field studies. The conclusions of this assessment are based on our subsurface exploration including borings drilled to a maximum depth of 91½ feet, laboratory testing, and engineering analyses.

Kleinfelder offers various levels of investigative and engineering services to suit the varying needs of different clients. Although risk can never be eliminated, more detailed and extensive studies yield more information, which may help understand and manage the level of risk. Since detailed study and analysis involves greater expense, our clients participate in determining levels of service, which provide information for their purposes at acceptable levels of risk. The client and key members of the design team should discuss the issues covered in this report with Kleinfelder, so that the issues are understood and applied in a manner consistent with the owner's budget, tolerance of risk and expectations for future performance and maintenance.

Recommendations contained in this report are based on our field observations and subsurface explorations, laboratory tests, and our present knowledge of the proposed construction. It is possible that soil, rock or groundwater conditions could vary between or beyond the points explored. If soil, rock or groundwater conditions are encountered during construction that differ from those described herein, the client is responsible for ensuring that Kleinfelder is notified immediately so that we may reevaluate the recommendations of this report. If the scope of the proposed construction, including the estimated loads, and the design depths or locations of the foundations, changes from that described in this report, the conclusions and recommendations contained in this report are not considered valid unless the changes are reviewed, and the conclusions of this report are modified or approved in writing, by Kleinfelder. Kleinfelder cannot be responsible for interpretation by others of this report or the conditions encountered in the field.

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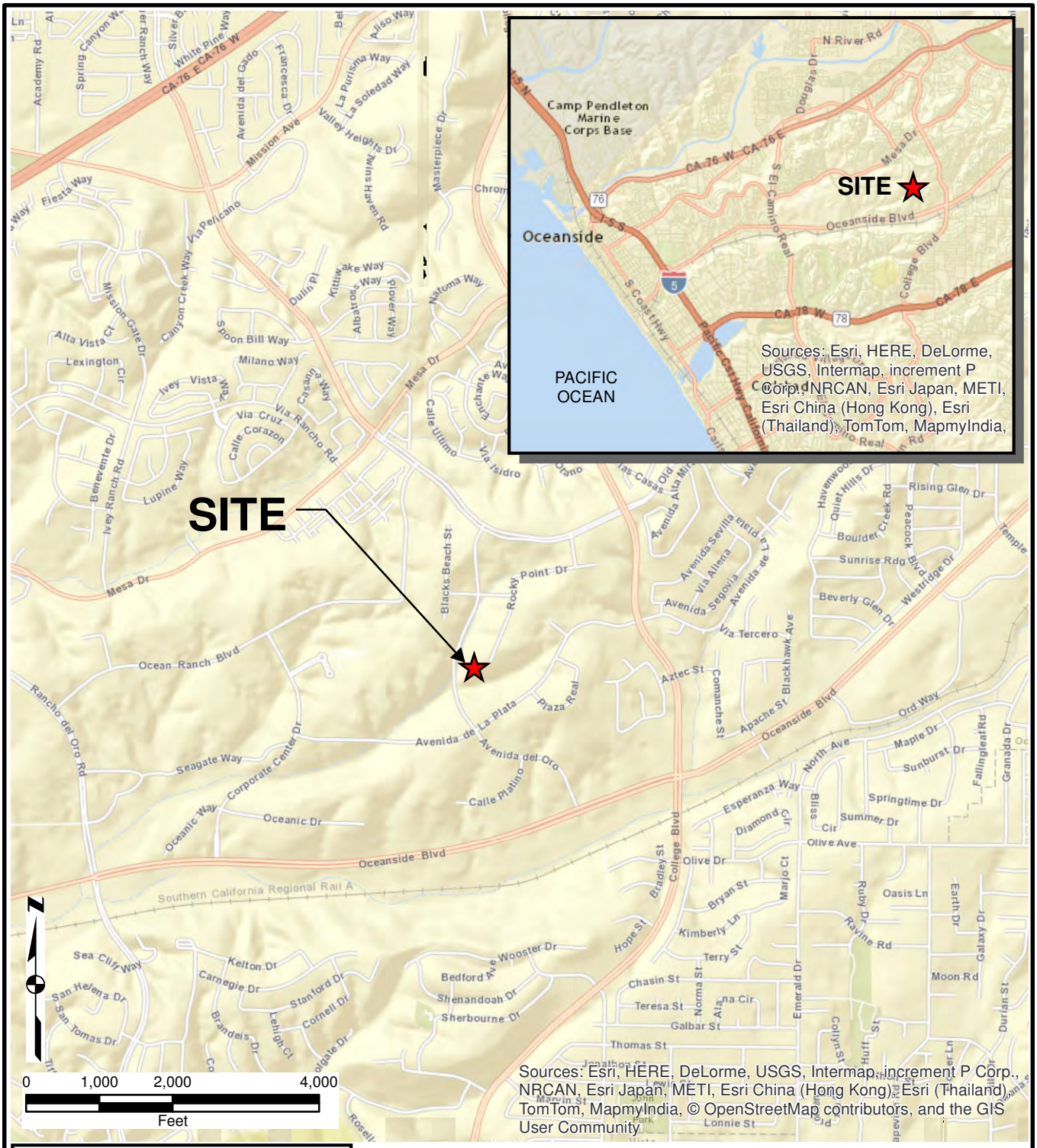
FIGURES



SOURCE:
ESRI ArcGIS Online Map Service, Streets

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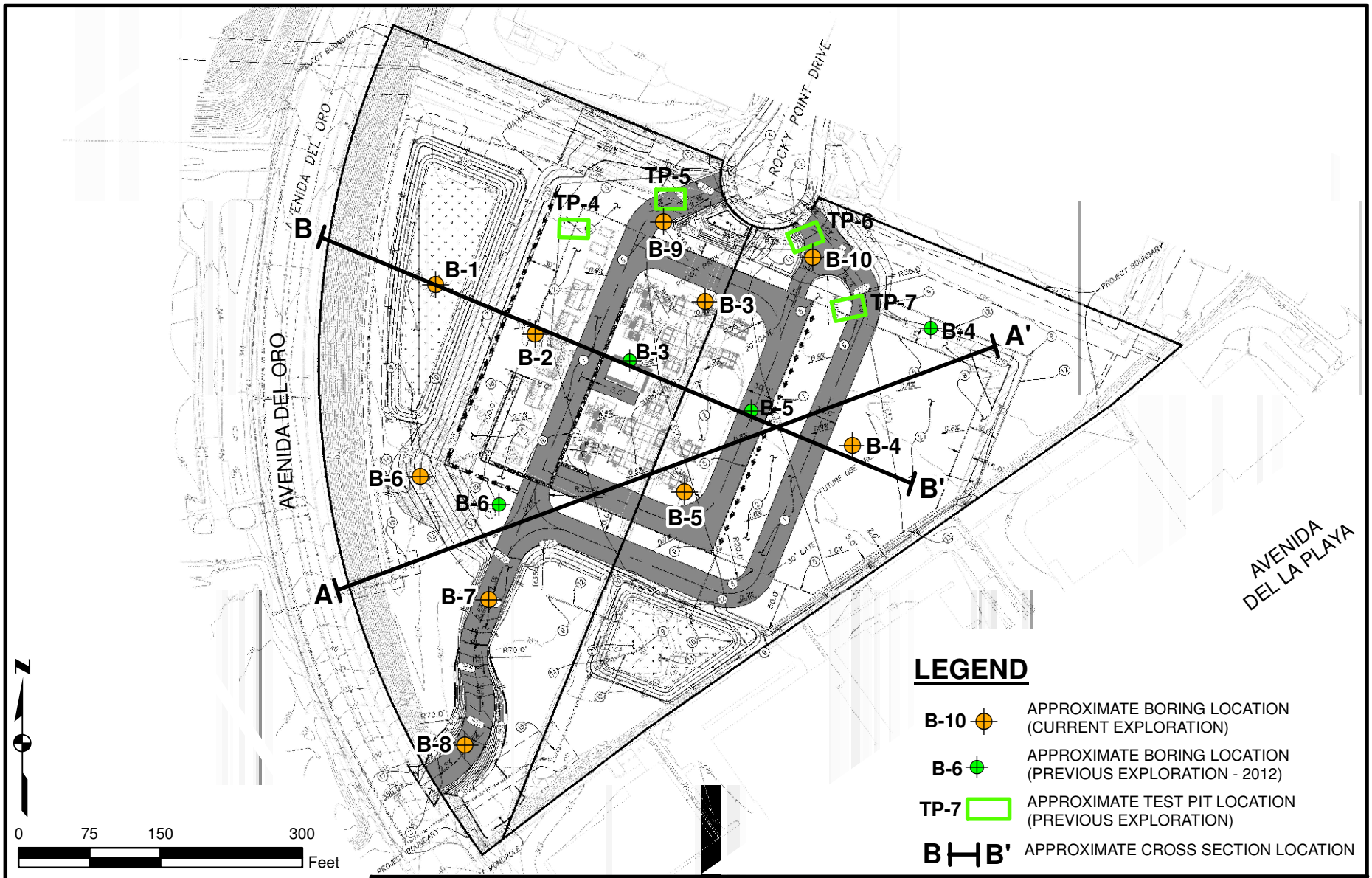
SITE VICINITY MAP

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

FIGURE
1

Date: 6/9/2015 User: jpatay Name: 20154777_oRanchVic Path: J:_clients\SanDiegoGasAndElectric\20154777\20154777_oRanchVic.mxd

J:_clients\SanDiegoGasAndElectric\20154777\20154777_oRanchBor.mxd 6/12/2015



LEGEND

- B-10 — APPROXIMATE BORING LOCATION (CURRENT EXPLORATION)
- B-6 — APPROXIMATE BORING LOCATION (PREVIOUS EXPLORATION - 2012)
- TP-7 — APPROXIMATE TEST PIT LOCATION (PREVIOUS EXPLORATION)
- B B' — APPROXIMATE CROSS SECTION LOCATION

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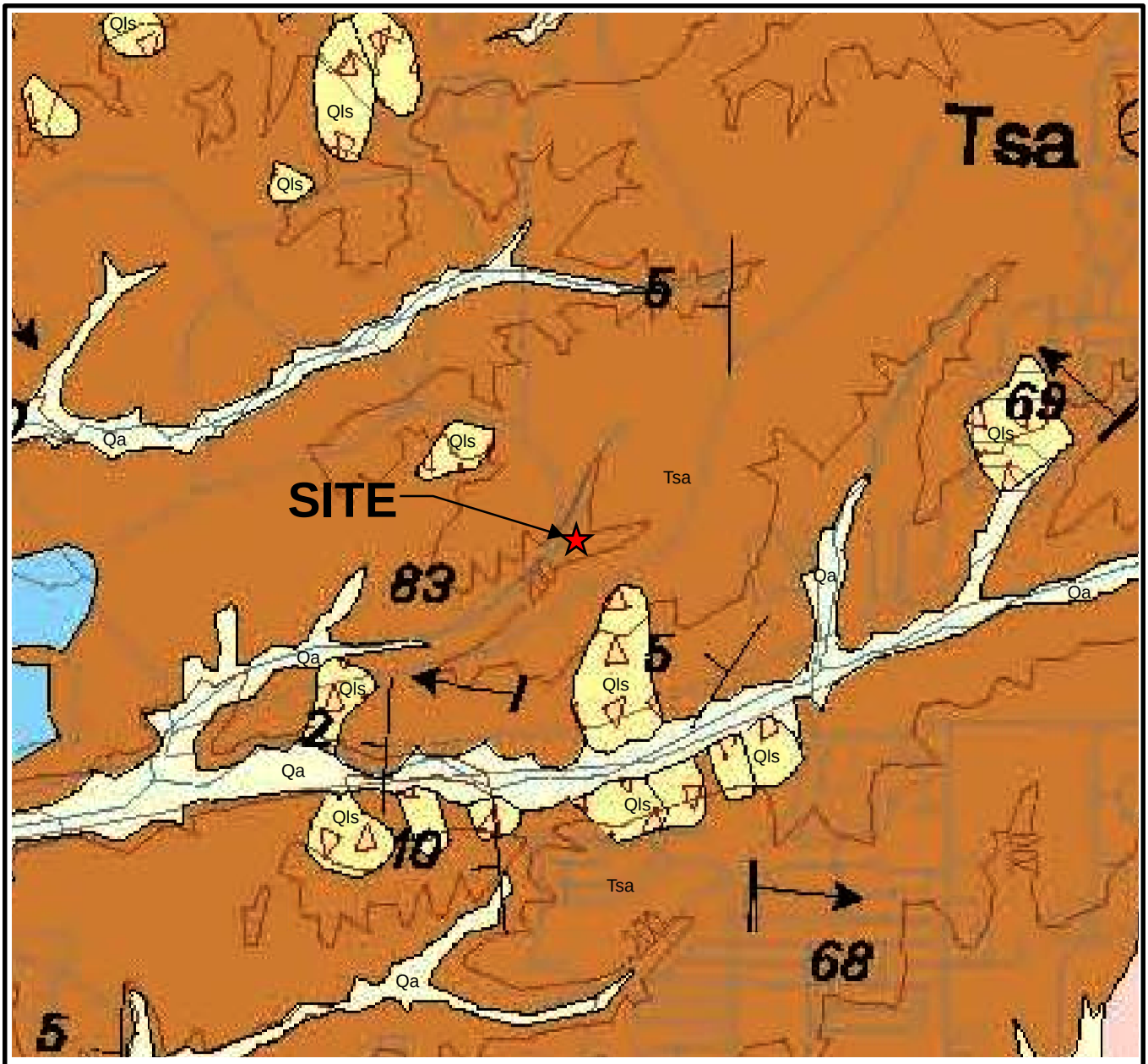
BORING LOCATION MAP

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

FIGURE
2



SOURCE:
GEOLOGY OF THE OCEANSIDE 30' X 60'
QUADRANGLE, CALIFORNIA BY
M. P. KENNEDY AND S. S. TAN, 2005

0 1,000 2,000 4,000
Feet

N

LEGEND

Qa	ALLUVIAL FLOOD PLAIN DEPOSITS
Qls	LANDSLIDE DEPOSITS UNDIVIDED
Tsa	SANTIAGO FORMATION

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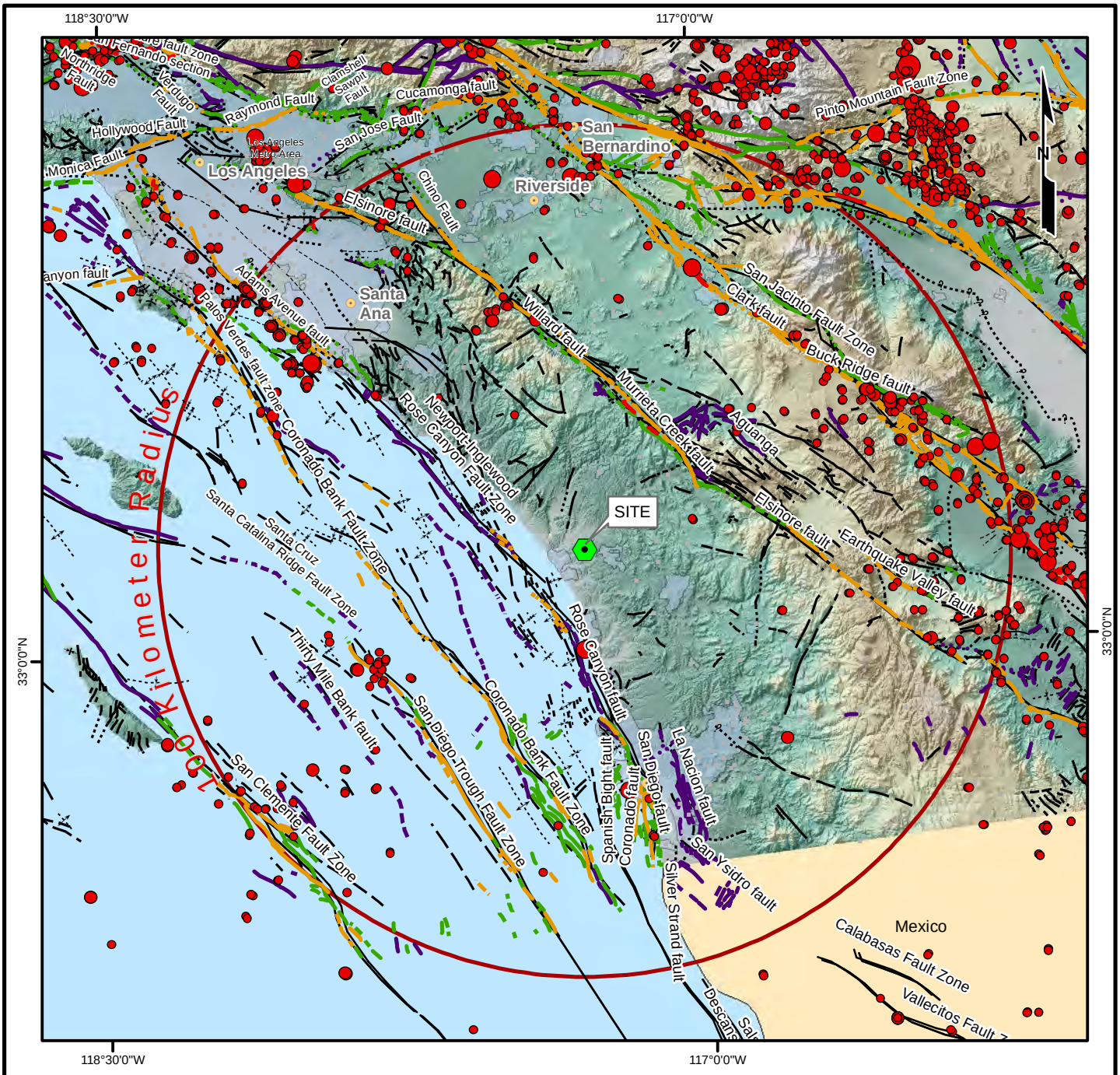
REGIONAL GEOLOGIC MAP

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

FIGURE
3



Faulting Legend

Quaternary Faults (Bryant, 2005; USGS, 2009)

Historic displacement (< 200 years)
- Mapped Fault Location
- Dashed were Approximated
- Concealed

Late Quaternary displacement (< 750,000 years)
- Mapped Fault Location
- Dashed were Approximated
- Concealed

Holocene displacement (< 11,000 years)
- Mapped Fault Location
- Dashed were Approximated
- Concealed

Quaternary displacement (< 1,600,000 years)
- Mapped Fault Location
- Dashed were Approximated
- Concealed

Pre-Quaternary Geologic Structures (CGS, 2000)
- fault, approx. located
- fault, approx. located, queried
- fault, certain
- fault, concealed
- fault, concealed, queried
- fault, inferred, queried

ANSS Earthquakes

Magnitude
- 4.0 - 4.9
- 5.0 - 5.9
- 6.0 - 6.9
- 7.0 - 7.9
- 8.0 - 8.9

35 17.5 0 35 Kilometers

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REGIONAL FAULT MAP AND EARTHQUAKE EPICENTERS (1800 - MAY 2015)

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

FIGURE
4

A

A'

N70°E

AVENIDA DEL ORO

EXISTING GROUND SURFACE

APPROXIMATE 2006 PREGRADING SURFACE

B-6 (2012)
(PROJECTED 25' SOUTH)

B-5
(PROJECTED 31' NORTH)

B-5 (2012)
(PROJECTED 26' SOUTH)

B-4
(PROJECTED 48' NORTH)

B-4 (2012)
(PROJECTED 41' SOUTH)

af
(FILL PLACED PRIOR TO 2006)

af
(2006 OVEREXCAVATION AREA)

Qyc

Tsa

TD = 81'

TD = 91.5'

TD = 71'

TD = 81'

TD = 81'

ELEVATION (IN FEET, MSL)

375
350
325
300
275
250

0 50 100 150 200 250 300 350 400 450 500 550 600 650 700

DISTANCE ALONG SECTION, IN FEET

LEGEND

af	ARTIFICIAL FILL
Qyc	YOUNG COLLUVIAL DEPOSITS
Tsa	SANTIAGO FORMATION

APPROXIMATE 2006 PREGRADING SURFACE

APPROXIMATE LOCATION OF GEOLOGIC CONTACT, QUERIED WHERE UNCERTAIN

B-5
(PROJECTED 31' NORTH)
TD = 91.5'

APPROXIMATE LOCATION OF BORING SHOWING, PROJECTION AND TOTAL BORING DEPTH

25 0 25
APPROXIMATE VERTICAL SCALE (feet)

50 25 0 50
APPROXIMATE HORIZONTAL SCALE (feet)

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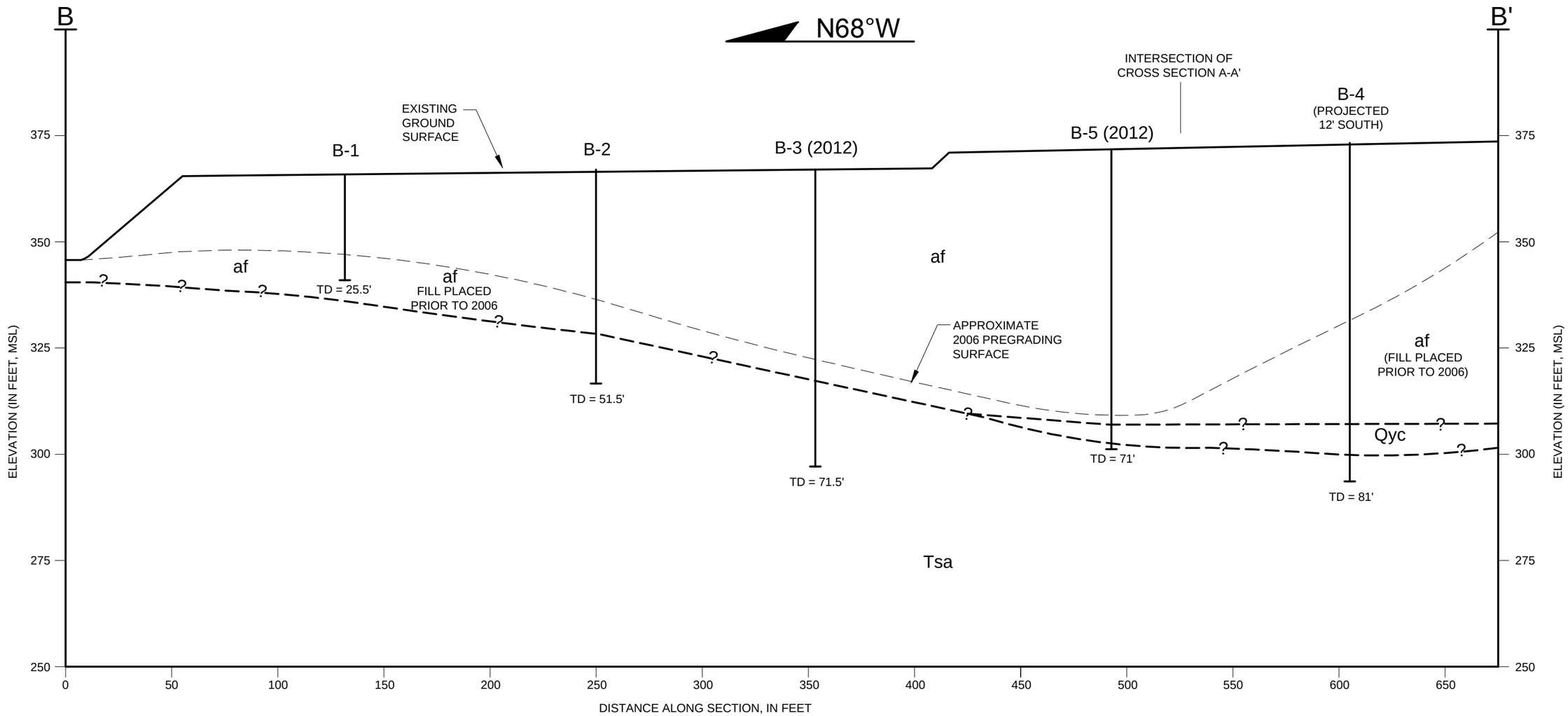
GEOLOGIC CROSS SECTION A-A'

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

FIGURE
5

ATTACHED IMAGES:
ATTACHED XREFS:



LEGEND

af	ARTIFICIAL FILL
Qyc	YOUNG COLLUVIAL DEPOSITS
Tsa	SANTIAGO FORMATION

APPROXIMATE 2006 PREGRADING SURFACE

APPROXIMATE LOCATION OF GEOLOGIC CONTACT, QUERIED WHERE UNCERTAIN

B-4
(PROJECTED
12' SOUTH)
TD = 81'

APPROXIMATE LOCATION OF BORING SHOWING, PROJECTION AND TOTAL BORING DEPTH

25 0 25
APPROXIMATE VERTICAL SCALE (feet)

50 25 0 50
APPROXIMATE HORIZONTAL SCALE (feet)

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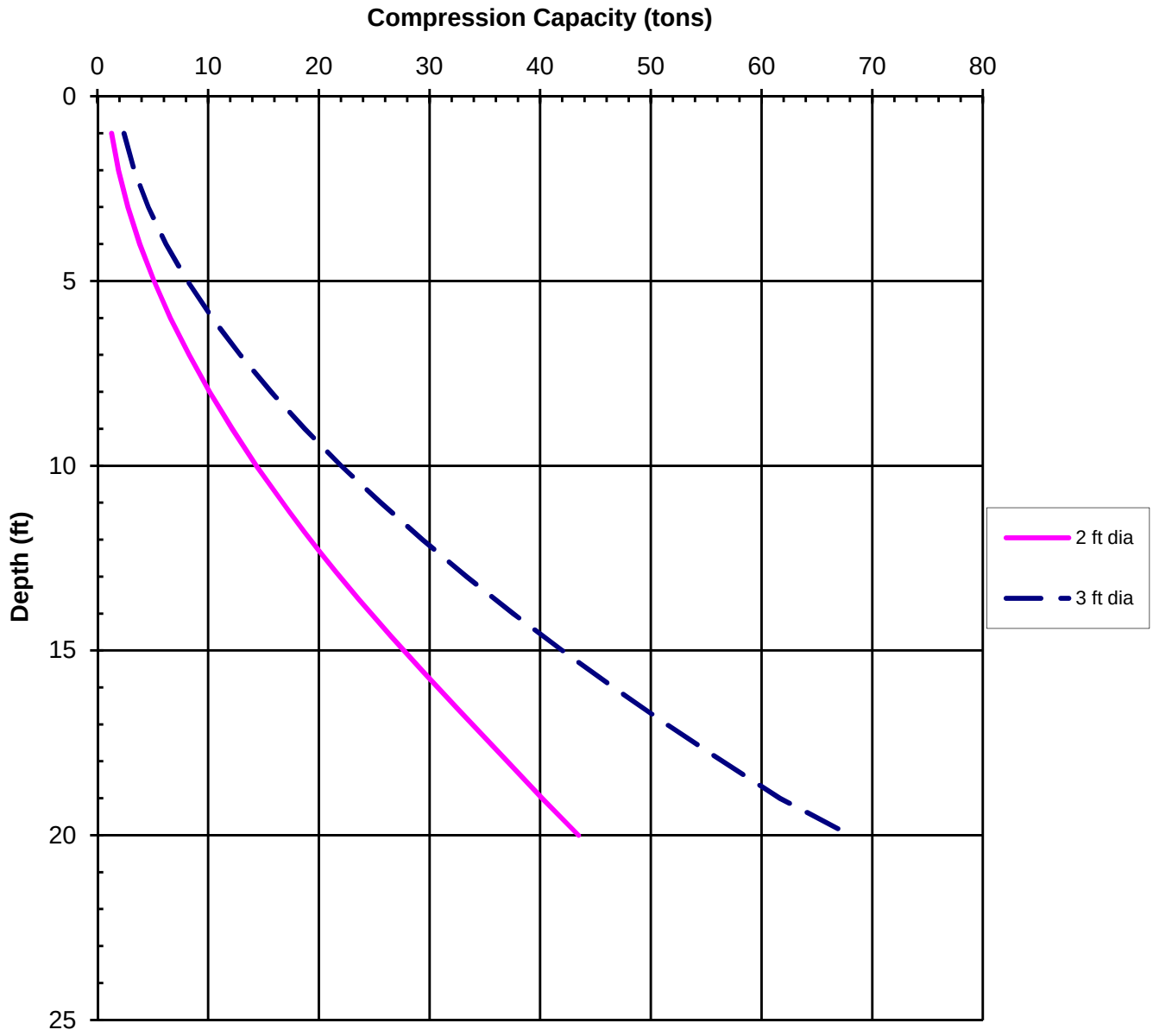
GEOLOGIC CROSS SECTION B-B'

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

FIGURE
6

CAD FILE: J:_clients\SanDiegoGasAndElectric\20154777\
PLOTTED: 12 Jun 2015, 3:51pm, jpatay
LAYOUT: Layout2
ATTACHED IMAGES:
ATTACHED XREFS:

Allowable Axial Capacity Curves For Drilled Piers
Southern Area of Site

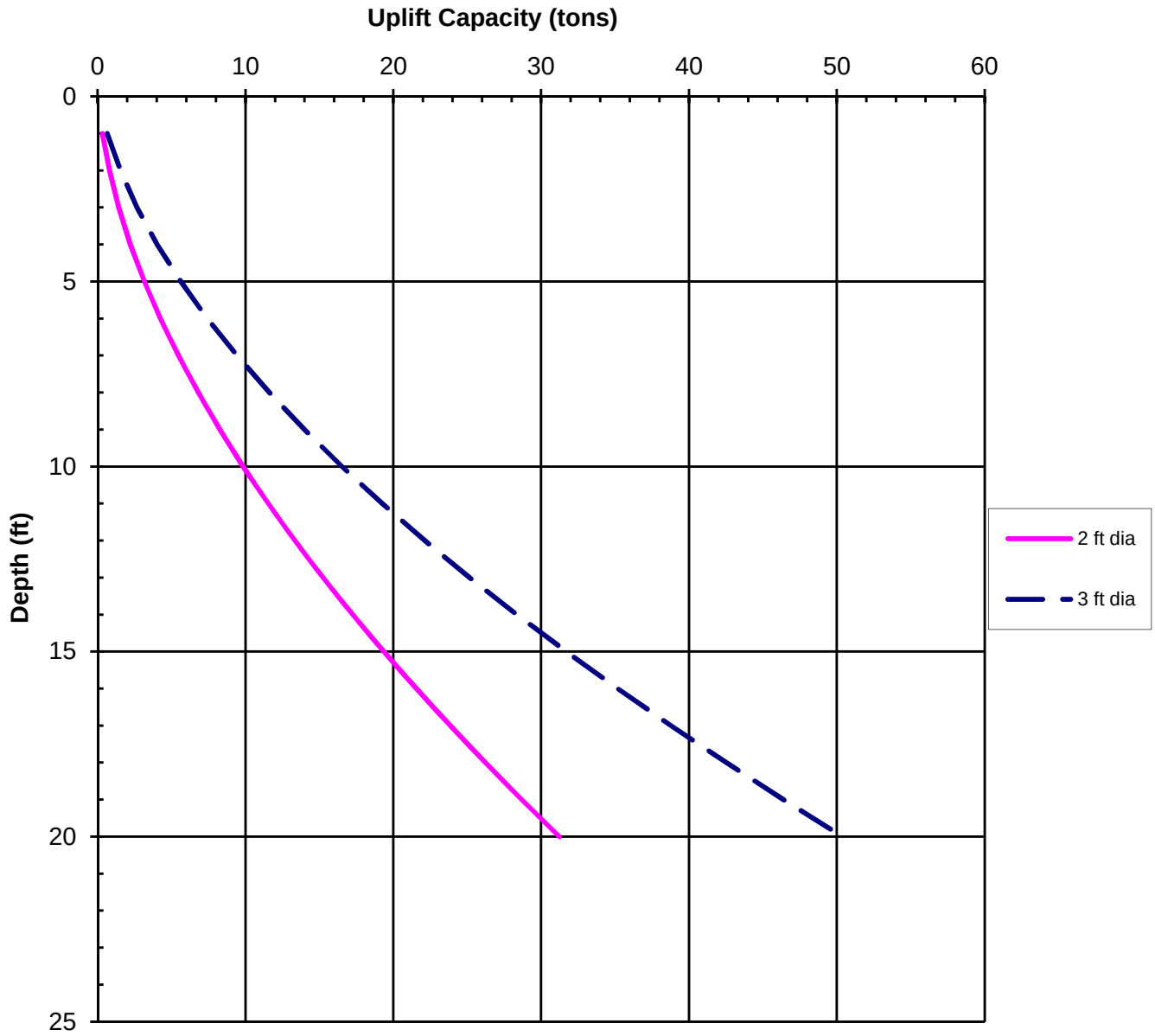


These results are based on the following assumptions and conditions. Piles with conditions different from those assumed should be re-evaluated by Kleinfelder.

- Soil profile is coarse grain fill from the ground surface to 25 feet, and then underalin by fine grained fill.
- Pile modulus of elasticity, E = 0.410E+07 lb/sq. in
- End bearing was utilized
- Ground water was not encountered

KLEINFELDER Bright People. Right Solutions.		**DOWNWARD AXIAL CAPACITY CURVES**	FIGURE
Checked by: KC	By: JC	SDG&E OCEAN RANCH SUBSTATION PACIFIC COAST BUSINESS PARK OCEANSIDE, CALIFORNIA	**7**
Project No. { 20154777	Date: 05/22/2015		

Allowable Axial Capacity Curves For Drilled Piers
Southern Area of Site



These results are based on the following assumptions and conditions. Piles with conditions different from those assumed should be re-evaluated by Kleinfelder.

- Soil profile is coarse grain fill from the ground surface to 25 feet, and then underalin by fine grained fill.
- Pile modulus of elasticity, E = 0.410E+07 lb/sq. in
- End bearing was utilized
- Ground water was not encountered

KLEINFELDER Bright People. Right Solutions.		**UPLIFT CAPACITY CURVES**	FIGURE
Checked by: KC	By: JC	SDG&E OCEAN RANCH SUBSTATION PACIFIC COAST BUSINESS PARK OCEANSIDE, CALIFORNIA	**8**
Project No. 20154777	Date: 05/22/2015		

APPENDIX A

FIELD INVESTIGATION AND BORING LOGS

APPENDIX A
FIELD INVESTIGATION AND BORING LOGS

GENERAL

Our field exploration program consisted of a site reconnaissance, review of previous geotechnical borings and test pits in 2012, and drilling ten geotechnical borings between April 15, 2015 and April 17, 2015. Prior to commencement of the fieldwork, geophysical techniques were used at the boring location in order to identify potential conflicts with subsurface structures. The boring locations were also cleared for buried utilities through Underground Service Alert (USA) of Southern California. In addition, Kleinfelder subcontracted a private utility locating company to sweep the proposed boring locations for underground utilities at the site.

Borings were placed within a structure, pavement or other improvement area. The borings were drilled to depths of approximately 6½ to 91½ feet below the existing ground surface (bgs) using a truck-mounted drill rig equipped with 6-inch-diameter hollow-stem augers (HSA). In addition to our current field exploration program, four borings were drilled within the project area to depths ranging between approximately 20 to 34 feet bgs and four test pits to depths ranging approximately 5 to 10 feet by Kleinfelder, Inc. in 2012 as part of our geotechnical site study for the substation. These borings are presented in Appendix A.1.

The boring logs of our current study are presented as Figures A-3 through A-19. An explanation to the boring logs are presented as Figures A-1 and A-2. The boring logs describe the earth materials encountered, samples obtained and show field and laboratory tests performed. The logs also show the location, boring number, drilling date and the name of the drilling subcontractor. The borings were logged by a Kleinfelder engineer using the Unified Soil Classification System. The boundaries between soil types shown on the log are approximate because the transition between different soil layers may be gradual. Bulk and drive samples of selected earth materials were obtained from the borings.

A California type sampler was used to obtain drive samples of the soil encountered. This sampler consists of a 3-inch O.D., 2.4-inch I.D. split barrel shaft that is pushed or driven a total of 18 inches into the soil at the bottom of the boring. The soil was retained in 6-inch brass sleeves for laboratory testing. An additional 2 inches of soil from each drive remained in the cutting shoe and was usually discarded after visually classifying the soil. The sampler was driven using a 140-pound hammer falling 30 inches. The total number of blows required to drive the sampler the final 12 inches is termed blow count and is recorded on the Log of Boring.

Samples were also obtained using a Standard Penetration Sampler (SPT). This sampler consists of a 2-inch O.D., 1⅜-inch I.D. split barrel shaft that is advanced into the soils at the bottom of the drill hole a total of 18 inches. The sampler was driven using a 140-pound hammer falling 30 inches. The total number of hammer blows required to drive the sampler the final 12 inches is termed the blow count (N), however all blow counts for each 6-inches is recorded on the boring log. The procedures we employed in the field are generally consistent with those described in ASTM Standard Test Method D1586.

SAMPLE/SAMPLER TYPE GRAPHICS

BULK SAMPLE

CALIFORNIA SAMPLER
(3 in. (76.2 mm.) outer diameter)

STANDARD PENETRATION SPLIT SPOON SAMPLER
(2 in. (50.8 mm.) outer diameter and 1-3/8 in. (34.9 mm.) inner diameter)

GROUND WATER GRAPHICS

WATER LEVEL (level where first observed)

WATER LEVEL (level after exploration completion)

WATER LEVEL (additional levels after exploration)

OBSERVED SEEPAGE

NOTES

- The report and graphics key are an integral part of these logs. All data and interpretations in this log are subject to the explanations and limitations stated in the report.
- Lines separating strata on the logs represent approximate boundaries only. Actual transitions may be gradual or differ from those shown.
- No warranty is provided as to the continuity of soil or rock conditions between individual sample locations.
- Logs represent general soil or rock conditions observed at the point of exploration on the date indicated.
- In general, Unified Soil Classification System designations presented on the logs were based on visual classification in the field and were modified where appropriate based on gradation and index property testing.
- Fine grained soils that plot within the hatched area on the Plasticity Chart, and coarse grained soils with between 5% and 12% passing the No. 200 sieve require dual USCS symbols, ie., GW-GM, GP-GM, GW-GC, GP-GC, GC-GM, SW-SM, SP-SM, SW-SC, SP-SC, SC-SM.
- If sampler is not able to be driven at least 6 inches then 50/X indicates number of blows required to drive the identified sampler X inches with a 140 pound hammer falling 30 inches.

UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D 2487)

COARSE GRAINED SOILS (More than half of material is larger than the #200 sieve)	**GRAVELS** (More than half of coarse fraction is larger than the #4 sieve)	CLEAN GRAVEL WITH <5% FINES	Cu ≥4 and 1≤ Cc≤3		**GW**	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
			Cu <4 and/ or 1>Cc >3		**GP**	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
		GRAVELS WITH 5% TO 12% FINES	Cu ≥4 and 1≤ Cc≤3		**GW-GM**	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE FINES
					GW-GC	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE CLAY FINES
			Cu <4 and/ or 1>Cc >3		**GP-GM**	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE FINES
					GP-GC	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE CLAY FINES
		GRAVELS WITH > 12% FINES			**GM**	SILTY GRAVELS, GRAVEL-SILT-SAND MIXTURES
					GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
					GC-GM	CLAYEY GRAVELS, GRAVEL-SAND-CLAY-SILT MIXTURES
	SANDS (More than half of coarse fraction is smaller than the #4 sieve)	CLEAN SANDS WITH <5% FINES	Cu ≥6 and 1≤ Cc≤3		**SW**	WELL-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE OR NO FINES
			Cu <6 and/ or 1>Cc >3		**SP**	POORLY GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE OR NO FINES
		SANDS WITH 5% TO 12% FINES	Cu ≥6 and 1≤ Cc≤3		**SW-SM**	WELL-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE FINES
					SW-SC	WELL-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE CLAY FINES
			Cu <6 and/ or 1>Cc >3		**SP-SM**	POORLY GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE FINES
					SP-SC	POORLY GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE CLAY FINES
		SANDS WITH > 12% FINES			**SM**	SILTY SANDS, SAND-GRAVEL-SILT MIXTURES
					SC	CLAYEY SANDS, SAND-GRAVEL-CLAY MIXTURES
					SC-SM	CLAYEY SANDS, SAND-SILT-CLAY MIXTURES

FINE GRAINED SOILS (More than half of material is smaller than the #200 sieve)	SILTS AND CLAYS (Liquid Limit less than 50)	**ML**	INORGANIC SILTS AND VERY FINE SANDS, SILTY OR CLAYEY FINE SANDS, SILTS WITH SLIGHT PLASTICITY
		CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
		CL-ML	INORGANIC CLAYS-SILTS OF LOW PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
		OL	ORGANIC SILTS & ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS (Liquid Limit greater than 50)	**MH**	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILT
		CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
		OH	ORGANIC CLAYS & ORGANIC SILTS OF MEDIUM-TO-HIGH PLASTICITY

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CHECKED BY:	SR
DATE:	5/28/2015
REVISED:	6/1/2015

GRAPHICS KEY

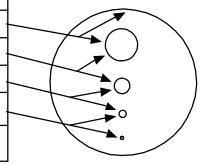
SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CA

FIGURE

A-1

GRAIN SIZE

DESCRIPTION		SIEVE SIZE	GRAIN SIZE	APPROXIMATE SIZE
Boulders		>12 in. (304.8 mm.)	>12 in. (304.8 mm.)	Larger than basketball-sized
Cobbles		3 - 12 in. (76.2 - 304.8 mm.)	3 - 12 in. (76.2 - 304.8 mm.)	Fist-sized to basketball-sized
Gravel	coarse	3/4 -3 in. (19 - 76.2 mm.)	3/4 -3 in. (19 - 76.2 mm.)	Thumb-sized to fist-sized
	fine	#4 - 3/4 in. (#4 - 19 mm.)	0.19 - 0.75 in. (4.8 - 19 mm.)	Pea-sized to thumb-sized
Sand	coarse	#10 - #4	0.079 - 0.19 in. (2 - 4.9 mm.)	Rock salt-sized to pea-sized
	medium	#40 - #10	0.017 - 0.079 in. (0.43 - 2 mm.)	Sugar-sized to rock salt-sized
	fine	#200 - #10	0.0029 - 0.017 in. (0.07 - 0.43 mm.)	Flour-sized to sugar-sized
Fines		Passing #200	<0.0029 in. (<0.07 mm.)	Flour-sized and smaller



Munsell Color

NAME	ABBR
Red	R
Yellow Red	YR
Yellow	Y
Green Yellow	GY
Green	G
Blue Green	BG
Blue	B
Purple Blue	PB
Purple	P
Red Purple	RP
Black	N

ANGULARITY

DESCRIPTION	CRITERIA
Angular	Particles have sharp edges and relatively plane sides with unpolished surfaces
Subangular	Particles are similar to angular description but have rounded edges
Subrounded	Particles have nearly plane sides but have well-rounded corners and edges
Rounded	Particles have smoothly curved sides and no edges

Particles Present

Amount	Percentage
trace	<5
few	5-10
little	15-25
some	30-45
and	50
mostly	50-100

PLASTICITY

DESCRIPTION	LL	FIELD TEST
Non-plastic	NP	A 1/8-in. (3 mm.) thread cannot be rolled at any water content.
Low (L)	< 30	The thread can barely be rolled and the lump or thread cannot be formed when drier than the plastic limit.
Medium (M)	30 - 50	The thread is easy to roll and not much time is required to reach the plastic limit. The thread cannot be rerolled after reaching the plastic limit. The lump or thread crumbles when drier than the plastic limit
High (H)	> 50	It takes considerable time rolling and kneading to reach the plastic limit. The thread can be rerolled several times after reaching the plastic limit. The lump or thread can be formed without crumbling when drier than the plastic limit

MOISTURE CONTENT

DESCRIPTION	FIELD TEST
Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, usually soil is below water table

REACTION WITH HYDROCHLORIC ACID

DESCRIPTION	FIELD TEST
None	No visible reaction
Weak	Some reaction, with bubbles forming slowly
Strong	Violent reaction, with bubbles forming immediately

APPARENT / RELATIVE DENSITY - COARSE-GRAINED SOIL

APPARENT DENSITY	SPT-N_{60} (# blows/ft)	MODIFIED CA SAMPLER (# blows/ft)	CALIFORNIA SAMPLER (# blows/ft)	RELATIVE DENSITY (%)
Very Loose	<4	<4	<5	0 - 15
Loose	4 - 10	5 - 12	5 - 15	15 - 35
Medium Dense	10 - 30	12 - 35	15 - 40	35 - 65
Dense	30 - 50	35 - 60	40 - 70	65 - 85
Very Dense	>50	>60	>70	85 - 100

NOTE: AFTER TERZAGHI AND PECK, 1948

CONSISTENCY - FINE-GRAINED SOIL

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (q_u)(psf)	CRITERIA
Very Soft	< 1000	Thumb will penetrate soil more than 1 in. (25 mm.)
Soft	1000 - 2000	Thumb will penetrate soil about 1 in. (25 mm.)
Firm	2000 - 4000	Thumb will indent soil about 1/4-in. (6 mm.)
Hard	4000 - 8000	Thumb will not indent soil but readily indented with thumbnail
Very Hard	> 8000	Thumbnail will not indent soil

STRUCTURE

DESCRIPTION	CRITERIA
Stratified	Alternating layers of varying material or color with layers at least 1/4-in. thick, note thickness
Laminated	Alternating layers of varying material or color with the layer less than 1/4-in. thick, note thickness
Fissured	Breaks along definite planes of fracture with little resistance to fracturing
Slickensided	Fracture planes appear polished or glossy, sometimes striated
Blocky	Cohesive soil that can be broken down into small angular lumps which resist further breakdown
Lensed	Inclusion of small pockets of different soils, such as small lenses of sand scattered through a mass of clay; note thickness
Homogeneous	Same color and appearance throughout

CEMENTATION

DESCRIPTION	FIELD TEST
Weakly	Crumbles or breaks with handling or slight finger pressure
Moderately	Crumbles or breaks with considerable finger pressure
Strongly	Will not crumble or break with finger pressure

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DATE:	5/28/2015
REVISED:	6/1/2015

SOIL DESCRIPTION KEY

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CA

FIGURE

A-2

BORING LOG B-1

Date Begin - End:	4/15/2015	**Drilling Company:**	Pacific Drilling		
Logged By:	J. Co	**Drill Crew:**	Gordy/Toby		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	Unimog	**Hammer Type - Drop:**	140 lb. Auto - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Solid Stem Auger		
Weather:	Sunny and Warm	**Exploration Diameter:**	6 in. in. O.D.		

FIELD EXPLORATION

Latitude: 33.21113° N
Longitude: -117.29459° W
Approximate Ground Surface Elevation (ft.): 367
Surface Condition: Bare Earth and Grass

Approximate Elevation (feet)	Depth (feet)	Graphical Log	Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in. Pocket Pen(PP)= tsf	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
365			**Artificial Fill (af)** **Clayey SAND (SC)**: fine to medium-grained, light yellowish brown (2.5 Y 6/3), moist, loose, low plasticity fines	1											
			Silty SAND (SM): fine to medium-grained, pale yellow (2.5 Y 7/3), moist, medium dense, low plasticity fines	2		BC=5 6 10	18"								
	5		mottled with olive gray, dense, becomes mottled with some clayey sand	3		BC=17 15 26	18"		12.2	117.3		33			
360															
	10		**Lean CLAY (CL)**: fine-grained, pale olive (5 Y 6/3) mottled with dark gray (2.5 Y, 4/1), moist, very hard, low plasticity	4		BC=5 13 21	14"		15.6	114.2			39	20	
355															
	15		organic odor	5		BC=7 14 20	18"								
350															
	20		**Lean CLAY (CL)**: olive gray (5 Y 5/2), moist, hard, weak cementation, low plasticity	6		BC=9 11 9	18"								
345			**Poorly-graded SAND with Silt (SP-SM)**: light gray (2.5 Y 7/2) to olive yellow (2.5Y 6/6), moist, medium dense												
	25		1 foot layers of claystone and sandstone, mottled clay in sand	7		BC=7 15 19	18"								
340															
	30														
335															

LABORATORY RESULTS

The boring was terminated at approximately 26.5 ft. below ground surface. The exploration was backfilled with bentonite on April 15, 2015.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
The exploration elevation is approximate and was estimated from the Preliminary Civil Development Plan by SDG&E dated February 27, 2015.

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PROJECT NO.:	20154777
DRAWN BY:	JC
CHECKED BY:	SR
DATE:	5/28/2015
REVISED:	6/1/2015

BORING LOG B-1

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CA

FIGURE
A-3

PAGE: 1 of 1

Date Begin - End:	4/15/2015	**Drilling Company:**	Pacific Drilling		**BORING LOG B-2**
Logged By:	J. Co	**Drill Crew:**	Gordy/Toby		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	Unimog	**Hammer Type - Drop:**	140 lb. Auto - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Solid Stem Auger		
Weather:	Sunny and Warm	**Exploration Diameter:**	6 in. in. O.D.		

FIELD EXPLORATION

Latitude: 33.21099° N
Longitude: -117.29424° W
Approximate Ground Surface Elevation (ft.): 367
Surface Condition: Bare Earth and Grass

Approximate Elevation (feet)	Depth (feet)	Graphical Log	Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in. Pocket Pen(PP)= tsf	Recovery (NR=No Recovery)
365	0		**Artificial Fill (af)** **Clayey SAND (SC)**: fine to coarse-grained, light yellowish brown (2.5 Y 6/3), dry to moist, loose, low plasticity fines	1			
			Silty SAND (SM): fine to coarse-grained, light yellowish brown (2.5 Y 5/3), dry to moist, medium dense, random dark gray claystone 1/2 inch chunks, low plasticity fines	2		BC=8 15 15	
360	5		**Poorly-graded SAND with Silt (SP-SM)**: fine to medium-grained, light gray (5 Y 7/2), dry to moist, medium dense, random 1/2 inch chunks of dark gray silty sand	3		BC=10 10 21	18"
355	10		**Clayey SAND (SC)**: fine to medium-grained, light yellowish brown (2.5 Y 5/3) to olive gray (5Y 5/2) with very dark gray (5Y 3/1), dry to moist, medium dense, randomly mixed with silty sand and 1/2" chunks of claystone, low plasticity fines	4		BC=9 11 15	18"
350	15		some mottled strong brown (7.5 YR 5/8)	5		BC=8 11 14	18"
345	20		increase in coarse grain sand and fine gravel from 20-20.5 feet	6		BC=6 8 7	18"
340	25		3" thick weakly cemented claystone, some mica	7		BC=8 11 8	18"
			Sandy CLAY (CL): fine to coarse-grained, very dark gray (5 Y 3/1), moist, hard, low plasticity fine, organic odor, small roots				
335	30		random sandy clay, some gray to olive yellow	8		BC=10 12 23	18"

LABORATORY RESULTS

USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
	12.2	112.6					DS
	14.4	106.6		38			
	7.8	106.1					

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BORING LOG B-2

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CA

FIGURE
A-4

BORING LOG B-2

Date Begin - End:	4/15/2015	**Drilling Company:**	Pacific Drilling		
Logged By:	J. Co	**Drill Crew:**	Gordy/Toby		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	Unimog	**Hammer Type - Drop:**	140 lb. Auto - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Solid Stem Auger		
Weather:	Sunny and Warm	**Exploration Diameter:**	6 in. in. O.D.		

FIELD EXPLORATION

Latitude: 33.21099° N
Longitude: -117.29424° W
Approximate Ground Surface Elevation (ft.): 367
Surface Condition: Bare Earth and Grass

Approximate Elevation (feet)	Depth (feet)	Graphical Log	Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in. Pocket Pen(PP)= tsf	Recovery (NR=No Recovery)
330			**Lean CLAY with Sand (CL)**: fine to coarse-grained, very dark gray (5 Y 3/1), moist, hard, rootlets	9		BC=8 8 10	18"
			Santiago Formation (Tsa) **SANDSTONE (excavates as):** **Silty SAND (SM)**: fine to coarse-grained, olive yellow (2.5 Y 6/6) to light gray (2.5 Y 7/2), dry to moist, very dense, 1/2" chunks of claystone at shoe, non-plastic				
	40			10		BC=14 37 50/6"	18"
325							
	45		becomes light yellowish brown (2.5Y 6/3) to olive yellow (2.5 Y 6/6)	11		BC=14 19 22	18"
320							
	50			12		BC=20 36 50/4"	16"
315							
	55						
310							
	60						
305							
	65						
300							

LABORATORY RESULTS

USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
	13.4			81			
	10.2	111.4		23			

The boring was terminated at approximately 51.5 ft. below ground surface. The exploration was backfilled with bentonite grout on April 15, 2015.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
The exploration elevation is approximate and was estimated from the Preliminary Civil Development Plan by SDG&E dated February 27, 2015.

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BORING LOG B-2

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CA

FIGURE
A-5

BORING LOG B-3

Date Begin - End:	4/15/2015	**Drilling Company:**	Pacific Drilling		
Logged By:	J. Co	**Drill Crew:**	Gordy/Toby		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	Unimog	**Hammer Type - Drop:**	140 lb. Auto - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Solid Stem Auger		
Weather:	Sunny and Warm	**Exploration Diameter:**	6 in. in. O.D.		

FIELD EXPLORATION

Latitude: 33.21109° N
Longitude: -117.29366° W
Approximate Ground Surface Elevation (ft.): 368
Surface Condition: Bare Earth and Grass

Approximate Elevation (feet)	Depth (feet)	Graphical Log	Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in. Pocket Pen(PP)= tsf	Recovery (NR=No Recovery)
			Artificial Fill (af)	1			
			Sandy CLAY (CL): fine to coarse grained, light olive brown (2.5 Y 5/3), moist, loose, low plasticity fines				
365			**Clayey SAND (SC)**: fine to coarse grained, light yellow brown (2.5 Y 6/3), moist, medium dense, low plasticity fines	2		BC=7 8 11	18"
				1			
	5		1/2" chunks of non-uniform clay	3		BC=9 11 17	18"
360							
	10		some light olive brown (2.5 Y 5/3), 1/2" claystone chunks	4		BC=7 9 12	18"
355							
	15		**Sandy CLAY (CL)**: fine to medium grained, gray (2.5 Y 5/1) to light olive brown (2.5 Y 5/3), moist, hard, low plasticity fines	5		BC=7 13 14	18"
350							
	20		mostly fine to coarse grained sandy clay with random silty sand and claystone chunks. gray to brownish yellow and dusky red	6		BC=7 6 7	16"
345							
	25		becomes very hard, random chunks of sandy clay, olive yellow mixed with gray and dark gray	7		BC=6 16 20	18"
340			**Santiago Formation (Tsa)** **CLAYSTONE: excavates as CLAY with Sand (CL)**: grayish brown (10 YR, 5/2), moist, very dense, weak cemented calcium carbonate fracture, low plasticity				
	30			8		BC=15 21 35	22"
335			**SANDSTONE: excavates as Silty SAND (SM)**: fine to medium grained, olive gray to gray (5 Y 4/2) with strong brown (7.5 YR 5/6), moist, very dense, low plasticity fines, caliche filled fractures				

LABORATORY RESULTS

USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
					44	26	Corrosion
	12.8	108.9	100	26			
	15.8	103.0					
	15.2	108.9					
	13.0						

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BORING LOG B-3

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CA

FIGURE

A-6

BORING LOG B-3

Date Begin - End:	4/15/2015	**Drilling Company:**	Pacific Drilling		
Logged By:	J. Co	**Drill Crew:**	Gordy/Toby		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	Unimog	**Hammer Type - Drop:**	140 lb. Auto - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Solid Stem Auger		
Weather:	Sunny and Warm	**Exploration Diameter:**	6 in. in. O.D.		

FIELD EXPLORATION

Latitude: 33.21109° N
Longitude: -117.29366° W
Approximate Ground Surface Elevation (ft.): 368
Surface Condition: Bare Earth and Grass

Approximate Elevation (feet)	Depth (feet)	Graphical Log	Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in. Pocket Pen(PP)= tsf	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			SANDSTONE: excavates as Poorly-graded SAND with Silt (SP-SM): fine to medium-grained, light yellowish brown (2.5 Y 6/4), moist, very dense, low plasticity fines	9		BC=17 34 50/4"	16"								
				10		BC=14 19 24	18"								
330															
	40														
325															
	45														
320															
	50														
315															
	55														
310															
	60														
305															
	65														
300															

The boring was terminated at approximately 38 ft. below ground surface. The exploration was backfilled with bentonite on April 15, 2015.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
The exploration elevation is approximate and was estimated from the Preliminary Civil Development Plan by SDG&E dated February 27, 2015.

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BORING LOG B-3

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CA

FIGURE
A-7

BORING LOG B-4

Date Begin - End:	4/16/2015	**Drilling Company:**	Pacific Drilling		
Logged By:	J. Co	**Drill Crew:**	Gordy/Toby		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	Unimog	**Hammer Type - Drop:**	140 lb. Auto - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Solid Stem Auger		
Weather:	Sunny and Warm	**Exploration Diameter:**	6 in. in. O.D.		

Latitude: 33.21067° N
Longitude: -117.29314° W
Approximate Ground Surface Elevation (ft.): 373
Surface Condition: Bare Earth and Grass

Approximate Elevation (feet)	Depth (feet)	Graphical Log	Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in. Pocket Pen(PP)= tsf	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Artificial Fill (af)	1											
			Clayey SAND (SC): fine to coarse grained, light olive gray (5 Y 6/2), moist, loose, low plasticity fines												
370			becomes white, medium dense, random 1/2" dark olive gray	2		BC=7 10 13	16"		14.0	114.2			33	16	DS, Corrosion
				1											
	5		random 1/2" dark olive gray	3		BC=4 7 10	14"								
365															
	10		**Silty SAND (SM)**: pale yellow, moist, medium dense, 1/2" dark gray claystone chunks	4		BC=8 10 15	18"		10.8	114.1	100	29 29			
360															
	15		increase in 2" claystone chunks	5		BC=7 9 11	18"								
355															
	20		**Sandy CLAY (CL)**: fine grained, pale olive (5 Y 6/3) mixed with random yellowish brown (10 YR 5/8), moist, firm, 1/4" claystone chunks, low plasticity fines	6		BC=3 6 6	14"		15.1						
350															
	25		becomes hard, 1/2 to 1" chunks of weak cemented fine grained silty sand, some white 1/2"	7		BC=6 11 12	18"								
345															
	30		**Lean CLAY (CL)**: yellowish brown (10 YR 5/4), moist, hard	8		BC=7 8 9	26"						41	23	
340															

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BORING LOG B-4

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CA

FIGURE
A-8

Date Begin - End:	4/16/2015	**Drilling Company:**	Pacific Drilling		**BORING LOG B-4**
Logged By:	J. Co	**Drill Crew:**	Gordy/Toby		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	Unimog	**Hammer Type - Drop:**	140 lb. Auto - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Solid Stem Auger		
Weather:	Sunny and Warm	**Exploration Diameter:**	6 in. in. O.D.		

FIELD EXPLORATION

Latitude: 33.21067° N
Longitude: -117.29314° W
Approximate Ground Surface Elevation (ft.): 373
Surface Condition: Bare Earth and Grass

Approximate Elevation (feet)	Depth (feet)	Graphical Log	Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in. Pocket Pen(PP)= tsf	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
335			**Sandy CLAY (CL)**: fine grained, pale olive (5 Y 6/3) mottled with very dark gray (5 Y 3/1) and chunks of strong brown (7.5 YR 5/6), moist, very hard, low plasticity fines	9		BC=9 13 20	18"								
	40		**Silty SAND (SM)**: white, gray to strong brown, moist, dense, 1/4" piece of wood, low plasticity fines	10		BC=6 7 6	24"								
330			**CLAY (CL)**: light brownish gray (2.5 Y 6/2), moist, firm, low plasticity fines												
	45		**Sandy CLAY (CL)**: fine to medium grained, pale olive with random chunks of very dark gray and strong brown, moist, hard, low plasticity fines	11		BC=5 10 15	18"		13.3	107.6					
325			**CLAY with Sand (CL)**: fine to medium grained, very dark gray (2.5 Y 3/1), moist, firm to hard, low plasticity fines												
	50			12		BC=4 6 9	24"								
320															
	55		**Clayey SAND (SC)**: fine grained, light olive gray (5 Y 6/2), moist, hard, low plasticity fines	13		BC=3 8 11	14"		17.8	103.4		43			
315															
	60		**Sandy CLAY (CL)**: fine to medium grained, very dark gray (2.5Y 3/1) to greenish gray (5 GY 6/1), moist, hard, organic odor, unwithered dry plants, low plasticity fines	14		BC=4 8 11	24"								
310															
	65		**CLAY with Sand (CL)**: fine grained, very dark gray (2.5 Y 3/1), moist, very hard, chunk of 2-3" wood with 1" nails in sampler, organic odor and rootlets, medium plasticity fines	15		BC=13 19 27	20"		20.1	107.5			45	27	
305			**Young Colluvial Deposits (Qyc)**												

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BORING LOG B-4

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CA

FIGURE
A-9

Date Begin - End: 4/16/2015 **Drilling Company:** Pacific Drilling

BORING LOG B-4

Logged By: J. Co **Drill Crew:** Gordy/Toby

Hor.-Vert. Datum: Not Available **Drilling Equipment:** Unimog **Hammer Type - Drop:** 140 lb. Auto - 30 in.

Plunge: -90 degrees **Drilling Method:** Solid Stem Auger

Weather: Sunny and Warm **Exploration Diameter:** 6 in. in. O.D.

FIELD EXPLORATION | LABORATORY RESULTS

Latitude: 33.21067° N
Longitude: -117.29314° W
Approximate Ground Surface Elevation (ft.): 373
Surface Condition: Bare Earth and Grass

Approximate Elevation (feet)	Depth (feet)	Graphical Log	Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in. Pocket Pen(PP)= tsf	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
300			**Young Colluvial Deposits (Qyc)** **CLAY with Sand (CL)**: fine grained, greenish black (10Y 2.5/1) and flecks of strong brown (7.5 YR 5/6), moist, hard, rootlets and wood fragments, medium plasticity fines	16		BC=6 9 10	18"								
	75		**Santiago Formation (Tsa)** **SANDSTONE: excavates as Silty SAND (SM)**: fine grained, brownish yellow (10 YR 6/8) with pale yellow, light gray, and gray (5 Y, 7/3, 7/1, 5/1), moist, very dense, non-plastic	17		BC=36 50/2"	8"								
295															
	80			18		BC=23 50/5"	11"								
290			The boring was terminated at approximately 81 ft. below ground surface. The exploration was backfilled with bentonite grout on April 16, 2015.												
	85														
285															
	90														
280															
	95														
275															
	100														
270															

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
The exploration elevation is approximate and was estimated from the Preliminary Civil Development Plan by SDG&E dated February 27, 2015.

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PROJECT NO.:	20154777
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BORING LOG B-4

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CA

FIGURE
A-10

BORING LOG B-5

Date Begin - End:	4/17/2015	**Drilling Company:**	Pacific Drilling		
Logged By:	J. Co	**Drill Crew:**	Gordy/Carlos		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	Unimog	**Hammer Type - Drop:**	140 lb. Auto - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Solid Stem Auger		
Weather:	Sunny and Warm	**Exploration Diameter:**	6 in. in. O.D.		

FIELD EXPLORATION

Latitude: 33.21053° N
Longitude: -117.29372° W
Approximate Ground Surface Elevation (ft.): 371
Surface Condition: Bare Earth and Grass

Approximate Elevation (feet)	Depth (feet)	Graphical Log	Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in. Pocket Pen(PP)= tsf	Recovery (NR=No Recovery)
370	0		**Artificial Fill (af)**	1			
			Silty SAND (SM): fine to medium grained, light olive gray (5 Y 6/2), dry to moist, loose, rootlets and roots, low plasticity fines				
			fine to coarse grained, medium dense, becomes olive gray to white with 1/2" chunks of claystone	2		BC=7 14 16	16"
				1			
365	5		becomes pale yellow (5 Y 7/3), random clayey sand and 1/2" claystone chunks,	3		BC=9 14 18	16"
360	10			4		BC=5 8 13	18"
355	15		**Clayey SAND (SC)**: pale yellow (5 Y 7/3), moist, medium dense, increase in clay, becomes more olive gray (5 Y 5/2) chunks of white and very dark gray	5		BC=5 5 8	18"
350	20		moist, olive gray mixed with pale yellow	6		BC=5 5 7	20"
345	25		**Sandy CLAY (CL)**: fine to medium grained, olive (5 Y 5/3) and random dusk red, strong brown and gray, moist, hard, 1/2" chunks of claystone, low plasticity fines	7		BC=9 9 20	18"
340	30			8		BC=8 8 7	24"

LABORATORY RESULTS

USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
							Modified Proctor, Corrosion
	13.3	113.8		27			DS
	12.2	111.2					
	15.6	110.3					
	12.2	107.6					

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BORING LOG B-5

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CA

FIGURE

A-11

Date Begin - End: 4/17/2015 **Drilling Company:** Pacific Drilling **BORING LOG B-5**

Logged By: J. Co **Drill Crew:** Gordy/Carlos

Hor.-Vert. Datum: Not Available **Drilling Equipment:** Unimog **Hammer Type - Drop:** 140 lb. Auto - 30 in.

Plunge: -90 degrees **Drilling Method:** Solid Stem Auger

Weather: Sunny and Warm **Exploration Diameter:** 6 in. in. O.D.

FIELD EXPLORATION | LABORATORY RESULTS

Latitude: 33.21053° N
Longitude: -117.29372° W
Approximate Ground Surface Elevation (ft.): 371
Surface Condition: Bare Earth and Grass

Approximate Elevation (feet)	Depth (feet)	Graphical Log	Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in. Pocket Pen(PP)= tsf	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
335			**Sandy CLAY (CL)**: fine to medium grained, olive (5 Y 5/3) and random dusk red, strong brown and gray, moist, hard, 1/2" chunks of claystone, low plasticity fines moderatley cemented dusk red, random chunks of pale yellow silty sand	9		BC=8 8 9	18"		14.4	112.4					
	40		some strong brown	10		BC=6 7 9	24"								
330															
	45		random chunks of dusk red, olive gray, and strong brown	11		BC=4 9 11	18"		7.8	112.8					
325															
	50		**Silty SAND (SM)**: fine grained, pale yellow (2.5 Y 7/4) mixed with yellow (2.5 Y 7/8), moist, medium dense	12		BC=5 7 7	24"								
320															
	55			13		BC=9 19 25	18"								
315			**Clayey SAND (SC)**: fine grained, pale yellow (2.5 Y, 8/2) to yellow (2.5 Y 7/8), moist, dense, 1/2" chunks of claystone												
	60		becomes light yellowish brown (2.5 Y 6/4) mottled with strong brown (7.5 YR 5/8). Then at 61.5 feet becomes white and light gray, low plasticity fines	14		BC=5 6 9	24"								
310															
	65		becomes white to light gray (5 Y 7/1) with little strong brown	15		BC=10 14 20	18"		13.4	111.5		46			
305															

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PROJECT NO.: 20154777
DRAWN BY: JC
CHECKED BY: SR
DATE: 5/28/2015
REVISED: 6/1/2015

BORING LOG B-5

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CA

FIGURE
A-12

Date Begin - End:	4/17/2015	**Drilling Company:**	Pacific Drilling	**BORING LOG B-5**	
Logged By:	J. Co	**Drill Crew:**	Gordy/Carlos		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	Unimog	**Hammer Type - Drop:**	140 lb. Auto - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Solid Stem Auger		
Weather:	Sunny and Warm	**Exploration Diameter:**	6 in. in. O.D.		

FIELD EXPLORATION

Latitude: 33.21053° N
Longitude: -117.29372° W
Approximate Ground Surface Elevation (ft.): 371
Surface Condition: Bare Earth and Grass

Approximate Elevation (feet)	Depth (feet)	Graphical Log	Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in. Pocket Pen(PP)= tsf	Recovery (NR=No Recovery)
300			**Sandy CLAY (CL)**: fine to medium grained, very dark gray (2.5 Y 3/1) with some light greenish gray at 70.5 feet, organic odor, moist, firm, organic odor, low to medium plasticity fines	16		BC=6 6 7	24"
295	75		olive gray (5 Y 5/2) mixed with very dark gray (2.5 Y 3/1), becomes very hard, organic odor	17		BC=10 17 31	18"
290	80		light olive gray (5 Y 6/2) to light gray (5 Y 7/1) mottled with strong brown and very dark gray, becomes hard	18		BC=7 7 12	24"
285	85		**Santiago Formation (Tsa)** **SANDSTONE: excavates as Silty SAND (SM)**: fine grained, pale olive (5 Y 6/3), moist, medium dense, low plasticity fines	19		BC=9 10 17	16"
280	90		becomes light gray (5 Y 7/1)	20		BC=21 39 50/4"	16"
275	95						
270	100						

LABORATORY RESULTS

USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
				67			

The boring was terminated at approximately 91.5 ft. below ground surface. The exploration was backfilled with bentonite grout on April 17, 2015.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
The exploration elevation is approximate and was estimated from the Preliminary Civil Development Plan by SDG&E dated February 27, 2015.

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PROJECT NO.:	20154777
DRAWN BY:	JC
CHECKED BY:	SR
DATE:	5/28/2015
REVISED:	6/1/2015

BORING LOG B-5

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CA

FIGURE
A-13

BORING LOG B-6

Date Begin - End:	4/16/2015	**Drilling Company:**	Pacific Drilling		
Logged By:	J. Co	**Drill Crew:**	Gordy/Toby		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	Unimog	**Hammer Type - Drop:**	140 lb. Auto - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Solid Stem Auger		
Weather:	Sunny and Warm	**Exploration Diameter:**	6 in. in. O.D.		

FIELD EXPLORATION

Latitude: 33.21057° N
Longitude: -117.29464° W
Approximate Ground Surface Elevation (ft.): 357
Surface Condition: Bare Earth and Grass

Approximate Elevation (feet)	Depth (feet)	Graphical Log	Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in. Pocket Pen(PP)= tsf	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
355			**Artificial Fill (af)** **Silty SAND (SM)**: fine to medium grained, light yellowish brown (2.5 Y 6/3) to pale yellow (5 Y, 8/3), dry to moist, medium dense, random clayey sand, low plasticity fines	1											
				2		BC=6 8 12	18"								
				1											
	5		increase in clay content	3		BC=7 11 14	18"		12.9	105.1		45			
350															
	10		**Poorly-graded SAND (SP)**: medium to coarse grained, pale yellow (5 Y 7/3), moist, medium dense, non-plastic	4		BC=4 8 8	18"		16.0	109.8					
345			**Clayey SAND (SC)**: fine to coarse grained, olive gray (5 Y 5/2), moist, medium dense, non-plastic												
	15		**Sandy CLAY (CL)**: fine to medium grained, light olive brown mottled with pink, moist, hard, 1/2" chunks of claystone, low plasticity fines	5		BC=5 9 12	18"		19.5	103.9			38	18	
340															
	20		becomes light yellow brown (2.5 Y 6/3) mottled with strong brown	6		BC=3 4 8	18"								
335			**Silty SAND (SM)**: fine grained, pale yellow (2.5 Y 7/3), moist, medium dense, low plasticity fines												
	25		**Sandy CLAY (CL)**: fine grained, light yellow brown (2.5 Y 6/3) mottled with strong brown, moist, hard	7		BC=2 7 11	18"		18.0	108.4					
330															
	30		becomes light olive brown (2.5 Y 5/4), firm	8		BC=3 6 8	18"								
325															

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CHECKED BY:	SR
DATE:	5/28/2015
REVISED:	6/1/2015

BORING LOG B-6

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CA

FIGURE

A-14

BORING LOG B-6

Date Begin - End:	4/16/2015	**Drilling Company:**	Pacific Drilling		
Logged By:	J. Co	**Drill Crew:**	Gordy/Toby		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	Unimog	**Hammer Type - Drop:**	140 lb. Auto - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Solid Stem Auger		
Weather:	Sunny and Warm	**Exploration Diameter:**	6 in. in. O.D.		

FIELD EXPLORATION

Latitude: 33.21057° N
Longitude: -117.29464° W
Approximate Ground Surface Elevation (ft.): 357
Surface Condition: Bare Earth and Grass

Approximate Elevation (feet)	Depth (feet)	Graphical Log	Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in. Pocket Pen(PP)= tsf	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Silty SAND (SM): fine grained, pale yellow (2.5 Y 7/3), very moist, medium dense	9		BC=8 12 16	18"		17.4	108.2					
320			**Sandy CLAY (CL)**: fine grained, olive yellow (2.5 Y 6/8), very moist, hard												
	40		**CLAY (CL)**: fine grained, dark gray (2.5 Y 4/1) with strong brown (7.5 YR 5/8), moist, hard, low plasticity fines	10		BC=5 8 10	18"								
315															
	45		**Sandy CLAY (CL)**: fine grained, light yellowish brown (2.5 Y 6/3) mottled with white and strong brown, very moist, hard, low plasticity fines	11		BC=5 10 14	18"		21.8	104.1					
310															
	50		moist	12		BC=7 9 12	18"								
305															
	55														
300															
	60														
295															
	65														
290															

The boring was terminated at approximately 51.5 ft. below ground surface. The exploration was backfilled with bentonite on April 16, 2015.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
The exploration elevation is approximate and was estimated from the Preliminary Civil Development Plan by SDG&E dated February 27, 2015.

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DRAWN BY:	JC
CHECKED BY:	SR
DATE:	5/28/2015
REVISED:	6/1/2015

BORING LOG B-6

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CA

FIGURE
A-15

BORING LOG B-7

Date Begin - End:	4/17/2015	**Drilling Company:**	Pacific Drilling		
Logged By:	J. Co	**Drill Crew:**	Gordy/Carlos		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	Unimog	**Hammer Type - Drop:**	140 lb. Auto - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Solid Stem Auger		
Weather:	Sunny and Warm	**Exploration Diameter:**	6 in. in. O.D.		

Latitude: 33.21021° N
Longitude: -117.29439° W
Approximate Ground Surface Elevation (ft.): 366
Surface Condition: Bare Earth and Grass

Approximate Elevation (feet)	Depth (feet)	Graphical Log	Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in. Pocket Pen(PP)= tsf	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
365	0		**Artificial Fill (af)** **Silty SAND (SM)**: fine to coarse grained, pale olive (5 Y 6/3), dry to moist, medium dense, low plasticity fines	1											R-Value
	5		becomes fine grained mottled with dark gray and 1/2" chunks of claystone	2		BC=7 9 16	18"								
360															
	10														
355															
	15														
350															
	20														
345															
	25														
340															
	30														
335															

The boring was terminated at approximately 6.5 ft. below ground surface. The exploration was backfilled with soil cuttings on April 17, 2015.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
The exploration elevation is approximate and was estimated from the Preliminary Civil Development Plan by SDG&E dated February 27, 2015.

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PROJECT NO.:	20154777
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CHECKED BY:	SR
DATE:	5/28/2015
REVISED:	6/1/2015

BORING LOG B-7

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CA

FIGURE
A-16

Date Begin - End:	4/17/2015	**Drilling Company:**	Pacific Drilling	**BORING LOG B-8**	
Logged By:	J. Co	**Drill Crew:**	Gordy/Carlos		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	Unimog	**Hammer Type - Drop:**	140 lb. Auto - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Solid Stem Auger		
Weather:	Sunny and Warm	**Exploration Diameter:**	6 in. in. O.D.		

Latitude: 33.20979° N
Longitude: -117.29447° W
Approximate Ground Surface Elevation (ft.): 367
Surface Condition: Bare Earth and Grass

Approximate Elevation (feet)	Depth (feet)	Graphical Log	Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in. Pocket Pen(PP)= tsf	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
365	0		**Artificial Fill (af)** **Clayey SAND (SC)**: fine to medium grained, olive gray (5 Y 5/2) mottled with very dark gray to light gray, dry to moist, loose, low plasticity fines												
	5			1		BC=3 3 6	18"								
360			**Sandy CLAY (CL)**: fine to medium-grained, pale olive (5 Y 6/4), moist, hard												
	10			2		BC=9 12 15	18"		15.0	114.4		68			
355			**Santiago Formation (Tsa)** **SANDSTONE: excavates as Silty SAND (SM)**: fine to medium-grained, light yellowish brown (2.5 Y 6/4), moist, very dense, low plasticity fines becomes greenish gray (10Y 6/1) mottled with yellowish brown (10 YR 5/8)	3											
	15			4		BC=15 23 28	16"								
350															
	20														
345															
	25														
340															
	30														
335															

The boring was terminated at approximately 16.5 ft. below ground surface. The exploration was backfilled with bentonite on April 17, 2015.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
The exploration elevation is approximate and was estimated from the Preliminary Civil Development Plan by SDG&E dated February 27, 2015.

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REVISED:	6/1/2015

BORING LOG B-8

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CA

FIGURE
A-17

PAGE: 1 of 1

Date Begin - End:	4/17/2015	**Drilling Company:**	Pacific Drilling	**BORING LOG B-9**	
Logged By:	J. Co	**Drill Crew:**	Gordy/Carlos		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	Unimog	**Hammer Type - Drop:**	140 lb. Auto - 30 in.
Plunge:	-90 degrees	**Drilling Method:**	Solid Stem Auger		
Weather:	Sunny and Warm	**Exploration Diameter:**	6 in. in. O.D.		

FIELD EXPLORATION

Latitude: 33.21129° N
Longitude: -117.29375° W
Approximate Ground Surface Elevation (ft.): 368
Surface Condition: Bare Earth and Grass

Approximate Elevation (feet)	Depth (feet)	Graphical Log	Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in. Pocket Pen(PP)= tsf	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
365	0		**Artificial Fill (af)** **Clayey SAND (SC)**: fine to medium grained, light olive gray (5 Y, 6/2), dry to moist, loose, medium plasticity fines	1											
	5		**Santiago Formation (Tsa)** **CALICHE**: pale yellow to strong brown, dry, very dense, highly cemented rock	2		BC=35 26 26	18"		13.2	112.1					
360			**SANDSTONE: excavates as Clayey SAND (SC)**: fine to medium grained, light olive gray (5 Y 6/2), dry to moist, very dense, low plasticity fines												
	10														
355															
	15														
350															
	20														
345															
	25														
340															
	30														
335															

The boring was terminated at approximately 6.5 ft. below ground surface. The exploration was backfilled with soil cuttings on April 17, 2015.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
The exploration elevation is approximate and was estimated from the Preliminary Civil Development Plan by SDG&E dated February 27, 2015.

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PROJECT NO.:	20154777
DRAWN BY:	JC
CHECKED BY:	SR
DATE:	5/28/2015
REVISED:	6/1/2015

BORING LOG B-9

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CA

FIGURE
A-18

PAGE: 1 of 1

Date Begin - End: 4/17/2015 **Drilling Company:** Pacific Drilling **BORING LOG B-10**

Logged By: J. Co **Drill Crew:** Gordy/Carlos

Hor.-Vert. Datum: Not Available **Drilling Equipment:** Unimog **Hammer Type - Drop:** 140 lb. Auto - 30 in.

Plunge: -90 degrees **Drilling Method:** Solid Stem Auger

Weather: Sunny and Warm **Exploration Diameter:** 6 in. in. O.D.

FIELD EXPLORATION | LABORATORY RESULTS

Latitude: 33.21114° N
Longitude: -117.29319° W
Approximate Ground Surface Elevation (ft.): 374
Surface Condition: Bare Earth and Grass

Approximate Elevation (feet)	Depth (feet)	Graphical Log	Lithologic Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. Blows/6 in. Pocket Pen(PP)= tsf	Recovery (NR=No Recovery)	USCS Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
370	0		**Artificial Fill (af)** **Clayey SAND (SC)**: fine to medium grained, light olive gray (5 Y, 6/2) with chunks of dark gray, dry to moist, loose, low plasticity fines	1											R-Value
	5		medium dense to dense, medium plasticity fines	2		BC=7 10 22	18"		9.1	112.9		19			
365	10														
360	15														
355	20														
350	25														
345	30														
340															

The boring was terminated at approximately 6.5 ft. below ground surface. The exploration was backfilled with soil cuttings on April 17, 2015.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
The exploration elevation is approximate and was estimated from the Preliminary Civil Development Plan by SDG&E dated February 27, 2015.

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PROJECT NO.:	20154777
DRAWN BY:	JC
CHECKED BY:	SR
DATE:	5/28/2015
REVISED:	6/1/2015

BORING LOG B-10

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CA

FIGURE
A-19

APPENDIX A-1
PREVIOUS FIELD INVESTIGATION BORING LOGS AND TEST PITS (2012)

Date Begin - End:	4/26/12 - 4/27/12	**Drill Company:**	Scott's Drilling	**BORING LOG B-3 (2012)**	
Logged By:	E. Koprulu	**Drill Crew:**			
Hor.-Vert. Datum:	NAD83 - NAD83	**Drill Equipment:**	CME-55	**Hammer Type - Drop:**	140 lb. Automatic - 30"
Angle from Vert.:	0 degrees	**Exploration Method:**	Hollow Stem Auger		
Weather:	Sunny	**Auger Diameter:**	8 inches		

FIELD EXPLORATION | LABORATORY RESULTS

Latitude: 33.21081° N
Longitude: 117.29389° W
Approximate Surface Elevation (ft): 367.0

Surface Condition: Bare Earth and Grass

Approximate Elevation (feet)	Depth (feet)	Graphical Log	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. blows/6 in	Recovery	USCS Symbol	Moisture Content (%)	Dry Density (pcf)	Passing No.4 Sieve (%)	Passing #200 Sieve (%)	Liquid Limit (NV=No Value)	Plasticity Index (NP=No Plasticity)	Other Tests/ Remarks
365	0													**Artificial Fill** **Clayey SAND (SC)**: fine to coarse grained, non-plastic fines, gray, moist
360	5													
	10		1		BC=17 32 44									**Sandy CLAY (CL)**: fine to medium grained, medium plasticity fines, gray to brown, moist, very hard
355	15													
350	20		2		BC=13 27 40									Fine to coarse grained, low plasticity fines, gray, moist, very hard
345	25													
340	30		3		BC=20 30 50/5"									Fine to medium grained, medium plasticity fines, grayish brown, moist, very hard, decrease in grain size
335														

gINT FILE: C:\users\mpalmer\desktop\124202_sdge Ocean Ranch.gpj C:KLF_STANDARD_GINT_LIBRARY_BETA.GLB [KLF_BORING/TEST PIT LOG]

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PROJECT NO.	124202
DRAWN BY:	EK
CHECKED BY:	DH/SR
DATE:	5/7/2012
REVISED:	6/2/2015

BORING LOG B-3 (2012)

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

PLATE

A-5

Date Begin - End:	4/26/12 - 4/27/12	**Drill Company:**	Scott's Drilling	**BORING LOG B-3 (2012)**	
Logged By:	E. Koprulu	**Drill Crew:**			
Hor.-Vert. Datum:	NAD83 - NAD83	**Drill Equipment:**	CME-55	**Hammer Type - Drop:**	140 lb. Automatic - 30"
Angle from Vert.:	0 degrees	**Exploration Method:**	Hollow Stem Auger		
Weather:	Sunny	**Auger Diameter:**	8 inches		

FIELD EXPLORATION | LABORATORY RESULTS

Latitude: 33.21081° N
Longitude: 117.29389° W
Approximate Surface Elevation (ft): 367.0

Surface Condition: Bare Earth and Grass

Approximate Elevation (feet)	Depth (feet)	Graphical Log	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. blows/6 in	Recovery	USCS Symbol	Moisture Content (%)	Dry Density (pcf)	Passing No.4 Sieve (%)	Passing #200 Sieve (%)	Liquid Limit (NV=No Value)	Plasticity Index (NP=No Plasticity)	Other Tests/ Remarks
330														
	40		4		BC=13 18 24									
325														
	45													
320														
	50		5		BC=21 25 35									
315														
	55													
310														
	60													
305														
	65													
300														

Sandy CLAY (CL): fine to medium grained, medium plasticity fines, gray to brown, moist, very hard *(continued)*

Fine to coarse grained, low plasticity fines, moist, very hard, intermixed color from light gray - dark brown to reddish brown, some scattered sand lenses

Fine to medium grained, medium plasticity fines, moist, very hard, intermixed color from light gray to reddish brown, some brown lenses of sand

Santiago Formation (Tsa)

CLAYSTONE excavates as **Sandy CLAY (CL):** fine grained, medium plasticity fines, gray, moist, very hard

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PROJECT NO.	124202
DRAWN BY:	EK
CHECKED BY:	DH/SR
DATE:	5/7/2012
REVISED:	6/2/2015

BORING LOG B-3 (2012)

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

PLATE

A-6

Date Begin - End:	4/26/12 - 4/27/12	**Drill Company:**	Scott's Drilling	**BORING LOG B-3 (2012)**	
Logged By:	E. Koprulu	**Drill Crew:**			
Hor.-Vert. Datum:	NAD83 - NAD83	**Drill Equipment:**	CME-55	**Hammer Type - Drop:**	140 lb. Automatic - 30"
Angle from Vert.:	0 degrees	**Exploration Method:**	Hollow Stem Auger		
Weather:	Sunny	**Auger Diameter:**	8 inches		

Approximate Elevation (feet)	Depth (feet)	Graphical Log	FIELD EXPLORATION: Latitude: 33.21081° N, Longitude: 117.29389° W, Approximate Surface Elevation (ft): 367.0, Surface Condition: Bare Earth and Grass	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. blows/6 in	Recovery	USCS Symbol	Moisture Content (%)	Dry Density (pcf)	Passing No.4 Sieve (%)	Passing #200 Sieve (%)	Liquid Limit (NV=No Value)	Plasticity Index (NP=No Plasticity)	Other Tests/ Remarks
295			**Santiago Formation (Tsa)** **CLAYSTONE** excavates as **Sandy CLAY (CL):** fine grained, medium plasticity fines, gray, moist, very hard, iron-oxide staining *(continued)*	6		BC=28 45 50/4"									
	75		The boring was terminated at approximately 71.5 feet below ground surface. The Boring was backfilled with bentonite on April 27, 2012.												
290															
	80														
285															
	85														
280															
	90														
275															
	95														
270															
	100														
265															

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling.
GENERAL NOTES:
The boring location and elevation are approximate and were estimated by BHA, Inc.
A Garmin etrex GPS unit was used to locate the boring with an accuracy of 5 to 10 feet.

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PROJECT NO.	124202
DRAWN BY:	EK
CHECKED BY:	DH/SR
DATE:	5/7/2012
REVISED:	6/2/2015

BORING LOG B-3 (2012)

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

PLATE
A-7

Date Begin - End:	4/24/12	**Drill Company:**	Scott's Drilling	**BORING LOG B-4 (2012)**	
Logged By:	E. Koprulu	**Drill Crew:**			
Hor.-Vert. Datum:	NAD83 - NAD83	**Drill Equipment:**	CME-55	**Hammer Type - Drop:**	140 lb. Automatic - 30"
Angle from Vert.:	0 degrees	**Exploration Method:**	Hollow Stem Auger		
Weather:	Sunny	**Auger Diameter:**	8 inches		

FIELD EXPLORATION | LABORATORY RESULTS

Latitude: 33.21102° N
Longitude: 117.29288° W
Approximate Surface Elevation (ft): 374.0

Surface Condition: Bare Earth and Grass

Approximate Elevation (feet)	Depth (feet)	Graphical Log	Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. blows/6 in	Recovery	USCS Symbol	Moisture Content (%)	Dry Density (pcf)	Passing No.4 Sieve (%)	Passing #200 Sieve (%)	Liquid Limit (NV=No Value)	Plasticity Index (NP=No Plasticity)	Other Tests/ Remarks
370	0		**Artificial Fill** **Silty SAND (SM)**: fine to coarse grained, non-plastic fines, gray, moist, dense	1											
				2		BC=9 20 28									
			Trace Clay Increase in Clay content												
365	5		**Clayey SAND (SC)**: fine to coarse grained, non-plastic fines, dark gray, moist, dense	3		BC=14 26 40									
	10		Fine to coarse grained, low plasticity fines, dark gray, moist, very dense, some lenses of dark brown Lean Clay	4		BC=12 31 42									
360	15		**Sandy CLAY (CL)**: fine to medium grained, low plasticity fines, moist, very hard, intermixed color from light gray to light tan, some lenses of dark brown Lean Clay	5		BC=18 32 42									
355	20		Fine grained, medium plasticity fines, light yellowish brown to light gray, moist, very hard, increase in clay content, decrease in sand content, lenses of Sand	6		BC=18 35 50/5.5"									
350	25		Fine to coarse grained, low plasticity fines, gray to brown, trace organic smell odor, moist, very hard, lenses of Sand throughout, dark brown to black lenses of old Top Soil	7		BC=16 35 42									
345	30		Fine grained, medium plasticity fines, gray to dark brown, trace organic smell odor, moist, very hard, black lenses of old Top Soil	8		BC=12 31 48									
340															

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REVISED:	6/2/2015

BORING LOG B-4 (2012)

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

PLATE
A-8

Date Begin - End:	4/24/12	**Drill Company:**	Scott's Drilling	**BORING LOG B-4 (2012)**	
Logged By:	E. Koprulu	**Drill Crew:**			
Hor.-Vert. Datum:	NAD83 - NAD83	**Drill Equipment:**	CME-55	**Hammer Type - Drop:**	140 lb. Automatic - 30"
Angle from Vert.:	0 degrees	**Exploration Method:**	Hollow Stem Auger		
Weather:	Sunny	**Auger Diameter:**	8 inches		

FIELD EXPLORATION

Latitude: 33.21102° N
Longitude: 117.29288° W
Approximate Surface Elevation (ft): 374.0

Surface Condition: Bare Earth and Grass

Approximate Elevation (feet)	Depth (feet)	Graphical Log	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. blows/6 in	Recovery
			9		BC=20 40 50/5"	
		Silty SAND (SM): fine grained, non-plastic fines, gray, moist, very dense				
335						
	40	**Clayey SAND (SC)**: fine grained, low plasticity fines, white to light brown, moist, very dense, caliche	10		BC=17 42 50	
330						
	45	**Sandy CLAY (CL)**: fine grained, medium plasticity fines, dark gray to black, moist, very hard	11		BC=19 38 50	
325						
	50	Fine grained, low plasticity fines, dark gray, moist, very hard, increase in Sand content, reddish brown and gray sand lenses	12		BC=15 29 46	
320						
	55	Fine to medium grained, low plasticity fines, gray, moist, hard, black colored CL-CH at shoe of sampler	13		BC=12 26 28	
315						
	60	**Lean to Fat CLAY (CL-CH)**: fine grained, medium plasticity fines, dark gray to black, moist, hard	14		BC=16 22 34	
310						
	65	Fine grained, medium plasticity fines, dark gray to black, moist, very hard, increase in sand content	15		BC=19 30 40	
305		**Young Colluvial Deposits (Qyc)**				

LABORATORY RESULTS

USCS Symbol	Moisture Content (%)	Dry Density (pcf)	Passing No.4 Sieve (%)	Passing #200 Sieve (%)	Liquid Limit (NV=No Value)	Plasticity Index (NP=No Plasticity)	Other Tests/ Remarks

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BORING LOG B-4 (2012)

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

PLATE

A-9

BORING LOG B-4 (2012)

Date Begin - End:	4/24/12	**Drill Company:**	Scott's Drilling		
Logged By:	E. Koprulu	**Drill Crew:**			
Hor.-Vert. Datum:	NAD83 - NAD83	**Drill Equipment:**	CME-55	**Hammer Type - Drop:**	140 lb. Automatic - 30"
Angle from Vert.:	0 degrees	**Exploration Method:**	Hollow Stem Auger		
Weather:	Sunny	**Auger Diameter:**	8 inches		

FIELD EXPLORATION | LABORATORY RESULTS

Latitude: 33.21102° N
Longitude: 117.29288° W
Approximate Surface Elevation (ft): 374.0

Surface Condition: Bare Earth and Grass

Approximate Elevation (feet)	Depth (feet)	Graphical Log	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. blows/6 in	Recovery	USCS Symbol	Moisture Content (%)	Dry Density (pcf)	Passing No.4 Sieve (%)	Passing #200 Sieve (%)	Liquid Limit (NV=No Value)	Plasticity Index (NP=No Plasticity)	Other Tests/ Remarks
			16		BC=15 32 40									
300	75		17		BC=18 37 50									CONSOL
295	80		18		BC=39 50/4"									

Young Colluvial Deposits (Qyc)
Fat CLAY (CH): fine grained, high plasticity fines, black, moist, very hard *(continued)*

Fine grained, high plasticity fines, black, moist, very hard

Santiago Formation (Tsa)
CLAYSTONE excavates as **Sandy CLAY (CL):** fine to medium grained, low plasticity fines, gray, moist, very hard

The boring was terminated at approximately 81 feet below ground surface. Boring was backfilled with bentonite on April 24, 2012.

290 85
285 90
280 95
275 100
270

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling.
GENERAL NOTES:
The boring location and elevation are approximate and were estimated by BHA, Inc.
A Garmin etrex GPS unit was used to locate the boring with an accuracy of 5 to 10 feet.

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BORING LOG B-4 (2012)

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PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

PLATE
A-10

Date Begin - End:	4/24/12 - 4/25/12	**Drill Company:**	Scott's Drilling	**BORING LOG B-5 (2012)**	
Logged By:	E. Koprulu	**Drill Crew:**			
Hor.-Vert. Datum:	NAD83 - NAD83	**Drill Equipment:**	CME-55	**Hammer Type - Drop:**	140 lb. Automatic - 30"
Angle from Vert.:	0 degrees	**Exploration Method:**	Hollow Stem Auger		
Weather:	Sunny	**Auger Diameter:**	8 inches		

FIELD EXPLORATION | LABORATORY RESULTS

Latitude: 33.21074° N
Longitude: 117.29347° W
Approximate Surface Elevation (ft): 372.0

Surface Condition: Bare Earth and Grass

Approximate Elevation (feet)	Depth (feet)	Graphical Log	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. blows/6 in	Recovery	USCS Symbol	Moisture Content (%)	Dry Density (pcf)	Passing No.4 Sieve (%)	Passing #200 Sieve (%)	Liquid Limit (NV=No Value)	Plasticity Index (NP=No Plasticity)	Other Tests/ Remarks
370	0													**Artificial Fill** **Silty SAND (SM)**: fine to coarse grained, non-plastic fines, gray, moist, dense
365	5		1		BC=15 24 29									Fine to coarse grained, non-plastic fines, gray, moist, dense, increase in grain size
360	10		2		BC=18 28 38									**Clayey SAND (SC)**: fine to coarse grained, non-plastic fines, gray to dark gray, moist, very dense
355	15													
350	20		3		BC=10 12 13									Fine grained, low plasticity fines, gray to dark gray, moist, medium dense, increase in Clay content
345	25													
340	30		4		BC=8 11 13									**Sandy CLAY (CL)**: fine grained, low plasticity fines, light brown to light gray, moist, firm

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BORING LOG B-5 (2012)

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PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

PLATE
A-11

Date Begin - End:	4/24/12 - 4/25/12	**Drill Company:**	Scott's Drilling	**BORING LOG B-5 (2012)**	
Logged By:	E. Koprulu	**Drill Crew:**			
Hor.-Vert. Datum:	NAD83 - NAD83	**Drill Equipment:**	CME-55	**Hammer Type - Drop:**	140 lb. Automatic - 30"
Angle from Vert.:	0 degrees	**Exploration Method:**	Hollow Stem Auger		
Weather:	Sunny	**Auger Diameter:**	8 inches		

FIELD EXPLORATION | LABORATORY RESULTS

Latitude: 33.21074° N
Longitude: 117.29347° W
Approximate Surface Elevation (ft): 372.0

Surface Condition: Bare Earth and Grass

Approximate Elevation (feet)	Depth (feet)	Graphical Log	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. blows/6 in	Recovery	USCS Symbol	Moisture Content (%)	Dry Density (pcf)	Passing No.4 Sieve (%)	Passing #200 Sieve (%)	Liquid Limit (NV=No Value)	Plasticity Index (NP=No Plasticity)	Other Tests/ Remarks
335														
	40		5		BC=10 15 21									
330														
	45													
325														
	50		6		BC=23 19 15									
320														
	55													
315														
	60		7		BC=8 13 15									
310														
	65													
305														

Fine to medium grained, low plasticity fines, light gray to reddish brown, moist, hard, trace caliche, 3-inch thick lense of Sand

CALICHE: dense, entire sample Caliche

Fine to coarse grained, low plasticity fines, light gray to brown, moist, hard, some rootlets

Young Colluvial Deposits (Qyc)
Fat CLAY (CH): high plasticity fines, black, organic odor, moist, hard

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BORING LOG B-5 (2012)

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OCEANSIDE, CALIFORNIA

PLATE
A-12

BORING LOG B-5 (2012)

Date Begin - End:	4/24/12 - 4/25/12	**Drill Company:**	Scott's Drilling		
Logged By:	E. Koprulu	**Drill Crew:**			
Hor.-Vert. Datum:	NAD83 - NAD83	**Drill Equipment:**	CME-55	**Hammer Type - Drop:**	140 lb. Automatic - 30"
Angle from Vert.:	0 degrees	**Exploration Method:**	Hollow Stem Auger		
Weather:	Sunny	**Auger Diameter:**	8 inches		

Approximate Elevation (feet)	Depth (feet)	Graphical Log	FIELD EXPLORATION: Latitude: 33.21074° N, Longitude: 117.29347° W, Approximate Surface Elevation (ft): 372.0, Surface Condition: Bare Earth and Grass	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. blows/6 in	Recovery	USCS Symbol	Moisture Content (%)	Dry Density (pcf)	Passing No.4 Sieve (%)	Passing #200 Sieve (%)	Liquid Limit (NV=No Value)	Plasticity Index (NP=No Plasticity)	Other Tests/ Remarks
300			**Santiago Formation (Tsa)** **CLAYSTONE** excavates as **Sandy CLAY (CL):** fine grained, medium plasticity fines, gray, moist, very hard, strongly cemented	8		BC=15 50/3"									
	75		The boring was terminated at approximately 71 feet below ground surface. The Boring was backfilled with bentonite on April 25, 2012.												
295															
	80														
290															
	85														
285															
	90														
280															
	95														
275															
	100														
270															

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling.
GENERAL NOTES:
The boring location and elevation are approximate and were estimated by BHA, Inc.
A Garmin etrex GPS unit was used to locate the boring with an accuracy of 5 to 10 feet.

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BORING LOG B-5 (2012)

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PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

PLATE
A-13

BORING LOG B-6 (2012)

Date Begin - End:	4/26/12	**Drill Company:**	Scott's Drilling		
Logged By:	E. Koprulu	**Drill Crew:**			
Hor.-Vert. Datum:	NAD83 - NAD83	**Drill Equipment:**	CME-55	**Hammer Type - Drop:**	140 lb. Automatic - 30"
Angle from Vert.:	0 degrees	**Exploration Method:**	Hollow Stem Auger		
Weather:	Sunny	**Auger Diameter:**	8 inches		

Latitude: 33.21047° N
Longitude: 117.29423° W
Approximate Surface Elevation (ft): 366.0

Surface Condition: Bare Earth and Grass

Approximate Elevation (feet)	Depth (feet)	Graphical Log	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. blows/6 in	Recovery	USCS Symbol	Moisture Content (%)	Dry Density (pcf)	Passing No.4 Sieve (%)	Passing #200 Sieve (%)	Liquid Limit (NV=No Value)	Plasticity Index (NP=No Plasticity)	Other Tests/ Remarks
365	0													**Artificial Fill** **Clayey SAND (SC)**: fine to coarse grained, non-plastic fines, gray, moist, dense
	5		1		BC=16 24 42									Fine to coarse grained, non-plastic fines, gray, moist, very dense
360														
	10		2		BC=16 37 45									Coarse grained, non-plastic fines, gray, moist, very dense, decrease in fines content, predominantly coarse grained sand
355														
	15													
350														
	20		3		BC=16 25 39									Coarse grained, non-plastic fines, gray, moist, very dense
345														
	25		4		BC=20 30 38									**Sandy CLAY (CL)**: fine to coarse grained, low plasticity fines, grayish brown, moist, very hard
340														
	30		5		BC=23 47 50									Fine grained, low plasticity fines, light brown, moist, very hard, gray colored Sand lenses throughout
335														

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BORING LOG B-6 (2012)

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

PLATE
A-14

Date Begin - End:	4/26/12	**Drill Company:**	Scott's Drilling	**BORING LOG B-6 (2012)**	
Logged By:	E. Koprulu	**Drill Crew:**			
Hor.-Vert. Datum:	NAD83 - NAD83	**Drill Equipment:**	CME-55	**Hammer Type - Drop:**	140 lb. Automatic - 30"
Angle from Vert.:	0 degrees	**Exploration Method:**	Hollow Stem Auger		
Weather:	Sunny	**Auger Diameter:**	8 inches		

FIELD EXPLORATION | LABORATORY RESULTS

Latitude: 33.21047° N
Longitude: 117.29423° W
Approximate Surface Elevation (ft): 366.0

Surface Condition: Bare Earth and Grass

Approximate Elevation (feet)	Depth (feet)	Graphical Log	Description	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. blows/6 in	Recovery	USCS Symbol	Moisture Content (%)	Dry Density (pcf)	Passing No.4 Sieve (%)	Passing #200 Sieve (%)	Liquid Limit (NV=No Value)	Plasticity Index (NP=No Plasticity)	Other Tests/ Remarks
330			**Sandy CLAY (CL)**: fine to coarse grained, low plasticity fines, grayish brown, moist, very hard *(continued)*												
325	40		Fine grained, low plasticity fines, light brown to white, moist, very hard, abundant caliche	6		BC=8 15 19									
			Pieces of debris (metal pieces) observed in soil cuttings												
320	45		**Fat CLAY (CH)**: high plasticity fines, dark brown to black, trace organic odor, moist, hard, some reddish brown to gray colored Sand lenses, some rootlets	7		BC=8 11 18									
315	50		**Sandy CLAY (CL)**: fine grained, medium plasticity fines, grayish brown, moist, hard	8		BC=13 25 35									
310	55		Soil cuttings indicate black colored Clay with strong organic smell from approximately 50 to 58 feet												
305	60		Fine grained, low plasticity fines, grayish brown, moist, very hard	9		BC=17 18 28									
300	65		Becomes firm to hard	10		BC=6 10 14									
			Fat CLAY (CH): trace fine grained, high plasticity fines, black, organic smell odor, moist, firm to hard												

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BORING LOG B-6 (2012)

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

PLATE
A-15

Date Begin - End:	4/26/12	**Drill Company:**	Scott's Drilling	**BORING LOG B-6 (2012)**	
Logged By:	E. Koprulu	**Drill Crew:**			
Hor.-Vert. Datum:	NAD83 - NAD83	**Drill Equipment:**	CME-55	**Hammer Type - Drop:**	140 lb. Automatic - 30"
Angle from Vert.:	0 degrees	**Exploration Method:**	Hollow Stem Auger		
Weather:	Sunny	**Auger Diameter:**	8 inches		

FIELD EXPLORATION | LABORATORY RESULTS

Latitude: 33.21047° N
Longitude: 117.29423° W
Approximate Surface Elevation (ft): 366.0

Surface Condition: Bare Earth and Grass

Approximate Elevation (feet)	Depth (feet)	Graphical Log	Sample Number	Sample Type	Blow Counts(BC)= Uncorr. blows/6 in	Recovery	USCS Symbol	Moisture Content (%)	Dry Density (pcf)	Passing No.4 Sieve (%)	Passing #200 Sieve (%)	Liquid Limit (NV=No Value)	Plasticity Index (NP=No Plasticity)	Other Tests/ Remarks
295														
	75													
290			11		BC=16 24 31									CONSOL
	80													
285			12		BC=18 50/5"									

Fat CLAY (CH): trace fine grained, high plasticity fines, black, organic smell odor, moist, firm to hard *(continued)*

Santiago Formation (Tsa)
CLAYSTONE excavates as **Sandy CLAY (CL):** fine grained, medium plasticity fines, brown, moist, very hard

Low plasticity fines, gray, moist, iron-oxide staining

The boring was terminated at approximately 81 feet below ground surface. Boring was backfilled with bentonite on April 26, 2012.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling.
GENERAL NOTES:
The boring location and elevation are approximate and were estimated by BHA, Inc.
A Garmin etrex GPS unit was used to locate the boring with an accuracy of 5 to 10 feet.

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BORING LOG B-6 (2012)

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

PLATE
A-16

TEST PIT LOG TP-4

Date Begin - End:	4/23/12	**Excavation Co.:**	Cut N Core
Logged By:	E. Koprulu	**Excavation Crew:**	
Hor.-Vert. Datum:	NAD83 - NAD83	**Excavation Equip.:**	CAT 430E Backhoe
Angle from Vert.:	0 degrees	**Excav. Dimensions:**	36 inches
Weather:	Sunny		

Approximate Elevation (feet)	Depth (feet)	Graphical Log	FIELD EXPLORATION	Sample Number	Sample Type	LABORATORY RESULTS: USCS Symbol	Moisture Content (%)	Dry Density (pcf)	Passing No.4 Sieve (%)	Passing #200 Sieve (%)	Liquid Limit (NV=No Value)	Plasticity Index (NP=No Plasticity)	Other Tests/ Remarks
			Latitude: 33.21125° N Longitude: 117.29421° W Approximate Surface Elevation (ft): 368.0 Surface Condition: Bare Earth and Grass										
			Artificial Fill **Clayey SAND (SC)**: fine to coarse grained, low plasticity fines, light brown, moist, dense, chunks of clay throughout	1									
365	5		**Santiago Formation** **T(sa) SANDSTONE:** Excavates as **Clayey SAND (SC)**: fine to coarse grained, low plasticity fines, gray, moist, dense	2									
360	10												
355	15												
350	20												
345	25												
340	30												
335													

The test pit was terminated at approximately 6 feet below ground surface. Test Pit was backfilled with excavated material on April 23, 2012.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during excavation.
GENERAL NOTES:
The test pit location and elevation are approximate and were estimated by BHA, Inc.
A Garmin etrex GPS unit was used to locate the test pit with an accuracy of 5 to 10 feet.
There was no shoring used for the test pit exploration.

TP-4

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TEST PIT LOG TP-4

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

PLATE
A-20

Date Begin - End: 4/23/12 **Excavation Co.:** Cut N Core

Logged By: E. Koprulu **Excavation Crew:**

Hor.-Vert. Datum: NAD83 - NAD83 **Excavation Equip.:** CAT 430E Backhoe

Angle from Vert.: 0 degrees **Excav. Dimensions:** 36 inches

Weather: Sunny

TEST PIT LOG TP-5

Approximate Elevation (feet)	Depth (feet)	Graphical Log	FIELD EXPLORATION	Sample Number	Sample Type	LABORATORY RESULTS: USCS Symbol	Moisture Content (%)	Dry Density (pcf)	Passing No.4 Sieve (%)	Passing #200 Sieve (%)	Liquid Limit (NV=No Value)	Plasticity Index (NP=No Plasticity)	Other Tests/ Remarks
			Latitude: 33.21126° N Longitude: 117.29373° W Approximate Surface Elevation (ft): 368.0 Surface Condition: Bare Earth and Grass										
365	0		**Artificial Fill** **Sandy CLAY (CL)**: fine to coarse grained, low plasticity fines, light brown, moist, dense, chunks of clay throughout	1									
	5		**Santiago Formation** **T(sa) SANDSTONE:** Excavates as **Silty SAND (SM)**: fine to coarse grained, low plasticity fines, gray, moist, dense, pockets of dark gray Clay, concreteion observed at approximately 5.5 feet	2									
360	10												
355	15												
350	20												
345	25												
340	30												
335													

The test pit was terminated at approximately 6 feet below ground surface. Test Pit was backfilled with excavated material on April 23, 2012.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during excavation.
GENERAL NOTES:
The test pit location and elevation are approximate and were estimated by BHA, Inc.
A Garmin etrex GPS unit was used to locate the test pit with an accuracy of 5 to 10 feet.
There was no shoring used for the test pit exploration.

TP-5

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TEST PIT LOG TP-5

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

PLATE
A-21

TEST PIT LOG TP-6

Date Begin - End:	4/23/12	**Excavation Co.:**	Cut N Core
Logged By:	E. Koprulu	**Excavation Crew:**	
Hor.-Vert. Datum:	NAD83 - NAD83	**Excavation Equip.:**	CAT 430E Backhoe
Angle from Vert.:	0 degrees	**Excav. Dimensions:**	36 inches
Weather:	Sunny		

Approximate Elevation (feet)	Depth (feet)	Graphical Log	FIELD EXPLORATION	Sample Number	Sample Type	LABORATORY RESULTS: USCS Symbol	Moisture Content (%)	Dry Density (pcf)	Passing No.4 Sieve (%)	Passing #200 Sieve (%)	Liquid Limit (NV=No Value)	Plasticity Index (NP=No Plasticity)	Other Tests/ Remarks
			Latitude: 33.21125° N Longitude: 117.29333° W Approximate Surface Elevation (ft): 374.0 Surface Condition: Bare Earth and Grass										
			Artificial Fill **Clayey SAND (SC)**: trace gravel, fine to coarse grained, non-plastic fines, light brown, moist, dense	1									
370	5		**Silty SAND (SM)**: fine to coarse grained, non-plastic fines, gray, moist, dense, weakly cemented chunks mixed	2									
365	10												
360	15												
355	20												
350	25												
345	30												
340													

The test pit was terminated at approximately 9.5 feet below ground surface. Test Pit was backfilled with excavated material on April 23, 2012.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during excavation.
GENERAL NOTES:
The test pit location and elevation are approximate and were estimated by BHA, Inc.
A Garmin etrex GPS unit was used to locate the test pit with an accuracy of 5 to 10 feet.
There was no shoring used for the test pit exploration.

TP-6

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www.kleinfelder.com PH. 858-320-2000 FAX. 858-320-2001

PROJECT NO.	124202
DRAWN BY:	EK
CHECKED BY:	DH
DATE:	5/7/2012
REVISED:	

TEST PIT LOG TP-6

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

PLATE
A-22
PAGE: 1 of 1

Date Begin - End: 4/23/12 **Excavation Co.:** Cut N Core

Logged By: E. Koprulu **Excavation Crew:**

Hor.-Vert. Datum: NAD83 - NAD83 **Excavation Equip.:** CAT 430E Backhoe

Angle from Vert.: 0 degrees **Excav. Dimensions:** 36 inches

Weather: Sunny

TEST PIT LOG TP-7

FIELD EXPLORATION

Latitude: 32.21111° N
Longitude: 117.29319° W
Approximate Surface Elevation (ft): 373.0

Surface Condition: Bare Earth and Grass

Approximate Elevation (feet)	Depth (feet)	Graphical Log	Sample Number	Sample Type	USCS Symbol	Moisture Content (%)	Dry Density (pcf)	Passing No.4 Sieve (%)	Passing #200 Sieve (%)	Liquid Limit (NV=No Value)	Plasticity Index (NP=No Plasticity)	Other Tests/ Remarks
370	0	**Artificial Fill**	1									
		Clayey SAND (SC): fine to coarse grained, non-plastic fines, light brownish gray, moist, dense	2									
		Silty SAND (SM): fine to medium grained, non-plastic fines, light gray, moist, dense										
		Silty SAND (SM): coarse grained, non-plastic fines, gray, moist, dense	3									
365	5	**Clayey SAND (SC)**: fine to coarse grained, non-plastic fines, gray, moist, dense	4									
360	10											
355	15											
350	20											
345	25											
340	30											

The test pit was terminated at approximately 8 feet below ground surface. Test Pit was backfilled with excavated material on April 23, 2012.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during excavation.

GENERAL NOTES:
The test pit location and elevation are approximate and were estimated by BHA, Inc.
A Garmin etrex GPS unit was used to locate the test pit with an accuracy of 5 to 10 feet.
There was no shoring used for the test pit exploration.

TP-7

KLEINFELDER
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5015 Shoreham Place
San Diego, CA 92122
www.kleinfelder.com PH. 858-320-2000 FAX. 858-320-2001

PROJECT NO.	124202
DRAWN BY:	EK
CHECKED BY:	DH
DATE:	5/7/2012
REVISED:	

TEST PIT LOG TP-7

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CALIFORNIA

PLATE

A-23

PAGE: 1 of 1

APPENDIX B

LABORATORY TEST RESULTS

APPENDIX B
LABORATORY TEST RESULTS

GENERAL

Laboratory tests were performed on selected samples as an aid in classifying the soils and to evaluate physical properties of the soils that may affect foundation design and construction procedures. The tests were performed in general conformance with the current ASTM or California Department of Transportation (Caltrans) standards. A description of the laboratory-testing program is presented below.

CLASSIFICATION

Soils were visually and texturally classified in accordance with the Unified Soil Classification System (USCS) in general accordance with ASTM D 2488. Soil classifications are indicated on the boring logs in Appendix A.

LABORATORY MOISTURE AND DENSITY DETERMINATIONS

Natural moisture content and dry density tests were performed on selected intact samples collected and moisture content was performed on selected disturbed samples. Moisture content was evaluated in general accordance with ASTM Test Method D 2216; dry unit weight was evaluated using procedures similar to ASTM Test Method D 2937. This data is included on the boring logs in Appendix A.

GRADATION ANALYSIS

Sieve and hydrometer analyses were performed on samples from the site to evaluate the gradation characteristics of the soil and to aid in its classification. The tests were performed in general accordance with ASTM Test Methods D6913 and ASTM D422. The results of the sieve analyses are shown in Figures B1 and B2.

WASH SIEVE

The percent passing the No. 200 sieve of selected soil samples was performed by wash sieving in accordance with ASTM Standard Test Method D1140. The results of the tests are presented on the boring logs in Appendix A.

DIRECT SHEAR TEST

Three-point direct shear tests were performed on selected soil samples to evaluate the shear strength of representative site soils encountered. The soil samples were tested in a saturated state at three different normal pressures in general accordance with ASTM Test Method D 3080. The test results are presented in Figures B3 through B5.

ATTERBERG LIMITS

Atterberg limit testing was performed on soil samples to assist in classification. Testing was performed in general accordance with ASTM D4318. Results are presented on Figure B-6.

R-VALUE TESTS

Two resistance values (R-value) test were performed on a bulk soil samples obtained within the proposed site to evaluate pavement support characteristics of the near-surface onsite soils. R-value tests were performed in accordance with ASTM Standard Test Method D4829. The test results are presented as Figures B-7and B-8.

MAXIMUM DRY DENSITY AND OPTIMUM MOISTURE CONTENT

The maximum dry density and optimum moisture content of a representative soil sample was evaluated in general accordance with ASTM Test Method D1557. The test result is summarized on Figure B-9

CORROSION TESTING

The sulfate and chloride contents, pH, and resistivity of selected samples were evaluated in general accordance with California Test 643. Our boring logs and these test results should be reviewed by a qualified corrosion engineer to evaluate the general soil stratigraphy corrosion potential with respect to construction materials to evaluate whether further testing is warranted. The results of the preliminary corrosive screening are presented on Figures B-10 through B-12 and summarized in Table B1 below.

Table B1

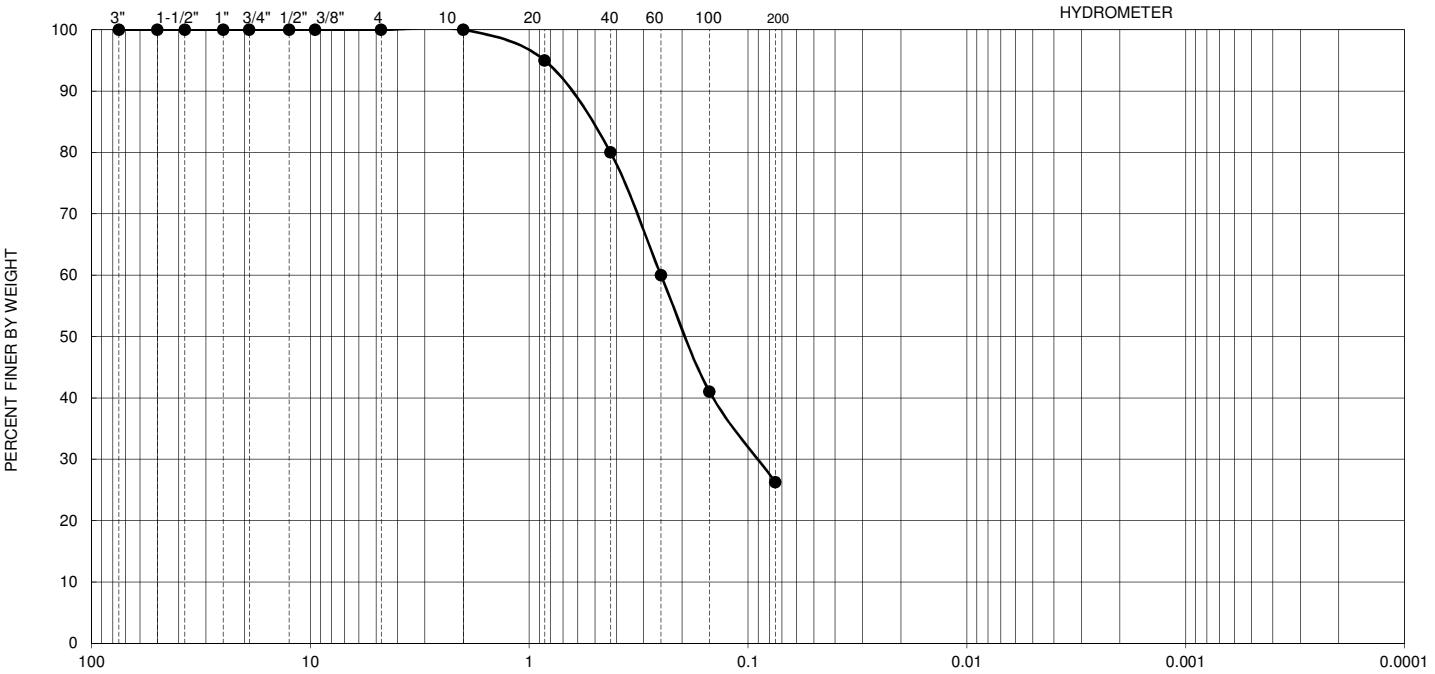
Preliminary Corrosion Test Results

BORING / SAMPLE NO.	DEPTH (FEET)	MINIMUM RESISTIVITY (OHM-CM)	PH	SULFATE CONTENT (PPM)	CHLORIDE CONTENT (PPM)
B-3 / 1	0.5 to 5	480	8.7	210	160
B-4 / 1	0.5 to 5	870	8.9	50	50
B-5 / 1	0.5 to 5	550	8.3	70	160

Date Tested: **5/4/2015**

USCS	GRAVEL		SAND			FINES	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay

U.S. STANDARD SIEVE NUMBERS



Boring No.	Sample No.	Depth (ft)	Passing 200 (%)	USCS Classification
B3	2	2.5-4	26.3	SC

Sample Description	Light Yellow Brown Clayey SAND

Sieve Analysis	Sieve Size		% Passing
	3"	75 mm	100
	2"	50 mm	100
	1.5"	37.5 mm	100
	1"	25 mm	100
	3/4"	19 mm	100
	1/2"	12.5 mm	100
	3/8"	9.5 mm	100
	No. 4	4.75 mm	100
	No. 10	2.0 mm	100
	No. 20	0.85 mm	95
	No. 40	0.425 mm	80
	No. 60	0.25 mm	60
	No 100	0.15 mm	41
	No 200	.075 mm	26.3

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 6913

KLEINFELDER
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Tested by:	Uly P.	Ck by:	TG
Project No.	20154777	Date:	12-Jun-15

GRADATION TEST RESULTS

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CA

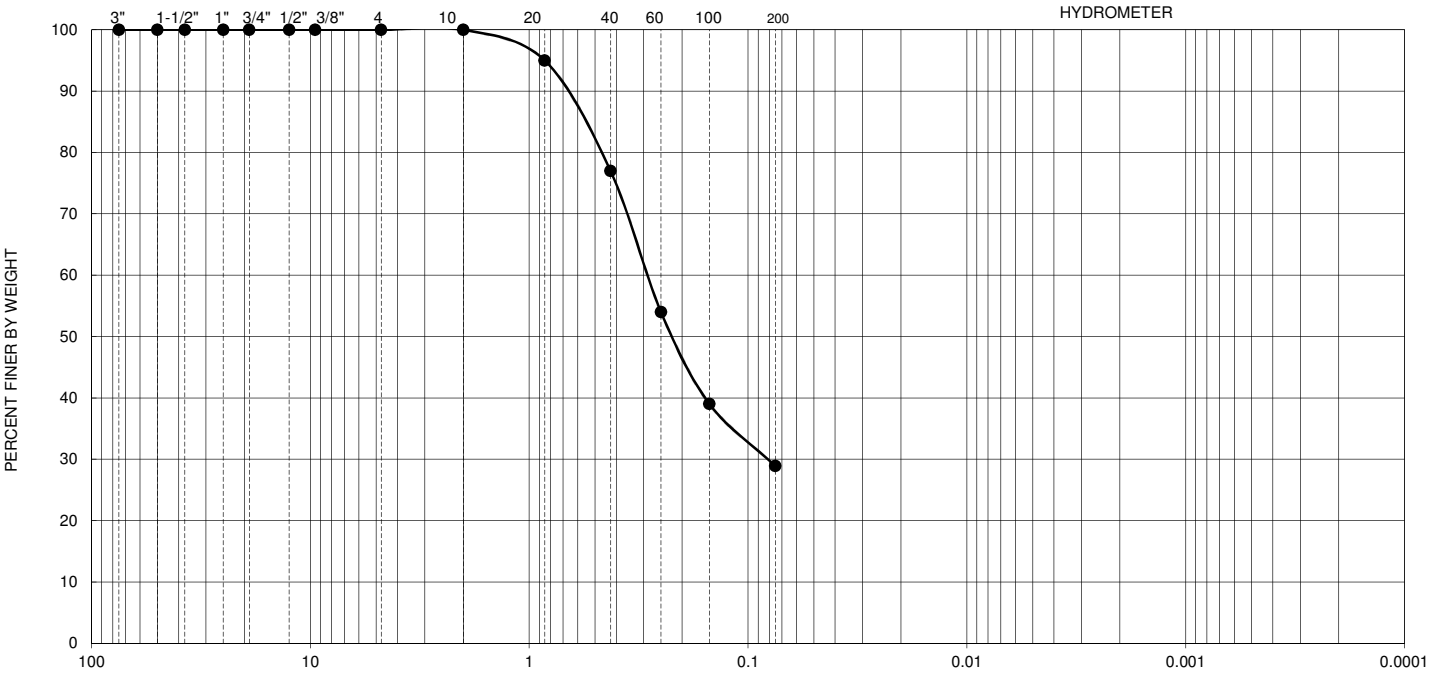
FIGURE

B-1

Date Tested: **5/4/2015**

USCS	GRAVEL		SAND			FINES	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay

U.S. STANDARD SIEVE NUMBERS



Boring No.	Sample No.	Depth (ft)	Passing 200 (%)	USCS Classification
B4	4	10-11.5	28.9	SM

Sample Description	Pale Yellow Silty SAND

Sieve Analysis	Sieve Size		% Passing
	3"	75 mm	100
	2"	50 mm	100
	1.5"	37.5 mm	100
	1"	25 mm	100
	3/4"	19 mm	100
	1/2"	12.5 mm	100
	3/8"	9.5 mm	100
	No. 4	4.75 mm	100
	No. 10	2.0 mm	100
	No. 20	0.85 mm	95
	No. 40	0.425 mm	77
	No. 60	0.25 mm	54
	No 100	0.15 mm	39
	No 200	.075 mm	28.9

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 6913

KLEINFELDER
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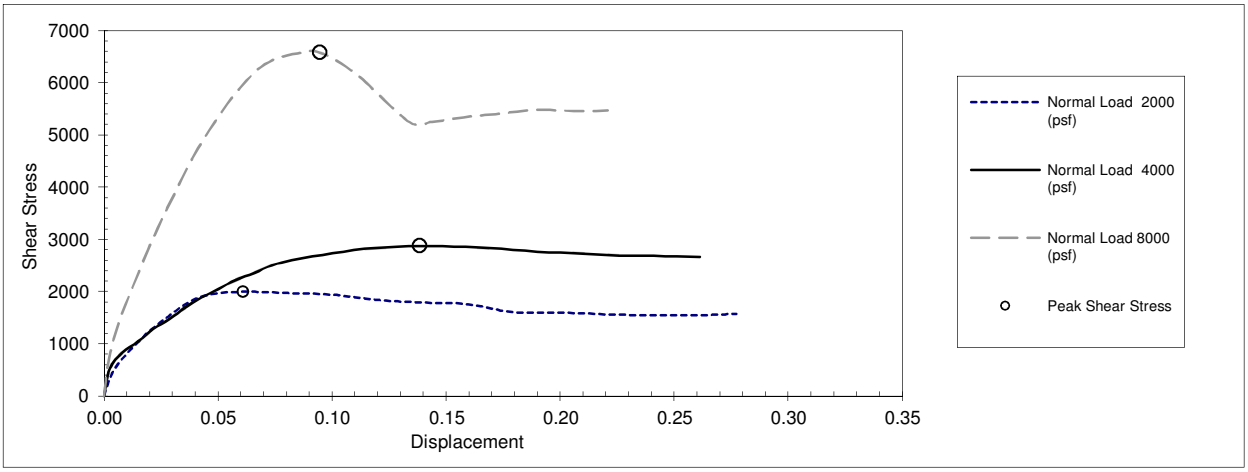
Tested by:	Uly P.	Ck by:	TG
Project No.	20154777	Date:	12-Jun-15

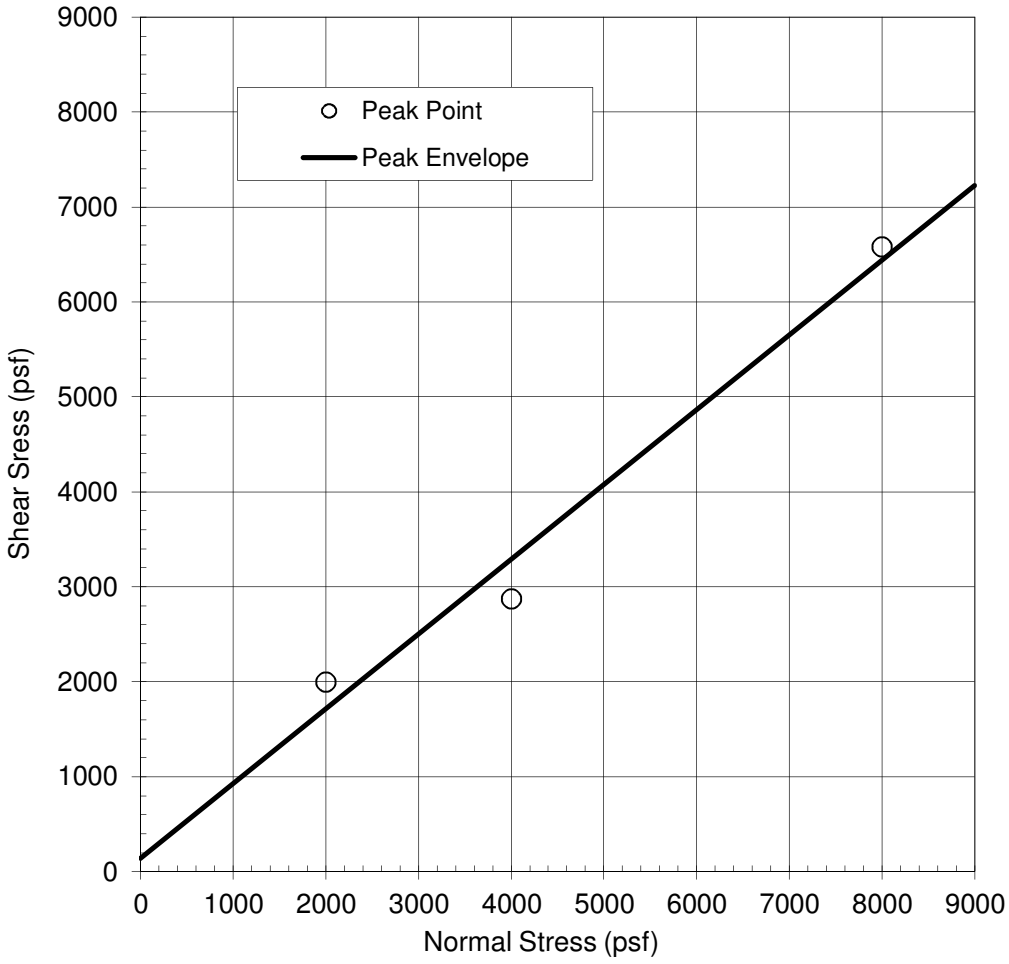
GRADATION TEST RESULTS

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CA

FIGURE

B-2





Strain Rate = 0.0118 inch/min

Date Tested: 4/29/2015

				Interpreted Shear Strength			
				Peak			
Boring No.	Sample No.	Depth	UCSC	Cohesion (psf)	Friction Angle (deg)		
B-2	2	2.5'-4'	SM	140	38.2		

Sample description: Light Yellowish Brown Silty SAND

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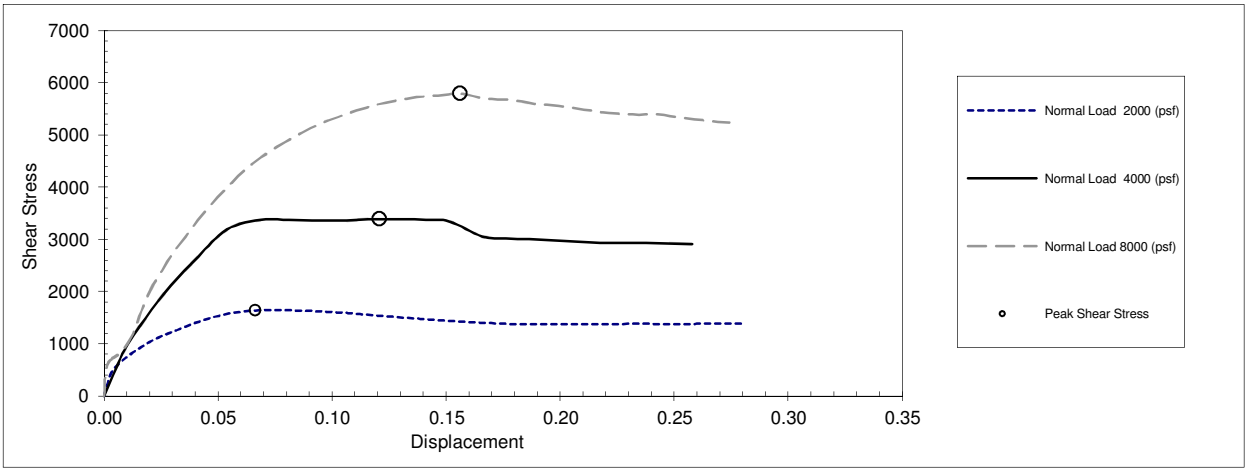
Tested by:	Uly P.	Ck by: TG
Project #	20154777	12-Jun-15

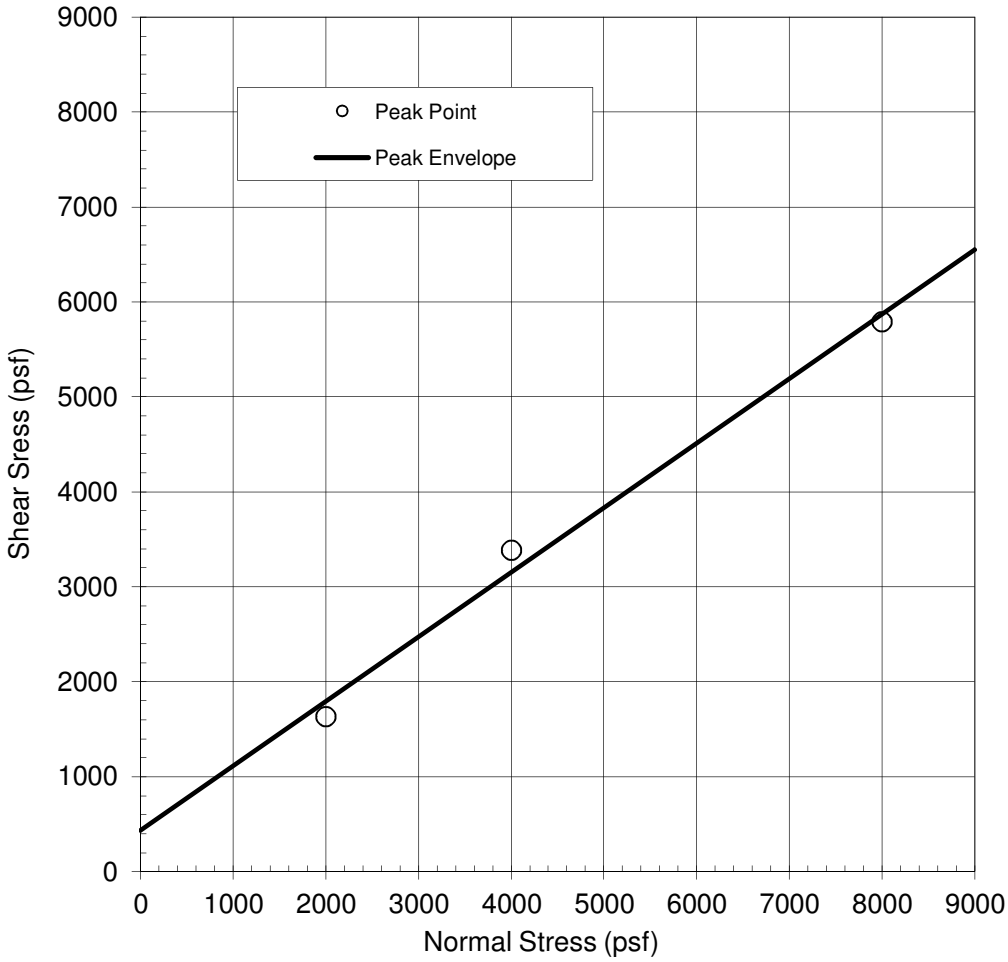
Direct Shear Test Results (ASTM D 3080)

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CA

FIGURE

B-3





Strain Rate = 0.0118 inch/min

Date Tested: 4/30/2015

				Interpreted Shear Strength			
				Peak			
Boring No.	Sample No.	Depth	UCSC	Cohesion (psf)	Friction Angle (deg)		
B-4	2	2.5'-5'	SC	435	34.2		

Sample description: Olive Gray Clayey SAND

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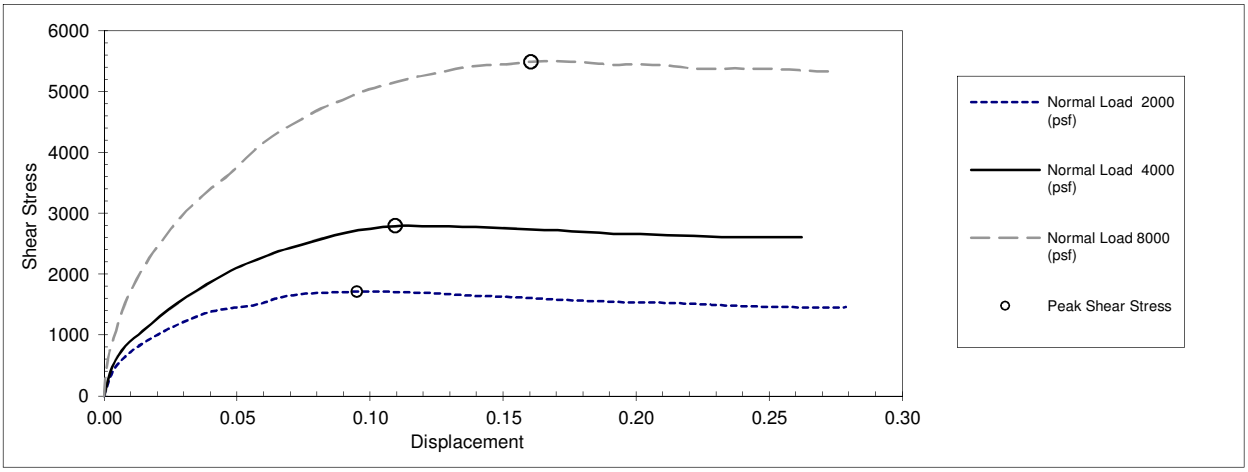
Tested by:	Uly P.	Ck by: TG
Project #	20154777	12-Jun-15

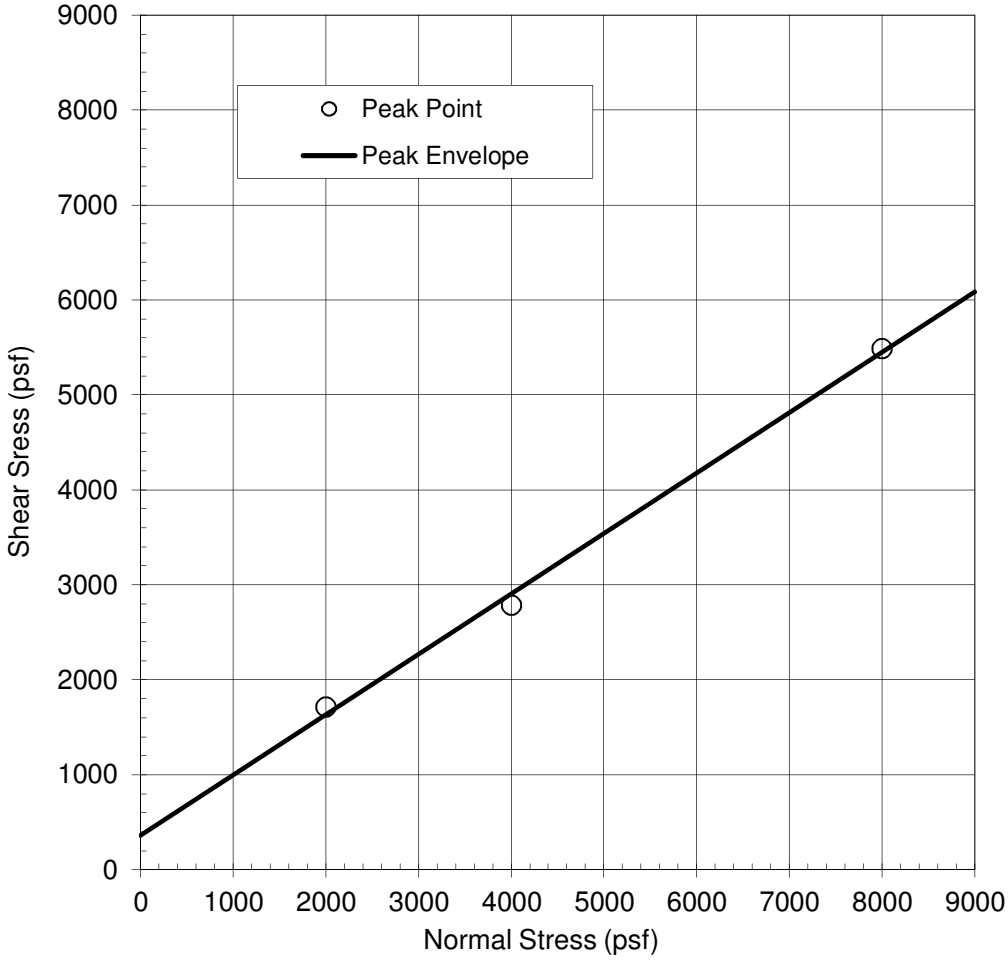
Direct Shear Test Results (ASTM D 3080)

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CA

FIGURE

B-4





Strain Rate = 0.0118 inch/min

Date Tested: 5/4/2015

				Interpreted Shear Strength			
				Peak			
Boring No.	Sample No.	Depth	UCSC	Cohesion (psf)	Friction Angle (deg)		
B-5	2	2.5'-4'	SM	362	32.4		

Sample description: Light Olive Gray Silty SAND

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Tested by:	Uly P.	Ck by: TG
Project #	20154777	12-Jun-15

Direct Shear Test Results (ASTM D 3080)

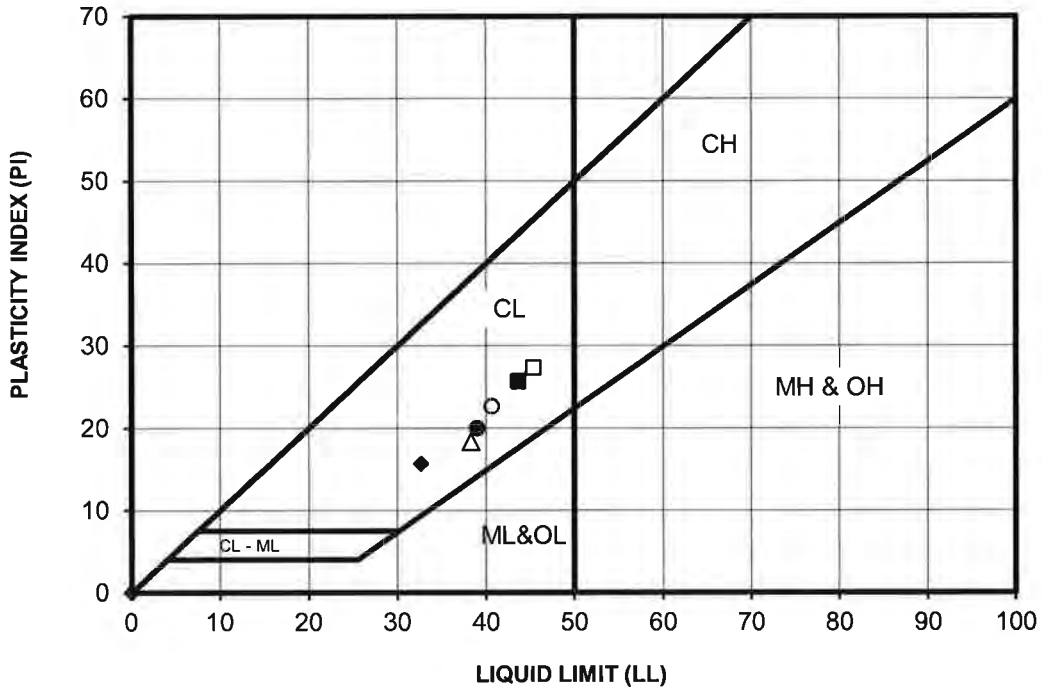
SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CA

FIGURE

B-5

Date Tested : 5/4/2015 & 5/13/2015

SYMBOL	SAMPLE NAME	DEPTH (ft)	LL	PL	PI	USCS CLASSIFICATION (Minus No. 40 Sieve Fraction)	USCS (Entire Sample)
●	B-1-4	10-11.5'	39	19	20	CL	CL
■	B-3-1	0.5-5'	44	18	26	CL	SC
◆	B-4-2	2.5-4'	33	17	16	CL	SC
○	B-4-8	30-31.5'	41	18	23	CL	CL
□	B-4-15	65-66.5'	45	18	27	CL	CL
△	B-6-5	15-16.5'	38	20	18	CL	CL
+							
◇							



PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 4318

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ATTERBERG LIMITS TEST RESULTS

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CA

FIGURE

B-6

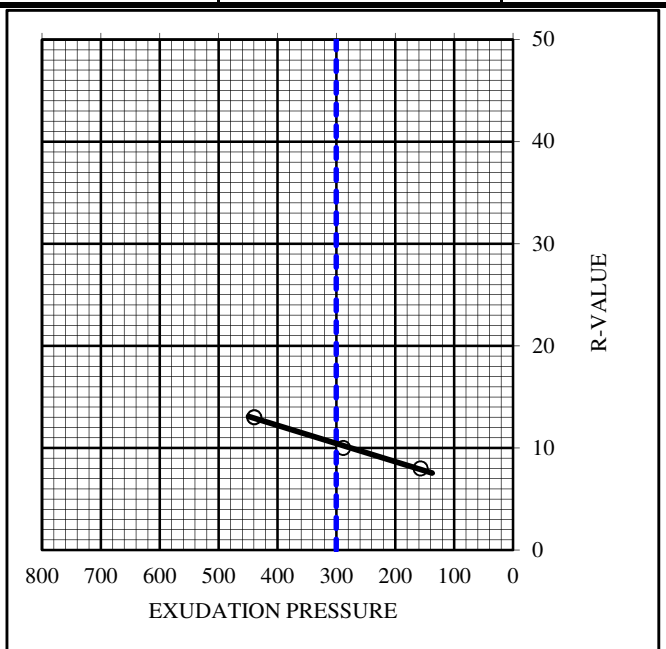
Tested by	Uly P.	Ck by:	TG
PROJECT NO: 20154777		12-Jun-15	

Boring No.	Sample No.	Depth	Description	Date Tested
B7	1	0.5-5'	Pale Olive Clayey SAND	5/6/2015

TEST SPECIMEN				
MOLD NO.	2	1	9	
FOOT PRESSURE, psi	**80**	**60**	**50**	
INITIAL MOISTURE, %	13.1	13.1	13.1	
"AS-IS" WEIGHT, g	1200	1200	1200	
DRY WEIGHT, g	1060.9	1060.9	1060.9	
WATER ADDED, ml	**40**	**52**	**64**	
COMPACTION MOISTURE, %	16.9	18.0	19.1	
HEIGHT OF BRIQUETTE, in.	**2.58**	**2.6**	**2.62**	
WEIGHT BRIQUETTE/MOLD,	**3213**	**3203.4**	**3216.4**	
WEIGHT OF MOLD, g	**2109.2**	**2103.4**	**2114.5**	
WEIGHT OF BRIQUETTE, g	1103.8	1100	1101.9	
DRY DENSITY, pcf	111.0	108.7	107.1	
STABILOMETER, 1000 lbs	**55**	**61**	**64**	
2000lbs	**134**	**139**	**144**	
DISPLACEMENT, in	**3.59**	**3.66**	**3.84**	
EXUDATION LOAD, lbs	**5515**	**3621**	**1972**	
EXUDATION PRESSURE, psi	439.1	288.3	157.0	
R-VALUE	12	9	7	
CORRECTED R-VALUE	13	10	8	
DIAL READING, END	0.0311	0.0302	0.0404	
DIAL READING, START	0.0300	0.0300	0.0400	
DIFFERENCE	0.0011	0.0002	0.0004	
EXPANSION PRESSURE, PSF	48.0	8.7	17.5	

INITIAL MOISTURE	
WET WEIGHT, g	433.8
DRY WEIGHT, g	383.5
WEIGHT OF WATER	
WEIGHT OF SAMPLE	
MOISTURE CONTENT %	13.1

R-VALUE:	**11**
Location:	



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Tested By:	Uly P.	Ck by:	TG
Job Number:	20154777	DATE:	12-Jun-15

R-Value (ASTM D2844)

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CA

FIGURE

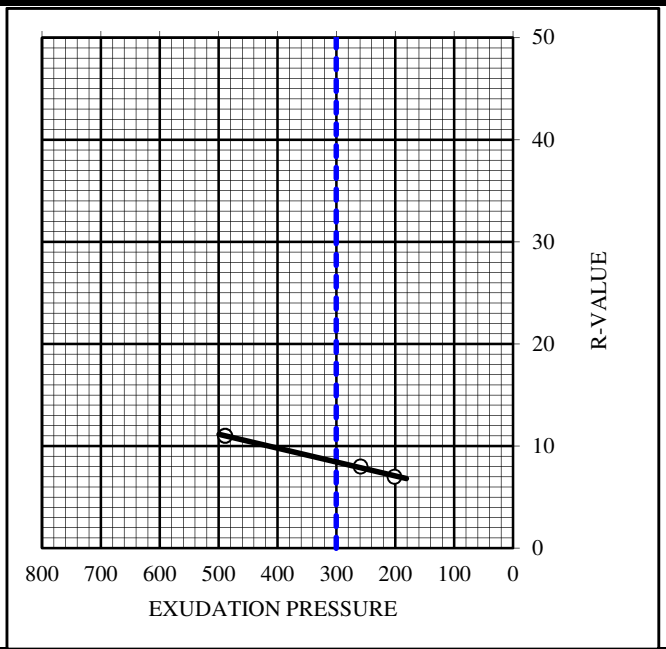
B-7

Boring No.	Sample No.	Depth	Description	Date Tested
B10	1	0.5-5'	Light Olive Gray Clayey SAND	5/6/2015

TEST SPECIMEN				
MOLD NO.	6	3	8	
FOOT PRESSURE, psi	**80**	**60**	**50**	
INITIAL MOISTURE, %	14.5	14.5	14.5	
"AS-IS" WEIGHT, g	1200	1200	1200	
DRY WEIGHT, g	1048.0	1048.0	1048.0	
WATER ADDED, ml	**30**	**45**	**58**	
COMPACTION MOISTURE, %	17.4	18.8	20.0	
HEIGHT OF BRIQUETTE, in.	**2.5**	**2.55**	**2.6**	
WEIGHT BRIQUETTE/MOLD,	**3170.7**	**3176.5**	**3174.6**	
WEIGHT OF MOLD, g	**2101**	**2105.4**	**2112.6**	
WEIGHT OF BRIQUETTE, g	1069.7	1071.1	1062	
DRY DENSITY, pcf	110.6	107.2	103.2	
STABILOMETER, 1000 lbs	**57**	**61**	**66**	
2000lbs	**136**	**142**	**145**	
DISPLACEMENT, in	**3.5**	**3.74**	**3.92**	
EXUDATION LOAD, lbs	**6142**	**3253**	**2529**	
EXUDATION PRESSURE, psi	489.0	259.0	201.4	
R-VALUE	11	8	6	
CORRECTED R-VALUE	11	8	7	
DIAL READING, END	0.0478	0.0285	0.0476	
DIAL READING, START	0.0475	0.0285	0.0482	
DIFFERENCE	0.0003	0.0000	-0.0006	
EXPANSION PRESSURE, PSF	13.1	0.0	0.0	

INITIAL MOISTURE	
WET WEIGHT, g	506.0
DRY WEIGHT, g	441.9
WEIGHT OF WATER	
WEIGHT OF SAMPLE	
MOISTURE CONTENT %	14.5

R-VALUE:	**9**
Location:	



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Tested By:	Uly P.	Ck by:	TG
Job Number:	20154777	DATE:	12-Jun-15

R-Value (ASTM D2844)

SDG&E OCEAN RANCH SUBSTATION
PACIFIC COAST BUSINESS PARK
OCEANSIDE, CA

FIGURE

B-8

KLEINFELDER
Bright People. Right Solutions.

5761 Copley Drive, Suite 100
San Diego, CA 92111
Phone: (858) 223-8500 Fax: (858) 277-1035

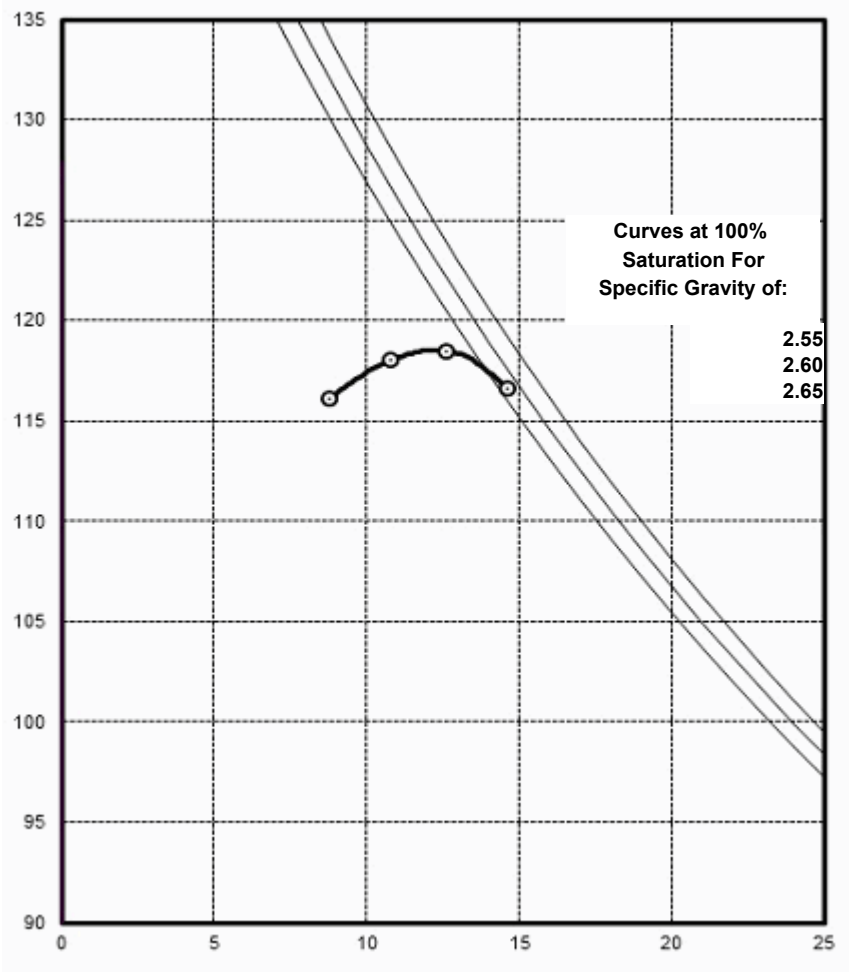
Laboratory Compaction Characteristics of Soil Using Modified Effort ASTM D 1557

Report To:

Richard Brady & Associates, Inc.
Osborn, Linda
3710 Ruffin Road
San Diego, CA 92123

Report Date: 5/14/2015
Project No.: 20154777.003A
Project: SDG&E - San Mateo Sub 12kV Breaker Proj
Task: 03-000L Lab Testing

TEST RESULTS



Sample No.: SD_20154777.B5.1
Date Sampled: 4/16/2015
Sample Location:
B-5 Sample 1 at 0.5'-5'

Material Description:
light olive brown clayey sand

Compaction Test Method:
ASTM D 1557 Method A
Maximum Dry Unit Weight (pcf): 118.5
Optimum Water Content (%): 12.3

Remarks:

Reviewed on 5/14/2015 by:

Ulysses Panuncialman
Laboratory Manager

FIGURE B-9

L A B O R A T O R Y R E P O R T

Telephone (619) 425-1993 Fax 425-7917 Established 1928

C L A R K S O N L A B O R A T O R Y A N D S U P P L Y I N C.
350 Trousdale Dr. Chula Vista, Ca. 91910 www.clarksonlab.com
A N A L Y T I C A L A N D C O N S U L T I N G C H E M I S T S

Date: May 12, 2015
Purchase Order Number: PROJ#20154777
Sales Order Number: 26878
Account Number: KLE
To:
--
Kleinfelder Inc.
550 West C Street Ste 1200
San Diego, CA 92101
Attention: Uly Panuncialman

Laboratory Number: SO5666-1 Customers Phone: 831-4600
Fax: 831-4619
Sample Designation:
--
One soil sample received on 05/04/15 at 3:42pm
marked as:
Project: SDG&E Ocean Ranch Substation
Project #: 20154777
Boring #: B3
Sample #: 1
Depth: 0.5-5'
Date Sampled: 04/15/15.

Analysis By California Test 643, 1999, Department of Transportation Division of Construction, Method for Estimating the Service Life of Steel Culverts.

pH 8.7

Water Added (ml)	Resistivity (ohm-cm)
10	1800
5	990
5	550
5	480
5	480
5	520
5	550

24 years to perforation for a 16 gauge metal culvert.
29 years to perforation for a 14 gauge metal culvert.
41 years to perforation for a 12 gauge metal culvert.
52 years to perforation for a 10 gauge metal culvert.
63 years to perforation for a 8 gauge metal culvert.

Water Soluble Sulfate Calif. Test 417 0.021%

Water Soluble Chloride Calif. Test 422 0.016%

Laura Torres
LT/ram

FIGURE B-10

L A B O R A T O R Y R E P O R T

Telephone (619) 425-1993 Fax 425-7917 Established 1928

C L A R K S O N L A B O R A T O R Y A N D S U P P L Y I N C.
350 Trousdale Dr. Chula Vista, Ca. 91910 www.clarksonlab.com
A N A L Y T I C A L A N D C O N S U L T I N G C H E M I S T S

Date: May 12, 2015
Purchase Order Number: PROJ#20154777
Sales Order Number: 26878
Account Number: KLE
To:

Kleinfelder Inc.
550 West C Street Ste 1200
San Diego, CA 92101
Attention: Uly Panuncialman

Laboratory Number: SO5666-2 Customers Phone: 831-4600
Fax: 831-4619
Sample Designation:

One soil sample received on 05/04/15 at 3:42pm
marked as:
Project: SDG&E Ocean Ranch Substation
Project #: 20154777
Boring #: B4
Sample #: 1
Depth: 0.5-5'
Date Sampled: 04/15/15.

Analysis By California Test 643, 1999, Department of Transportation Division of Construction, Method for Estimating the Service Life of Steel Culverts.

pH 8.9

Water Added (ml)	Resistivity (ohm-cm)
10	2200
5	1400
5	870
5	880
5	910
5	920

29 years to perforation for a 16 gauge metal culvert.
38 years to perforation for a 14 gauge metal culvert.
52 years to perforation for a 12 gauge metal culvert.
66 years to perforation for a 10 gauge metal culvert.
81 years to perforation for a 8 gauge metal culvert.

Water Soluble Sulfate Calif. Test 417 0.005%

Water Soluble Chloride Calif. Test 422 0.005%

Laura Torres
LT/ram

FIGURE B-11

L A B O R A T O R Y R E P O R T

Telephone (619) 425-1993 Fax 425-7917 Established 1928

C L A R K S O N L A B O R A T O R Y A N D S U P P L Y I N C.
350 Trousdale Dr. Chula Vista, Ca. 91910 www.clarksonlab.com
A N A L Y T I C A L A N D C O N S U L T I N G C H E M I S T S

Date: May 12, 2015
Purchase Order Number: PROJ#20154777
Sales Order Number: 26878
Account Number: KLE
To:
--
Kleinfelder Inc.
550 West C Street Ste 1200
San Diego, CA 92101
Attention: Uly Panuncialman

Laboratory Number: SO5666-3 Customers Phone: 831-4600
Fax: 831-4619
Sample Designation:
--
One soil sample received on 05/04/15 at 3:42pm
marked as:
Project: SDG&E Ocean Ranch Substation
Project #: 20154777
Boring #: B5
Sample #: 1
Depth: 0.5-5'
Date Sampled: 04/15/15.

Analysis By California Test 643, 1999, Department of Transportation Division of Construction, Method for Estimating the Service Life of Steel Culverts.

pH 8.3

Water Added (ml)	Resistivity (ohm-cm)
10	2000
5	1100
5	720
5	580
5	550
5	570
5	590

24 years to perforation for a 16 gauge metal culvert.
31 years to perforation for a 14 gauge metal culvert.
43 years to perforation for a 12 gauge metal culvert.
55 years to perforation for a 10 gauge metal culvert.
67 years to perforation for a 8 gauge metal culvert.

Water Soluble Sulfate Calif. Test 417 0.007%

Water Soluble Chloride Calif. Test 422 0.016%

Laura Torres
LT/ram

FIGURE B-12

APPENDIX C

SUGGESTED GUIDELINES FOR EARTHWORK CONSTRUCTION

APPENDIX C
SUGGESTED GUIDELINES FOR EARTHWORK CONSTRUCTION

GENERAL

Scope - The work done under theses specifications shall include site clearing, removal of unsuitable material, excavation, preparation of natural soils, placement and compaction of on-site and imported fill material.

Contractor's Responsibility - The Contractor shall attentively examine the site in such a manner that he can correlate existing surface conditions with those presented in the geotechnical evaluation report. He shall satisfy himself that the quality and quantity of exposed materials and subsurface soil or rock deposits have been satisfactorily represented by the Geotechnical Engineer's report and project drawings. Any discrepancy of prior knowledge to the Contractor to that is revealed through his evaluations shall be made known to the Owner. It is the Contractor's responsibility to review the report prior to construction. The selection of equipment for use on the project and the order of the work shall similarly be the Contractor's responsibility. The Contractor shall be responsible for providing equipment capable of completing the requirements included in the following sections.

Geotechnical Engineer - The work covered by these specifications shall be observed and tested by Kleinfelder, the Geotechnical Engineer, who shall be hired by the Owner. The Geotechnical Engineer will be present during the site preparation and grading to observe the work and to perform the tests necessary to evaluate material quality and compaction. The Geotechnical Engineer shall submit a report to the Owner, including a tabulation of tests performed. The costs of re-testing unsuitable work installed by the Contractors shall be deducted by the Owner from the payments to the Contractor.

Standard Specifications - Where referred to in these specifications, "Standard Specifications" shall mean the State of California Standard Specifications for Public Works Construction, with Regional Supplement Amendments for San Diego County, 2000 Edition.

Compaction Test Method - Where referred to herein, relative compaction shall mean the in-place dry density of soil expressed as a percentage of the maximum dry density of the same material, as determined by the ASTM D 1557 Compaction Test Procedure. Optimum moisture content shall mean the moisture content at the maximum dry density determined above.

SITE PREPARATION

Clearing - Areas to be graded shall be cleared and grubbed of all vegetation and debris. These materials shall be removed from the site by the Contractor.

Stripping - Surface soils containing roots and organic matter shall be stripped from areas to be graded and stockpiled or discarded as directed by the Owner. In general, the depth of stripping of the topsoil will be approximately 6 to 12 inches within the landscaped areas. Deeper stripping, where required to remove weak soils or accumulations of organic matter, shall be performed when determined necessary by the Geotechnical Engineer. Stripped material shall be removed from the site or stockpiled at a location designated by the Owner.

Removal of Existing Fill - Existing fill soils, trash and debris in the areas to be graded shall be removed prior to the placing of any compacted fill. Portions of any existing fills that are suitable for use in new compacted fill may be stockpiled for future use. All organic materials, topsoil, expansive soils, oversized rock or other unsuitable material shall be removed from the site by the Contractor or disposed of at a location on-site, if so designated by the Owner.

Ground Surface - The ground surface exposed by stripping shall be scarified to a depth of 6 inches, moisture conditioned to the proper moisture content for compaction and compacted as required for compacted fill. Ground surface preparation shall be approved by the Geotechnical Engineer prior to placing fill.

EXCAVATION

General - Excavations shall be made to the lines and grades indicated on the plans. The data presented in the Geotechnical Engineer's report is for information only and the Contractor shall make his own interpretation with regard to the methods and equipment necessary to perform the excavation and to obtain material suitable for fill.

Materials - Soils which are removed and are unsuitable for fill shall be placed in nonstructural areas of the project, or in deeper fills at locations designated by the Geotechnical Engineer.

All oversize rocks and boulders that cannot be incorporated in the work shall be removed from the site by the Contractor.

Treatment of Exposed Surface - The ground surface exposed by excavation shall be scarified to a depth of 6 inches, moisture conditioned to the proper moisture content for compaction and

compacted as required for compacted fill. Compaction shall be approved by the Geotechnical Engineer prior to placing fill.

COMPACTED FILL

Materials - Fill material shall consist of suitable on-site or imported soil. All materials used for structural fill shall be reasonably free of organic material, have an Expansion Index of 50 or less, 100% passing the 3 inch sieve and less than 30 percent passing the #200 sieve.

Placement - All fill materials shall be placed in layers of 8 inches or less in loose thickness and uniformly moisture conditioned. Each lift should then be compacted with a sheepsfoot roller or other approved compaction equipment to at least 90 percent relative compaction in areas under structures, utilities, roadways and parking areas. No fill material shall be placed, spread or rolled while it is frozen or thawing, or during unfavorable weather conditions.

Compaction Equipment - The Contractor shall provide and use sufficient equipment of a type and weight suitable for the conditions encountered in the field. The equipment shall be capable of obtaining the required compaction in all areas.

Recompaction - When, in the judgment of the Geotechnical Engineer, sufficient compactive effort has not been used, or where the field density tests indicate that the required compaction or moisture content has not been obtained, or if pumping or other indications of instability are noted, the fill shall be reworked and recompacted as needed to obtain a stable fill at the required density and moisture content before additional fill is placed.

Responsibility - The Contractor shall be responsible for the maintenance and protection of all embankments and fills made during the contract period and shall bear the expense of replacing any portion which has become displaced due to carelessness, negligent work or failure to take proper precautions.

UTILITY TRENCH BEDDING AND BACKFILL

Material - Pipe bedding shall be defined as all material within 4 inches of the perimeter and 12 inches over the top of the pipe. Material for use as bedding shall be clean sand, gravel, crushed aggregate or native free draining material, having a Sand Equivalent of not less than 30.

Backfill should be classified as all material within the remainder of the trench. Backfill shall meet the requirements set forth in Section 4.2.7 for compacted fill.

Placement and Compaction - Pipe bedding shall be placed in layers not exceeding 8 inches in loose thickness, conditioned to the proper moisture content for compaction and compacted to at least 90 percent relative compaction. All other trench backfill shall be placed and compacted in accordance with Section 306-1.3.2 of the Standard Specifications for Mechanically Compacted Backfill. Backfill shall be compacted as required for adjacent fill. If not specified, backfill shall be compacted to at least 90 percent relative compaction in areas under structures, utilities, roadways, parking areas and concrete flatwork.

SUBSURFACE DRAINAGE

General - Subsurface drainage shall be constructed as shown on the plans. Drainage pipe shall meet the requirements set forth in the Standard Specifications.

Materials - Permeable drain rock used for subdrainage shall meet the following gradation requirements:

SIEVE SIZE	PERCENTAGE PASSING
3"	100
1-1/2"	90 - 100
3/4"	50 - 80
No. 4	24 - 40
No. 100	0 - 4
No. 200	0 - 2

Geotextile Fabric - Filter fabric shall be placed between the permeable drain rock and native soils. Filter cloth shall have an equivalent opening size greater than the No. 100 sieve and a grab strength not less than 100 pounds. Samples of filter fabric shall be submitted to the Geotechnical Engineer for approval before the material is brought to the site.

Placement and Compaction - Drain rock shall be placed in layers not exceeding 8 inches in loose thickness and compacted as required for adjacent fill, but in no case, to be less than 85 percent relative compaction. Placement of geotextile fabric shall be in accordance with the manufacturer's specifications and shall be checked by the Geotechnical Engineer.

AGGREGATE BASE BENEATH CONCRETE SLABS

Materials - Aggregate base beneath concrete slabs shall consist of clean free-draining sand, gravel or crushed rock conforming to the following gradation requirements:

SIEVE SIZE	PERCENT PASSING
1"	100
3/8"	30 – 100
No. 20	0 – 10

Placement - Aggregate base shall be compacted and kept moist until placement of concrete. Compaction shall be by suitable vibrating compactors. Aggregate base shall be placed in layers not exceeding 8 inches in loose thickness. Each layer shall be compacted by at least four passes of the compaction equipment or until 95 percent relative compaction has been obtained.

APPENDIX D

ASFE INSERT

Important Information about Your

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you —* should apply the report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical-engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical-Engineering Report Is Based on a Unique Set of Project-Specific Factors

Geotechnical engineers consider many unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk-management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical-engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical-engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical-engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, droughts, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final,* because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations *only* by observing actual

subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical-engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical-engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical-engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold-prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, many mold-prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical-engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold-prevention consultant; ***none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.***

Rely, on Your GBA-Member Geotechncial Engineer for Additional Assistance

Membership in the GEOPROFESSIONAL BUSINESS ASSOCIATION exposes geotechnical engineers to a wide array of risk confrontaton techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your GBA-member geotechnical engineer for more information.

GEOPROFESSIONAL BUSINESS ASSOCIATION

8811 Colesville Road/Suite G106, Silver Spring, MD 20910
Telephone: 301/565-2733 Facsimile: 301/589-2017
e-mail: info@geoprofessional.org www.geoprofessional.org

IIGER03135.0MRP

Appendix F

SDG&E Operations and Maintenance
Wildland Fire Prevention Plan

ESP – 113.1 (Revised)

Electric Standard Practice – 113.1
SDG&E Operations and Maintenance Wildland Fire Prevention Plan

Electric Distribution Engineering has published this standard with revisions and additions made by the SDG&E Fire Program Manager.

- Changes and Additions highlighted in YELLOW

If you have any questions regarding this Standard Practice, please contact:
- Hal Mortier at (858) 654-8683 or **HMortier@semprautilities.com**

DEPARTMENT	DIVISION	EFFECTIVE DATE
TRANS. & DISTRIB. ENGINEERING	DISTRIBUTION ENGINEERING	JULY 26, 2016

SECTION

GENERAL PRACTICES

SUBJECT TITLE

SDG&E OPERATIONS AND MAINTENANCE WILDLAND FIRE PREVENTION PLAN

1.0 PURPOSE

1.1 Southern California presents a dangerous natural wildland fuel scenario and explosive fire weather potential. The period for active fire conditions can exist all year long depending on rainfall totals and other dynamic weather factors. The fall months and at times extending into early winter historically host the region's largest fires. Extended dry periods can bring us into or back into critical fire conditions essentially any time of the year. SDG&E facilities, equipment, and activities can present a potential wildland fire ignition risk which must be minimized to the extent reasonably possible. In the event a fire occurs, we must also be equipped to suppress small fires, thus potentially preventing a major fire. Most importantly, we must provide the resources and training necessary to keep our employees safe while working in the wildland areas. This plan is for all system Operations & Maintenance work and can be used for low complexity Construction projects when additional mitigation is not required (see 4.7 SDG&E PROJECT SPECIFIC FIRE PLANS). The intent of this document is to formalize procedures and routine practices that will:

1.1.1 Assist SDG&E employees in their understanding of fire prevention and to improve their ability to prevent the start of any fire. The emphasis will be on wildland fires, especially during the critical times of the year when the fire risk is high.

1.1.2 Set standards for fire tools and equipment to be present in vehicles and at work sites. This will assist with rapid response to small fires in the event one should occur.

1.1.3 Incorporate State, Federal, and local requirements into our standard way of doing business to provide compliance with rules and regulations on a daily basis no matter where work is taking place. This would include, but not be limited to: pertinent laws, Forest Standard Practice Regulations, and "Special Use Permit" or "Right of Way" fire related requirements.

1.1.4 Define or reference restrictions mandated by "Red Flag Warnings", "Project Activity Levels", or other unique fire danger scenarios. Provide the means for determining when these restrictions are in effect, what activities they prohibit, the precise locations to which they apply; and identify the notification procedures for all affected employees and contractors. (See TMC-1320)

1.1.5 Ensure that our employees and contractors have positive communication for reporting fires and initiating assistance. **Dialing 911 is the primary means for reporting emergencies.**

1.1.6 Discuss procedure to identify when a Construction project specific "Fire Plan" is required and the process for developing the document.

1.1.7 Share some common sense practices, with regards to fire safety, that should be used in all activities to reduce the risk of fires and to prevent injury to employees as a result of fire.

1.1.8 Introduce and require the use of the "Fire Potential Index" to determine when additional fire risk mitigation measures are advised or required.

2.0 APPLICABILITY

2.1 This applies to SDG&E field personnel who will work in the wildland areas of the service territory. This also includes Distribution and Transmission operating personnel who will be involved with field personnel in regards to safety, system reliability and/or restoration. Contractors performing work for SDG&E will be expected to comply with this Standard Practice as it relates to their activities.

DEPARTMENT	DIVISION	EFFECTIVE DATE
TRANS. & DISTRIB. ENGINEERING	DISTRIBUTION ENGINEERING	JULY 26, 2016

SECTION

GENERAL PRACTICES

SUBJECT TITLE

SDG&E OPERATIONS AND MAINTENANCE WILDLAND FIRE PREVENTION PLAN

3.0 DEFINITIONS

3.1 **"At Risk" Activities:** Activities that present a risk of igniting a wildfire

3.2 **Wildland Areas:** This term refers to any area within the SDG&E service territory that has wildland fuels available for ignition.

3.3 **Fire Threat Zone (FTZ):** This is a CALFIRE developed rating of wildland threat based on a combination of potential fire behavior (fuel rank) and expected fire frequency. SDG&E has established practices within the FTZ on how SDG&E constructs facilities and also determines certain construction practices to be used within the FTZ. See attachment 1.

3.4 **SDG&E High Risk Fire Areas (HRFA):** This area will be an assortment of GIS polygons that represent the zones of greatest concern within the SDG&E service territory, blending fuels, topography, wind, and system information. (The areas can change annually and the map will be labeled with the appropriate year, "SDG&E 20XX Highest Risk Fire Area" and is always a subset of the Fire Threat Zone). The HRFA helps to determine how SDG&E operates the electric system, as a function of weather conditions. See attachment 1.

3.5 **Fire Season:** Fire season is no longer officially designated by the wildland fire agencies. California is considered to be in fire season on a yearlong basis. CAL FIRE adjusts its staffing patterns as fire conditions moderate or escalate and this can be used as an indicator of potential fire activity.

3.6 **Fire Potential Index (FPI) (1-17):** This is a comprehensive assessment of fire risk, used as a tool for making operation & maintenance decisions related to fire prevention. The tool converts environmental, statistical, and scientific data into an easily understood forecast of short-term fire threat. The index is generated for a seven day forecast period for an assortment of geographic areas within the service territory. The 7-day forecast is used for planning purposes while the daily FPI is used for work activities. The FPI is used to determine the fire potential range for each day (Normal, Elevated, or Extreme), definitions of each to follow.

3.6.1 **Normal Fire Potential (1-11):** It is considered "Normal" when the FPI is green. All O&M activities can take place in the wildland areas of the service territory without additional risk mitigation, as long as baseline fire equipment is available as prescribed in this plan. Note: the baseline fire equipment requirements meet or exceed all local, state, & federal requirements for working in the wildland areas.

3.6.2 **Elevated Fire Potential (12-14):** It is considered "Elevated" when the FPI is either yellow or orange. Certain "at risk" O&M activities (as identified in the matrix, attachment 2) will require additional risk mitigation (as prescribed in the matrix, see attachment 2) to perform those work activities.

3.6.3 **Extreme Fire Potential (15-17):** It is considered "Extreme" when the FPI is red. No "at risk" activities should be conducted except for those activities which if, left undone present a greater risk than that involved with their accomplishment. Consultation with the On-duty Fire Coordinator is required to help make that determination and identify additional mitigation required to reduce risk.

3.7 **Red Flag Warning (RFW):** The National Weather Service will declare a RFW when conditions are expected to meet either of the following criteria:

3.7.1 Relative humidity is 15% or less with sustained winds equal to or greater than 25 mph, or frequent gusts equal to or greater than 35 mph for a period of 6 hrs or more. This RFW (based on wind/relative humidity) will be considered “Extreme” operating condition regardless of the FPI for that time period and have the same restrictions described for “Extreme”.

3.7.2 Dry lightning is for a lightning event that is not accompanied by enough precipitation to significantly wet fuels that have been identified as critically dry. This is common within the inland and mountain zones. This RFW (based only on dry lightning) will be assessed by Meteorology and Fire Coordination to determine the appropriate operating condition related to actual weather conditions, and Grid and Dist. Ops. will notify field personnel.

3.8 **Project Activity Level (PAL):** This term is specific to the Cleveland National Forest (CNF) and only applies to work within the boundaries of the CNF. When conducting work on the CNF it is each crew member’s responsibility to know the PAL level and adhere to any additional work restrictions or mitigation measures.

3.9 **Fire Tools:**

3.9.1 **Shovel**: standard round point shovel with overall length of at least 46”.

3.9.2 **Pulaski**: an axe-like fire hand tool used for cutting, chopping or grubbing.

3.9.3 **McLeod**: a fire hand tool used for raking and scraping.

3.9.4 **Backpack pump**: is a portable 5 gallon water pack with hose and nozzle used for extinguishing Class A (common combustibles) fires and primarily wildland fires. They can be rubber collapsible packs or stainless steel canisters.

3.9.5 **Fire box**: can be placed in a staging area or worksite to supplement available fire suppression equipment when necessary due to excessive work activity. It generally contains additional hand tools and/or backpack pumps as deemed appropriate.

3.10 **Major Operations Work Area:** It will be considered a major operations work area when work activities or staging of resources will be concentrated in and out of a staging facility. These work sites are typically large in size and include but are not limited to construction yards, fly yards, substation pads and any other area where construction work will be concentrated.

3.11 **Fire Patrol:**

3.11.1 A *designated* “Fire Patrol” is a member of a work crew assigned the responsibility and accountability for fire prevention, risk mitigation, early detection of fires, and rapid extinguishment should one occur. This can be accomplished co-laterally with other work duties.

3.11.2 A *dedicated* “Fire Patrol” is a person(s) assigned the responsibility and accountability for fire prevention, risk mitigation, early detection of fires, and rapid extinguishment should one occur. This will be their sole duty while serving as a dedicated Fire Patrol.

3.12 **SDG&E Fire Coordinator (FC):** The SDG&E Fire Coordinator serves as a conduit or liaison to the emergency service agencies for the utilities for everyday operations as well as emergency incidents. The FC will help the emergency service agencies obtain their needs related to the utility and represent the utility needs to the emergency service agencies.

3.13 **SDG&E Incident Commander (IC):** SDG&E will follow Incident Command System protocols on all emergency incidents. SDG&E will positively identify a single point of contact for all SDG&E resources (people and equipment) on any emergency incident. The appropriate line authority will identify who the SDG&E IC will be on moderate or complex incidents. "First- in" supervisor will generally be the IC on low complexity incidents. The IC will coordinate SDG&E activities with the overall Incident Commander, usually a jurisdictional fire chief.

3.14 **Operations & Maintenance (O&M):** O&M refers to post construction care and maintenance of SDG&E facilities.

4.0 PROCEDURE

4.1 **General:** SDG&E personnel will be committed to the following three step process for reducing the fire risk and exposure involved with potential wildland fires related to our work activities or equipment;

4.1.1 Fire Prevention: all work activities taking place in the wildland areas of our service territory will be assessed with regard to fire risk during standard safety tailboard sessions. Those activities that pose risk and can be excluded will be. Those that cannot be eliminated will incorporate appropriate mitigation measures to reduce the risk where possible, and in those cases where all risk cannot be eliminated the following steps will be in place.

4.1.2 Immediate or Early Fire Detection: SDG&E enhances the ability of its crews to detect fire at its earliest stages by assigning designated (co-lateral duty) and dedicated Fire Patrols (sole duty) as well as training all personnel to establish good situational awareness during "Normal", "Elevated", and "Extreme" operating conditions.

4.1.3 Rapid Extinguishment: prescribed fire tools and equipment will be available within 50' of worksite and immediately available for rapid extinguishment of any ignition.

4.2 **Tools & Equipment:** When working in the FTZ (identified on Attachment 1); the following tools and equipment are required as a minimum and will be carried on the vehicles as described. If work is in a wildland area outside the FTZ it is recommended you use these same standards. This does not apply to transient traffic driving on primary road beds through the wildland areas. These items will meet the California Forest Practice Rules; Public Resource Code Division 4, Chapter 6. Making this equipment available at your work sites will also meet the majority of the requirements mandated by the wildland fire agencies within the company service territory.

Some additional project specific or weather specific requirements may be necessary and will be discussed in the following section of this plan. **Please note that if your work project is over 50' from the vehicle location, the mandated equipment should be removed from the vehicle and staged at the work site.**

4.2.1 Passenger Vehicles (performing work in the wildland areas):

4.2.1.1 1 round point shovel with overall length of at least 46”

4.2.1.2 1 serviceable fire extinguisher, minimum U.L. rated “2 BC”; rating found on fire extinguisher label (a “2” rated extinguisher will put out approx. 2 sq. ft. of combustible material and BC indicates it will work on flammable liquids and is non-conductive for electrical fires)

4.2.2 Trucks & 4 Wheel Drive Vehicles;

4.2.2.1 1 round point shovel with overall length of at least 46”

4.2.2.2 1 Pulaski

4.2.2.3 1 (5) gallon backpack pump

4.2.3 Heavy Machinery or Equipment (including tub grinders, whole tree chippers, drilling rigs, tractors, etc.);

4.2.3.1 1 round point shovel with overall length of at least 46”

4.2.3.2 1 Pulaski

4.2.3.3 1 (5) gallon backpack pump

4.2.4 Chain Saw Use;

4.2.4.1 1 shovel within 25 feet of the chainsaw operation with unrestricted access to the tool.

4.2.4.2 1 serviceable UL rated 2BC fire extinguisher in their immediate possession.

4.2.5 Major Operations Work Area (When vehicle equipment does not meet the needs of the work area a Fire Box or equivalent should be located on site and be accessible to all personnel and there should be enough total tools to outfit number of personnel on scene);

4.2.5.1 1 (5) gallon backpack pump

4.2.5.2 2 Pulaskis

4.2.5.3 2 McLeod fire tools

4.2.5.4 Round point shovels 46” (enough to outfit remaining personnel)

4.3 **Fire Risk & Mitigation Matrix:** The following matrix is designed to blend the fire risk associated with a specific work activity with the fire potential index for the day to establish the proper fire prevention measures required in each scenario. Most of the work activities can be done daily simply by having the required equipment from section 4.2 available, serviceable, and proximate to work site. Some activities involve more risk and may require additional mitigation measures. The fire potential is determined by the daily Fire Potential Index. Green on the FPI is considered **Normal Fire Potential**. Under **Normal** the baseline tool & equipment requirements from section 4.2 suffice, except for specifically noted exceptions. **Elevated Fire Potential** is when the FPI is in the yellow/orange range and certain work activities may require additional mitigation measures in order to proceed with the work; again refer to matrix. *The supervisor responsible for the work activity will document how the additional mitigation will be met for the day’s activities. This can be done in conjunction with normal tailboard documentation or as separate documentation.*

Extreme Fire Potential is the red on the FPI and most work activities will cease, except where not performing the work creates a greater risk than doing so. In those cases where work will be done, consult with On-duty Fire Coordinator ((858) 503-5152) and check matrix to see if additional mitigation is required. The supervisor responsible for the work activities will document that work has in fact ceased or why it was acceptable to continue. If Fire Coordination is consulted they too will document when a joint decision to continue work is made.

Normal	Elevated	Extreme
< 12	12-14	15-17

DEPARTMENT	DIVISION	EFFECTIVE DATE
TRANS. & DISTRIB. ENGINEERING	DISTRIBUTION ENGINEERING	JULY 26, 2016

SECTION

GENERAL PRACTICES

SUBJECT TITLE

SDG&E OPERATIONS AND MAINTENANCE WILDLAND FIRE PREVENTION PLAN

FIRE RISK & MITIGATION MATRIX

The work activity described can be performed to the operating level indicated unless specifically noted that it cannot, or by meeting the minimum additional mitigation requirements indicated for that level. This assumes the baseline tool requirements from section 4.2 are available, serviceable, and proximate to work site. *Note; a "designated" Fire Patrol can have co-lateral duties, whereas a "dedicated" Fire Patrol is committed to fire prevention duties and responsibilities.* The criterion for EXTREME is to do only the work where not performing the work creates a greater risk than doing so. Consult Fire Coordination for special mitigation requirements.

Work Activity	Work Activity Description	**NORMAL** Operating Conditions	**ELEVATED** Operating Conditions	**EXTREME** Operating Conditions
Vehicle, Roads, Inspections				
Vehicle travel	On paved roads or improved roads with no vegetation on roadbed	✓	✓	✓
Vehicle travel	Off road vehicle travel and un-maintained roadbeds	✓	Must designate a Fire Patrol (Document)	Permitted only for work that meets the extreme criteria and must have a dedicated Fire Patrol
Inspections	Ground, aerial, security, climbing, vegetation, and weed control inspections	✓	✓	Must follow vehicle travel rules above.
Access Road Maintenance	Vegetation removal, water bars, culvert cleaning/repair, grading	✓	Must designate a Fire Patrol (Document) and 150 gal. of water and equipment for its use	Not Permitted

Equipment Maintenance				
Insulator Washing	Conducted on existing access roads with Insulator Wash Rig (1,000 gal.)	✓	✓	Not Permitted
Equipment Replacement	Mechanical replacement of system equipment; i.e. insulators, fuses, etc. ON paved roads or improved roads with no vegetation on roadbed	✓	Must designate a Fire Patrol (Document)	Permitted only for work that meets the extreme criteria and must have a dedicated Fire Patrol
Equipment Replacement	Mechanical replacement of system equipment; i.e. insulators, fuses, etc. Off road vehicle travel and on unmaintained roadbeds	✓	Must designate a Fire Patrol (Document)	Permitted only for work that meets the extreme criteria and must have a dedicated Fire Patrol
Conductor Replacement	Replacement of conductor with all activities conducted ON paved roads or improved roads with no vegetation on roadbed	✓	Must designate a Fire Patrol (Document)	Not Permitted
Conductor Replacement	Replacement of conductor with all activities conducted Off road vehicle travel and on unmaintained roadbeds	✓	Must have dedicated Fire Patrol and 150 gal. of water and equipment for its use	Not Permitted
Pole Replacement / Pole hole digging	Replacement of existing power pole ON paved roads or improved roads with no vegetation on roadbed	✓	Must designate a Fire Patrol (Document)	Not Permitted
Pole Replacement / Pole hole digging	Replacement of existing power pole Off road vehicle travel and on unmaintained roadbeds	✓	Must designate a Fire Patrol (Document) and 150 gal. of water and equipment for its use	Not Permitted

DEPARTMENT	DIVISION	EFFECTIVE DATE
TRANS. & DISTRIB. ENGINEERING	DISTRIBUTION ENGINEERING	JULY 26, 2016

SECTION

GENERAL PRACTICES

SUBJECT TITLE

SDG&E OPERATIONS AND MAINTENANCE WILDLAND FIRE PREVENTION PLAN

Vegetation Management				
Pole/Tower Ground Clearance *(PRC 4292)*	10' clearance around poles and tower structures hand tools only	✓	✓	Not Permitted
Pole/Tower Ground Clearance *(PRC 4292)*	10' clearance around poles and tower structures weed eaters/hand tools and chain	✓	Must designate a Fire Patrol (Document)	Not Permitted
Conductor Vegetation Clearance *(PRC 4293)*	Tree trimming and occasional removal to maintain required clearances mandated by code	✓	Must designate a Fire Patrol (Document)	Allowed when trees making contact or intermittent contact. Must have a dedicated Fire Patrol.
Noxious Weed Control	Controlling or abating weeds in permitted access roads & worksites	✓	Must designate a Fire Patrol (Document)	Not Permitted
Other Activities				
Welding or Grinding	Welding or grinding will always require that it be done in an area 10' minimum clearance to mineral soil or equivalent	Must designate a Fire Patrol (Document)	Must have a dedicated Fire Patrol	Not Permitted
Blasting	Any work using explosives must have permit with restrictions identified	Must designate a Fire Patrol (Document)	Must designate a Fire Patrol (document) and 150 gal. of water and equipment for its use	Not Permitted
Combustion Engines	Compressors, generators, etc. must have 10' minimum clearance or equivalent from the heat source	✓	Must designate a Fire Patrol (Document)	Permitted only for work that meets the extreme criteria and must have a dedicated Fire Patrol

Activities not covered by the *Matrix* that do not fit with an identified work activity require consultation with the On-duty Fire Coordinator for approval and/or additional mitigation requirements.

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4.3.1 Optional considerations for particularly hazardous or high risk areas where additional mitigation measures are warranted *(discuss with On-duty Fire Coordinator)*

4.3.1.1 Small fire engine or patrol unit with minimum 150 gallons of water

4.3.1.2 Cache of fire hose and related accessories

4.3.1.3 Water supply; water tender, truck, or hydrant (1500 gal. recommended)

4.3.1.4 Dozer or tractor, capable of producing fire line

4.3.2 Helicopter Operations: Helicopter staging areas will be treated similar to other staging areas with enough fire equipment for personnel on site or fire box available on major operations. On Incidental Landing Areas (ILA's) adequate firefighting equipment shall be carried on the helicopter for the number of personnel working on the ground at those sites.

4.4 General Fire Prevention Considerations:

4.4.1 It is required on projects in the SDG&E FTZ (and recommended in any wildland area) to conduct a formal "tailboard" safety session all fire concerns. All fire concerns will be documented, including designated or dedicated fire patrol, mitigation measures taken, and extinguishment plans for any at risk work for the day.

4.4.2 Smoke only in designated smoking areas or in a 10' clearing void of all grass or other vegetation.

4.4.3 Idling your vehicle in areas of brush, grass, or other vegetation is prohibited. When parking in these areas; shut off vehicle and check vehicle undercarriage for any threat of fire ignition.

4.4.4 When driving over grass meadows or areas of low vegetation, have a designated Fire Patrol follow along with fire tools available to extinguish an inadvertent fire start. If traveling alone, you become the designated fire patrol, frequent observations of the ground behind you should be made with fire tools ready and available and this should not be done in elevated or extreme conditions.

4.4.5 At work sites have all required tools available and within 50' of the work activity. Tools should be serviceable and ready for use.

4.4.6 When using any piece of equipment capable of producing sparks and/or which has an exposed exhaust system, provide an area with 10' clearance or equivalent from the heat source and at a minimum assign and document a designated Fire Patrol during elevated and extreme conditions.

4.4.7 All internal combustion engines shall have approved spark arresters.

4.4.7.1 Engines used to provide motive power for trucks, tractors, buses, and passenger vehicles, except motorcycles, are exempt if the exhaust system is equipped with a muffler.

4.4.7.2 Turbocharged engines are exempt.

4.4.8 When it is possible, wet down adjacent vegetation when performing at risk work in the wildland areas.

4.4.9 Consider work hour restrictions in the wildland areas avoiding particularly hazardous work during the hottest portions of the day.

4.4.10 When it is possible, wet down adjacent vegetation when performing at risk work in the wildland areas.

4.4.11 Consider work hour restrictions in the wildland areas avoiding particularly hazardous work during the hottest portions of the day.

4.5 **General Fire Safety Considerations:** As previously indicated, fire prevention is the primary focus of all of our efforts. We do carry the proper equipment to rapidly extinguish a witnessed ignition or very small fire that is within our capabilities to take action on. If at any time the fire becomes unmanageable or unsafe for you to continue your suppression actions, you should stop and retreat to a safe area. If work activities require personnel to perform utility related work adjacent to or near an uncontrolled wildfire the following considerations become important for your safety (See below).

4.5.1 Use proper Personal Protective Equipment (P.P.E.), standard SDG&E requirements apply. When working within or adjacent to uncontrolled fire perimeter company issued fire resistant clothing should be worn.

4.5.2 When working on or adjacent to a wildland fire, positive communications must be maintained internally using SDG&E work protocols. It is critical that employees have the ability to communicate with fire agencies for reporting fires and for the exchange of critical information for the duration of an incident. Cross communication with the fire agencies is the responsibility of the SDG&E Incident Commander (single point of contact assigned to manage all SDG&E resources), the Fire Coordinator (FC), or the On- Site (pre-designated work supervisor for affected area) Supervisor in the absence of a Fire Coordinator or SDG&E Incident Commander.

4.5.3 Know what the fire is doing at all times, observe personally or be in direct communication with a competent person (IC, FC, or On-Site Supervisor) who is monitoring fire activity.

4.5.4 Work within the Incident Command System (ICS) while assigned to a fire incident. Understand the chain of command for the incident and who you are accountable to. Check in and check out when entering an uncontrolled fire perimeter after it is determined to be safe by the IC, FC, or on-site SDG&E Single Point of Contact.

4.5.5 Pre-evaluate and designate safety zones (areas large enough to provide a safe retreat) and escape routes (safe access to these safety zones) when working in the wildland areas during high fire danger days.

4.5.6 Get proper rest and adequate water during extended fire activity to avoid fatigue and help prevent accidents and/or injuries.

4.5.7 Exercise extreme caution when driving within a fire area and/or smoky conditions. Be aware of falling rocks, trees, and other debris as well as road obstructions and other traffic. Keep driving speeds down when visibility is limited.

4.6 **Red Flag Warnings/Extreme Fire Potential Index:** Red Flag Warnings (RFW) are issued by the National Weather Service. Its intent is to pass along critical fire weather information to users and occupants in the wildland areas to bring about more prudent actions in all of their wildland related activities. There are currently two basic criteria (see definitions under RFW) for establishing a RFW. One is wind related, along with extreme dryness, and this RFW will be considered "Extreme" operating condition automatically and all work activity will cease except for such work that without performing it would create a greater risk. The second RFW criterion is lightning related and is issued when areas of "dry" lightning are imminent. During this type of RFW, Fire Coordination and Meteorology will confer to determine the operating condition for the duration of the RFW. RFW are generally issued for various weather zones that transect the SDG&E service territory. The wind/relative humidity RFW will apply to all identified weather zones within SDG&E service territory and can be expanded to exclude weather zones if necessary after consultation between Fire Coordination and Meteorology. Extreme FPI is issued by SDG&E Meteorology group. In either case work restrictions likely apply, see 4.3. Supervisors will retain authority to allow (exempt) work necessary to mitigate an immediate fire risk. The supervisor will be required to document the exemption. If required the On-duty Fire Coordinator can provide assistance with the decision and documentation process. During pre-event conference calls Fire Coordination will remind affected parties of work restrictions as they relate to the particular event.

4.7 **Project Activity Levels:** The United States Forest Service has a program it utilizes to reduce the risk of fire on National Forest land, particularly in the timber or mountain areas. It is referred to as Project Activity Levels *(PALS)*. Each day at 4:00 p.m. the PAL will be announced for the following day. It may be different for different geographical areas in the county. IT ONLY APPLIES TO THE CLEVELAND NATIONAL FOREST. This information is available by calling (619) 557-5262. The PAL index will determine what activities can be done on the forest the following day and what risk mitigation can be done to be allowed to do additional work activities. The CNF O&M Fire Prevention plan must be followed when working on USFS lands (contact On-Duty FC for current version: (858) 503-5152).

4.8 **SDG&E Project Specific Fire Plans:** This Wildland Fire Prevention plan will be sufficient for most routine day to day work activities performed in the wildland by all SDG&E employees and contractors. For projects outside of normal work activities or for an activity that seems to be especially hazardous the Fire Coordination group should be consulted. The FC will make a determination whether this Wildland Fire Prevention plan is sufficient for the prescribed work, this plan with some minor additional mitigation will suffice, or if a project specific Fire Prevention Plan is required. If required the FC will work with the Project Manager or representative to develop the required plan, follow it through to approval, and monitor compliance with the plan as appropriate. On major projects there may be additional requirements assessed by the CPUC or a jurisdictional fire agency that will be incorporated as required into the project specific Fire Prevention Plan.

4.9 **Other Critical Fire Danger Proclamations:** The Fire Chiefs with jurisdictional responsibility for a given area have the authority to proclaim certain restrictions in extreme fire conditions or when they are experiencing a critical shortage of resources. These cases will be very rare and it will be incumbent on them to insure we are informed of any temporary changes in fire restrictions for a particular area. Upon notification we would be required to comply as appropriate.

4.10 **Fire Related Training:** It is mandatory that all field going employees have basic wildland fire prevention training on an annual basis. If an employee who does not have wildland fire prevention training chooses to go to the field they will be escorted by someone who has had the training and has the required tools for both employees. . Wildland Fire Prevention training (SFUGN103) will be incorporated into annual Compliance Training and documented through using this process. The training can be accomplished in one hour at a routine safety meeting just prior to fire season or schedule sessions specifically for this purpose. For those employees who are likely to be asked to work within or immediately adjacent to an uncontrolled fire area, the following additional training is recommended: Two hours total consisting of Fire Safety, Incident Command System, and basic fire behavior training. For supervisors, managers, and company officers, who could be assigned as the SDG&E Incident Commander or EOC "Officer in Charge" on a major incident, additional advanced ICS training is recommended. The Fire Coordinator group will provide this training or assist with arranging qualified instruction. The FC may bring in additional qualified instructors, or qualify additional SDG&E employees as instructors, using the "train the trainer" approach to assist with this effort. Documentation of this training shall be done by the work supervisors and recorded in the employee's training records.

4.11 **EOC and Control Centers:**

4.11.1 Service Dispatch, Electric Distribution Operations, Electric Grid Operations, and the EOC play a vital role in any fire emergency. Communications with these groups, when applicable, is critical. Provide information updates and feedback to each of these groups as their areas of responsibility becomes affected. This should continue through the duration of the incident. As this standard practice governs the fire prevention aspects of an event, Distribution Operations and Grid Operations manage the System Operation and all protocols in TSP-1320, DOP3013, & ESP109 must be complied with.

4.11.2 Early notification to the EOC of potential activation is recommended when appropriate. Notification procedures are identified in ESP 113 FIRE COORDINATION and should be followed as prescribed.

4.12 **Fire Coordination:** SDG&E has (6) full-time Fire Coordinators and additional qualified assistance within the company. They are essentially the liaison for the company to the Emergency Response agencies. Questions related to this plan or request assistance on any emergency should be made through the FC group.

5.0 REFERENCES

5.1 State Forest Standard Practice Act:
http://www.fire.ca.gov/resource_mgt/downloads/2015%20FP%20Rulebook_with%20TRA%20No%201_Final.pdf

5.2 TMC 1320 (aka DOP3013, ESP109 – SDG&E Fire Conditions)

5.3 ESP 113 – FIRE COORDINATION

5.4 Power Line Fire Prevention Field Guide – 2008 edition
http://cdfdata.fire.ca.gov/pub/fireplan/fpupload/fppguidepdf126.pdf

DEPARTMENT	DIVISION	EFFECTIVE DATE
TRANS. & DISTRIB. ENGINEERING	DISTRIBUTION ENGINEERING	JULY 26, 2016

SECTION

GENERAL PRACTICES

SUBJECT TITLE

SDG&E OPERATIONS AND MAINTENANCE WILDLAND FIRE PREVENTION PLAN

6.0 REVISION HISTORY

Effective Date:	Type Of Change	Brief Description of Change
26Jul2016	Revised	SDG&E Fire Program Manager has made minor changes to this standard. Revisions or additions highlighted in YELLOW. Removed Attachment 2, Project Specific Fire Plan Template.
8Jun2015	Revised	SDG&E Fire Program Manager updated all maps
25Jul2014	Revised	Revised by SDG&E Fire Program Manager
24Apr2013	Revised	Revised by SDG&E Fire Program Manager
05Jul2012	Revised	Revised by SDG&E Fire Program Manager

7.0 ATTACHMENTS

7.1 Attachment 1: Service Territory with SDG&E 2015 Highest Fire Risk Areas & FTZ

DEPARTMENT	DIVISION	EFFECTIVE DATE
TRANS. & DISTRIB. ENGINEERING	DISTRIBUTION ENGINEERING	JULY 26, 2016

SECTION

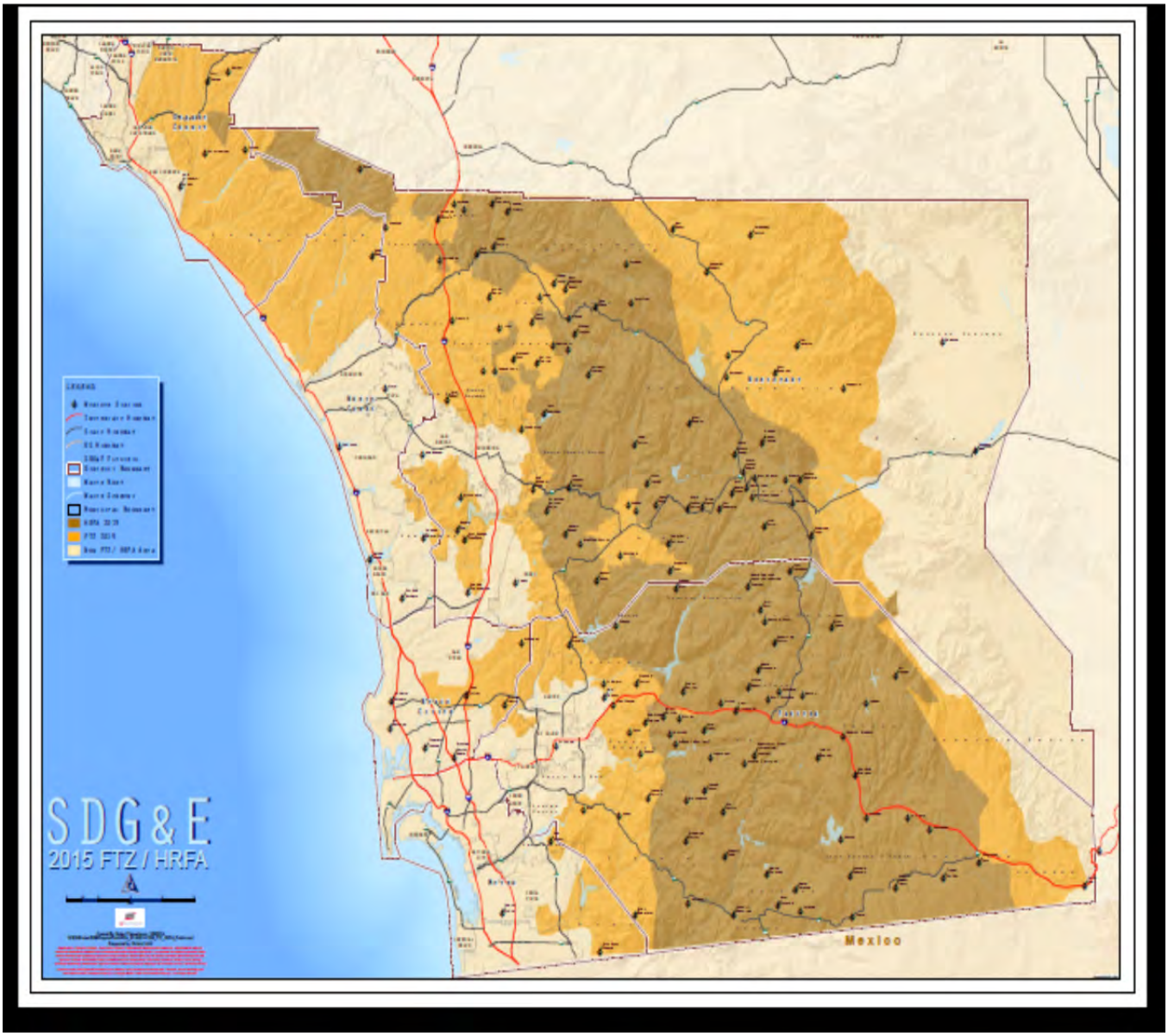
GENERAL PRACTICES

SUBJECT TITLE

SDG&E OPERATIONS AND MAINTENANCE WILDLAND FIRE PREVENTION PLAN

Attachment 1:

Service Territory with SDG&E 2016 Highest Fire Risk Areas & FTZ



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Appendix G

Biological Technical Report

Appendix G

Biological Technical Report

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Final Biological Technical Report

Ocean Ranch Substation Project
San Diego County, California

Prepared for:
San Diego Gas & Electric Company
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May 2016

Pangea Biological

Table of Contents

List of Figures

List of Tables

List of Appendices

ACRONYMS AND ABBREVIATIONS

BMPs	Best Management Practices
BTR	Biological Technical Report
CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
CNPS	California Native Plant Society
CNDDB	California Natural Diversity Database
CPUC	California Public Utilities Commission
RWQCB	California Regional Water Quality Control Boards
CPCN	Certificate of Public Convenience and Necessity
CWA	Clean Water Act
CFR	Code of Federal Regulations
ESA	Endangered Species Act
MBTA	Migratory Bird Treaty Act
NOAA	National Oceanic and Atmospheric Administration
NCCP	Natural Communities Conservation Plan
PEA	Proponent's Environmental Assessment
PSA	Proposed Study Area
SDG&E	San Diego Gas & Electric Company
SWRCB	State Water Resources Control Board
ACOE	U.S Army Corps of Engineers
U.S.C.	United States Code
USFWS	United States Department of the Interior Fish and Wildlife Service
EPA	United States Environmental Protection Agency

1.0 INTRODUCTION

San Diego Gas & Electric Company (SDG&E) is a regulated public utility that provides electric service to 3.4 million people within its 4,100 square mile service territory, covering parts of two counties and 25 cities and unincorporated communities in the San Diego area. In an effort to serve existing customers and anticipate customer-driven load, and maintain reliability of the electrical distribution system, SDG&E proposes to construct a new substation in the City of Oceanside within San Diego County (Figure 1). The proposed substation site is located on land owned by SDG&E and the power line loop-in is located within existing SDG&E rights-of-way (ROW) and franchise position within the City of Oceanside public streets.

SDG&E has retained Pangea Biological (Pangea) to conduct biological resource surveys within the Proposed Study Area (PSA) for the proposed Project. Analysis of biological and water/wetland resources within the PSA included a 50-foot wide buffer from the proposed substation, associated staging, storage, and work areas.

The purpose of this Biological Technical Report (BTR) is to document the findings of both reconnaissance-level and focused biological studies conducted along the PSA, analyze the potential and actual impacts that could occur as a result of the proposed Project, and to recommend measures to avoid, minimize, or mitigate for unavoidable impacts that would result from the implementation of the proposed Project. This report will be included as a supplement to SDG&E's Proponent's Environmental Assessment (PEA), and filed as part of its application for a Certificate of Public Convenience and Necessity (CPCN) that will be submitted to the California Public Utilities Commission (CPUC). Pangea has prepared this report on behalf of SDG&E.

2.0 PROJECT DESCRIPTION

The proposed Project is situated in the northwestern portion of San Diego County in the City of Oceanside, approximately 35 miles north of downtown San Diego. The proposed Ocean Ranch Substation is located within the Pacific Coast Business Park, which is part of the Rancho del Oro Specific Plan area. The proposed Ocean Ranch Substation will be located entirely on land owned by SDG&E, and the powerline loop-in is located within existing SDG&E ROW and franchise position within the City of Oceanside public streets.

Figure 1: Project Location Overview

2.1 Project Overview

The proposed Project includes the following main components:

- **Ocean Ranch Distribution Substation:** Construction of a new 69/12 kV low profile substation in the City of Oceanside. The substation will have an initial capacity of 60 megavolt ampere (MVA) rating, and an ultimate capacity of 120 MV).

- **TL 6966 Loop-In.** TL 6966 is an existing underground 69 kV circuit which has termination points at San Luis Rey Substation (to the west) and Melrose Substation (to the east). It will be intercepted at the intersection of Avenida De La Plata and Rancho Del Oro and extended to the proposed substation via the construction of an underground power line duct bank with a total length of approximately 1,330 feet. This will reconfigure the existing tie line into TL 6966 (San Luis Rey to Ocean Ranch) and TL 6979 (Ocean Ranch to Melrose).

- **12 kV Distribution System:** Four new underground distribution circuits will be installed and will intercept four existing circuits. A portion of the existing circuits will be offloaded to the new Ocean Ranch circuits. Approximately 4,650 feet of new 12 kV distribution line will be constructed, most of which will be on the Ocean Ranch Substation site. The proposed Project includes construction of four new manholes and one new handhole to access the new segment of underground 12 kV distribution line.

- **Telecommunication Systems:** A 40-foot monopole will be installed in the southwest corner of the Ocean Ranch substation property for a proposed microwave radio communication system. A fiber optic cable will be installed on the existing overhead poles and in the underground duct structures connecting the Ocean Ranch substation and the San Luis Rey substation. Two pad-mounted pedestals, approximately 3 feet high, will be installed to enclose the communications equipment at or near the property line.

Each of these general proposed Project components are discussed in detail below.

Ocean Ranch Substation

The proposed Ocean Ranch Substation is a planned 9.66-acre site, which will include the facility's water quality basins, landscaping, internal maintenance roads, and future uses. The proposed Substation will be a low profile design, and once constructed will be enclosed by an approximately 10-foot-tall, "La Paz" or similarly brown-colored, masonry perimeter wall. All substation construction work will be conducted within the SDG&E-owned parcel.

TL 6966 Loop-In

In order to connect in to the proposed Ocean Ranch Substation, the existing underground segment of power line TL 6966 will be intercepted at the intersection of Rancho Del Oro and Avenida De La Plata and extended underground along Rancho Del Oro to the proposed substation site. This proposed underground segment will consist of an underground duct bank traversing in a northerly direction along Ranch Del Oro from the Avenida De La Plata and Rancho Del Oro intersection to the proposed substation site, for a combined total distance of approximately 1,330 feet. The proposed underground segment will create two circuits into the proposed Ocean Ranch Substation. The underground power line within the constructed duct bank connecting into the proposed Ocean Ranch Substation from the Melrose substation will be

relabeled TL 6979. The underground power line within the constructed duct bank connecting into the proposed substation from San Luis Rey Substation will continue to be labeled TL 6966. Approximately two vaults, one per underground power line, shall be installed within the proposed substation property area. Additionally, an off-set vault design configuration (one circuit per vault) will be implemented to maintain reliability and for maintenance. The total length of the new underground power line is approximately 1,500 feet, of which approximately 1,000 feet is within the public road ROW and 500 feet is within SDG&E ROW or franchise position.

Distribution Circuits

The proposed Project will entail the installation of 2,850 feet of new underground duct banks to facilitate the relocation of distribution circuits C509, C903, C904, and C905 from existing substations to the proposed Ocean Ranch Substation.

The proposed Project will provide additional circuits to facilitate load transfers and distribute circuit load. The electric distribution circuits exiting the substation will be installed in public ROW or within the franchise position of City of Oceanside public streets, or in new ROW if required. The four circuits will cut-over to existing circuits originating from the Ocean Ranch Substation and tie in to existing distribution circuits.

Telecommunication Systems

The proposed telecommunication system will be composed of fiber optic cable and microwave radio, and AT&T communication service to provide reliable and redundant communications to the substations. The telecommunication services facilitate the remote monitoring, control, and operation of the substation equipment and provide teleprotection relaying, telemetry, telephone, modem, access control, and video monitoring. In order to connect the proposed Ocean Ranch Substation to these substation systems, fiber optic cable, microwave radio, and AT&T services will be installed.

The fiber optic cable will be installed between the Ocean Ranch Substation and the San Luis Rey Substation. The fiber optic cable will be installed on the existing overhead poles and in the underground duct structures connecting the Ocean Ranch substation and the San Luis Rey substation.

A 40-foot monopole will be installed in the southwest corner of the property for the microwave radio communication system. A 2-foot diameter antenna will be mounted on the monopole and point west to provide a communications link to the San Luis Rey Substation. A conduit duct will be installed on the property between the monopole and the substation control shelter.

2.2 Project Components

Activities associated with the proposed Project include construction of the new Ocean Ranch Substation, installation of new underground distribution line, and access and use of four staging yards. Wherever possible, activities will occur within existing paved or unpaved access roads or other previously disturbed areas. Table 2.1 summarizes all the construction components in support of the proposed Project.

Table 2.1 Proposed Project Component Summary

Workspace Type	Quantity	Typical Workspace Dimensions Size
Underground Construction		
Underground Trench Work Area, Vault Installation, Wire Pulling	5,980 feet	Approximately 5,980 feet of new underground line, with temporary workspace of a 30-foot width for the length of the line (5,980 feet by 30 feet, or approximately 179,400 square feet [4.12 acres])
Proposed Ocean Ranch Substation		
The proposed Ocean Ranch Substation Site	1	9.66 acres
San Luis Rey Substation		
Work conducted within existing developed substation, no extra workspace required	1	N/A
Staging Yards		
San Luis Rey Staging Yard	1	0.5 acre
Corporate Staging Yard	1	11.5 acres
USPS Staging Yard	1	5.0 acres
Melrose Staging Yard	1	0.5 acre

Pulling Sites

The underground cable installation process will require a network of pull sites located adjacent to the proposed and existing underground vaults. These pull sites will be approximately 50 feet long by 30 feet wide and will be located within the temporary work areas associated with underground trench/vault work areas.

Underground Construction

The installation of new duct banks and vaults will require temporary workspace within an existing paved street (Avenida Del Oro). The underground trench temporary work area will be approximately 30 feet wide and will be generally centered on the power line alignments. The underground trench work area will be adjusted to comply with traffic control permits to maintain traffic flow through construction areas as necessary. The duct banks would require an approximately 30-foot-wide workspace (approximately 15 feet on each side of the line), for approximately 5,980 feet in length (a total of 4.12 acres of temporary workspace within paved roads will be required).

Ocean Ranch Substation Work Area

All construction equipment, vehicles, personnel, and material staging in support of construction of the Ocean Ranch Substation will be located within the property lines of the proposed Ocean Ranch Substation Site. Because the site is currently disturbed, minimal clearing of vegetation will be required for construction. The proposed Ocean Ranch Substation Site will include adequate space to accommodate all construction activities, equipment, materials, temporary office trailers, and vehicle parking for construction of the substation.

Staging Areas

The proposed Project includes four temporary construction staging areas: the San Luis Rey Staging Yard, Corporate Staging Yard, USPS Staging Yard, and Melrose Staging Yard. The staging areas may be used for the refueling of vehicles and construction equipment by a mobile fueling truck, pole framing and assembly, parking, and open storage for material and equipment, construction trailers, portable restrooms, and lighting. Generators may also be used in this area to provide temporary power to construction trailers. Construction workers typically meet at the staging area each morning and park their vehicles at the yard. In-ground fencing will be installed at the staging yards in cases where it is not already installed. Gravel, class II base, or other BMP may be used to line the ground at staging yards to avoid the creation of unsafe mud conditions and unnecessary sediment transport off site. SDG&E has attempted to identify a reasonable number of staging yards commensurate with the size, location, and scope of the proposed Project.

Access Roads

Construction will primarily take place within the existing SDG&E easements, access roads, and substation properties. Most work areas are accessible by vehicle in paved/developed areas, unpaved SDG&E-maintained access roads, or other existing disturbed areas. Vehicles will remain within existing access roads, previously disturbed areas, and designated temporary work areas, where feasible.

3.0 REGULATORY SETTING

This section includes a description of the biological resources regulatory framework. The California Public Utilities Commission has exclusive jurisdiction over the siting, design, and construction of the proposed Project, and the proposed Project is not subject to local discretionary land use regulations.

3.1 Federal

Federal Endangered Species Act

The Federal Endangered Species Act (ESA) of 1973 (16 United States Code (USC) Section 1531 *et seq*.) is aimed at the protection of plants and animals which have been identified as being at risk of extinction, and classified as either threatened or endangered. Section 9 of the ESA also regulates the “taking” of any endangered fish or wildlife species. As development is proposed, the responsible agency or individual landowners are required to submit to a formal consultation with the U.S. Fish and Wildlife Service (USFWS) to assess impacts to listed species (including plants) or its critical habitat as the result of a development project, pursuant to Sections 7 and 10 of the ESA. The USFWS is required to make a determination as to the extent an impact(s) would have to a particular species due to a project. If it is determined that impacts to a species would likely occur, measures to avoid or reduce such impacts must be identified. The USFWS may issue an incidental take statement, following consultation and the issuance of a Biological Opinion.

This allows for take of the species that is incidental to another authorized activity, provided that the action will not adversely affect the existence of the species.

Migratory Bird Treaty Act (MBTA)

The Migratory Bird Treaty Act (MBTA) (16 USC 703 et seq.) is a federal statute that implements treaties with several countries on the conservation and protection of migratory birds. The number of bird species covered by the MBTA is extensive and is listed at 50 Code of Federal Regulation (CFR) 10.13. The regulatory definition of "migratory bird" is broad and includes any mutation or hybrid of a listed species and includes any part, egg, or nest of such bird (50 CFR 10.12).

Migratory birds are not necessarily federally listed endangered or threatened birds under the ESA. The MBTA, which is enforced by USFWS, makes it unlawful "by any means or in any manner, to pursue, hunt, take, capture, [or] kill" any migratory bird, or attempt such actions, except as permitted by regulation. The applicable regulations prohibit the take, possession, import, export, transport, sale, purchase, barter, or offering of these activities, except under a valid permit or as permitted in the implementing regulations (50 CFR 21.11).

Clean Water Act (CWA)

The purpose of the Clean Water Act (CWA) is to "restore and maintain the chemical, physical, and biological integrity of the nation's waters." Section 404 of the CWA prohibits the discharge of dredge or fill material into waters of the U.S. without a permit from the U.S. Army Corps of Engineers (USACE). The definition of "waters of the U.S." includes rivers, streams, estuaries, the territorial seas, ponds, lakes, and wetlands. Wetlands are defined as those areas "that are inundated or saturated by surface or groundwater 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" (33 CFR § 328.3(b)). The U.S. Environmental Protection Agency has veto authority over the USACE's administration of the Section 404 program and may override a USACE decision with respect to permitting.

The CWA (33 USC Section 1251 et seq.), formerly the Federal Water Pollution Control Act of 1972, was enacted with the intent of restoring and maintaining the chemical, physical, and biological integrity of the waters of the United States. The CWA requires states to set standards to protect, maintain, and restore water quality through the regulation of point source and certain non-point sources discharges into surface water. Those discharges are regulated by the National Pollutant Discharge Elimination System (NPDES) permit process (CWA Section 402). The proposed Project is under the jurisdiction of the San Diego Regional Water Quality Control Board (RWQCB). Section 4.9, Hydrology and Water Quality, has additional details regarding the CWA, including Sections 401, 402, and 404 (including the June 2015 final Clean Water Rule).

The U.S Army Corps of Engineers (ACOE) administers Section 404 of the CWA, which regulates the discharge of dredged or fill material into navigable waters, including wetlands and other Waters of the U.S. The definition of Waters of the U.S. includes rivers, streams, estuaries, territorial seas, ponds, lakes, and wetlands. Wetlands are defined as those areas "that are inundated or saturated by surface or groundwater 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" (33 CFR § 328.3(b)). The ACOE issues general and individual permits and makes determinations on whether an area is considered jurisdictional. Substantial impacts to Waters of the U.S. may require an Individual Permit.

Projects that only minimally affect Waters of the U.S. may meet the conditions of one of the existing Nationwide Permits, provided such permits' other respective conditions are satisfied.

A Water Quality Certification or waiver pursuant to Section 401 of the CWA is required for Section 404 permit actions. The SWRCB (State Water Resources Control Board), in conjunction with the nine California Regional Water Quality Control Boards (RWQCB), administers Section 401 of the CWA, which is a requirement of a State Water Quality Certification or waiver for any activity requiring a Section 404 permit. The State Water Quality Certification ensures the activity will not violate any established State water quality standards. The SWRCB and or RWQCB issues permits pursuant to the Section 401 Water Quality Certification Program. For the proposed Project, this certification or waiver would need to be issued by the San Diego Regional Water Quality Control Board (RWQCB).

Final Rule for Revised Designation of Critical Habitat for the Coastal California Gnatcatcher

The USFWS designates critical habitat for endangered and threatened species under the FESA (16 USC § 1533 (a)(3)). Critical habitat is designated for the survival and recovery of federally listed endangered and/or threatened species. Critical habitat includes areas used for foraging, breeding, roosting, shelter, and movement or migration.

In the USFWS 2003 Proposed Rule to Revise Designation of Critical Habitat for the Coastal California Gnatcatcher, the USWFS considered but did not propose as critical habitat, pursuant to sections 3(5)(A) and 4(b)(2) of the Act, reserve lands covered by three completed and approved regional/subregional HCPs (68 FR 20228). These lands include SDG&E right-of-way (ROW) within SDG&E's Natural Community Conservation Plan (NCCP). Although these areas were not included in the proposed critical habitat, the USFWS sought public review and comment on these lands, provided maps to facilitate the public's ability to comment, and alerted the public that the lands could potentially be included in the final designation. Lands considered but not proposed for designation were also analyzed for potential economic impacts in the Draft Economic Analysis.

In 2007, USFWS issued the Revised Final Rule, reaffirming exclusion of lands within approved regional and subregional HCPs under section 4(b)(2) of the FESA. USFWS determined that lands owned by SDG&E and covered under SDG&E's NCCP provided greater benefits to coastal California gnatcatcher than other areas designated as critical habitat. As such, the USFWS designation of critical habitat for the coastal California gnatcatcher specifically excludes SDG&E ROW within SDG&E's NCCP area.

3.2 State

CEQA Guidelines § 15125 (c) and/or § 15380

Enacted in 1970, CEQA requires an applicant to fully disclose potential environmental impacts before issuance of a permit by State and local agencies. State CEQA Guidelines Sections 15125(c) and 15380(b) articulates the classifications of species to be analyzed under CEQA. In general, impacts to plants or their habitat having a California Rare Plant Rank (CRPR) of 1A (plants presumed extirpated in California and either rare or extinct elsewhere), 1B (plants rare, threatened, or endangered in California and elsewhere), 2A (plants presumed extirpated in California, but common elsewhere), 2B (plants rare, threatened, or endangered plants in California), or 3 (plants about which more information is needed – a review list) must be analyzed during preparation of the environmental documents relating to CEQA. According to the California Native Plant Society's (CNPS) Rare Plant Program, species with these CRPR meet the definition

of “rare and endangered” under the aforementioned CEQA Guidelines. Impacts on these species would be considered significant and would require mitigation.

California Endangered Species Act (Fish and Game Code §§ 2050-2115.5)

The California Endangered Species Act (CESA) of 1984 regulates the listing and take of plant and animal species designated as endangered, threatened, or rare within the State. The State of California also lists Species of Special Concern (SSC) based on limited distribution, declining populations, diminishing habitat, or unusual scientific, recreational, or educational value. The California Department of Fish and Wildlife (CDFW) is given the responsibility by the State to assess development projects for their potential to impact listed species and their habitats. State-listed special status species are also addressed through the issuance of a permit under Fish and Game Code Section 2081 (Memorandum of Understanding), consistent with the Multiple Habitat Conservation Program (MHCP) which affects the Project area.

“Take” is defined in Section 86 of the Fish and Game Code as to “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.” CESA allows for take incidental to otherwise lawful projects. State lead agencies are required to consult with the CDFW to ensure that any action they undertake is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of essential habitat.

California Species of Special Concern

Species of Special Concern (SSC) is an administrative designation by CDFW and carries no formal legal status. These species are designated by the CDFW with the goal of focusing attention on animals with conservation risk, to stimulate research on poorly known species, and to achieve conservation and recovery of these animals before they meet criteria for listing under CESA. SSC should be considered during the environmental review process.

CEQA (California Public Resources Code §§ 21000-21177) requires State agencies, local governments, and special districts to evaluate and disclose impacts from "projects" in the State. Section 15380 of the CEQA Guidelines clearly indicates that species of special concern should be included in an analysis of project impacts if they can be shown to meet the criteria of sensitivity outlined therein.

Sections 15063 and 15065 of the CEQA Guidelines, which address how an impact is identified as significant, are particularly relevant to SSCs. Project-level impacts to listed (rare, threatened, or endangered species) species are generally considered significant thus requiring lead agencies to prepare an Environmental Impact Report to fully analyze and evaluate the impacts. In assigning "impact significance" to populations of non-listed species, analysts usually consider factors such as population-level effects, proportion of the taxon's range affected by a project, regional effects, and impacts to habitat features (CDFW 2015).

Fully Protected Species (Fish and Game Code §§ 3511, 4700, 5050, 5515)

Prior to the development of the CESA and the ESA, species were listed as “fully protected” by the State of California. Fully protected species, including fish, amphibians, reptiles, birds, and mammals, were identified to allow for the protection of those animals that were rare or that were threatened by potential extinction. The majority of fully protected species have since been listed as threatened or endangered under the CESA and/or the ESA. Fully protected species may not be taken or possessed at any time. Fish and Game Code lists birds (Section 3511), mammals (Section 4700), reptiles and amphibians (Section 5050), and fish (Section 5515).

California Fish and Wildlife Code

Within the State of California, fish, wildlife, and native plant resources are protected and managed by the CDFW. The Fish and Game Commission and/or the CDFW are responsible for issuing permits for the take or possession of protected species. The following sections of the Code address the protected species: Section 3511 (birds), Section 4700 (mammals), Section 5050 (reptiles and amphibians), and Section 5515 (fish).

Non-game Birds, Birds of Prey, Nests and Eggs (Fish and Game Code §§3503, 3503.5, 3513, 3800)

The State of California has incorporated the protection of birds and nests in Sections 3503, and (migratory) non-game birds in Section 3513 and 3800 of the Fish and Game Code. Birds of prey, that is, birds in the orders *Falconiformes* or *Strigiformes*, are protected from possession, and egg/nest destruction in Section 3503.5.

Section 2081 of the California Fish and Game Code gives the California Department of Fish and Wildlife (CDFW) the authority to issue an incidental take permit for projects that have the potential for take on a special status species, including state-listed species, as long as the impacts are minimized and fully mitigated and will not jeopardize the continued existence of a state-listed species. The measures required to minimize and fully mitigate impacts must be roughly proportional to the extent of the proposed impact to the species and must be capable of successful implementation while maintaining the applicant's objectives to the greatest extent feasible.

Native Plant Protection Act (Fish and Game Code §§ 1900–1913)

The Native Plant Protection Act (NPPA) was adopted in 1977 (Fish and Game Code §§ 1900–1913) to preserve, protect, and enhance rare and endangered plants. The CDFW is responsible for administering the NPPA, while the Fish and Game Commission has the authority to designate native plants as "endangered" or "rare" and to protect them from "take."

Streambed Alteration Program (Fish and Game Code §§ 1601–1606)

Sections 1601 through 1606 of the Fish and Game Code require that a Notification of Lake or Streambed Alteration Agreement Application be submitted to the CDFW for "any activity that may substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake." The CDFW reviews the proposed actions and, if necessary, submits (to the applicant) a proposal that includes measures to protect affected fish and wildlife resources. The final proposal that is mutually agreed upon by the CDFW and applicant is a Lake or Streambed Alteration Agreement.

Porter-Cologne Water Quality Act

The intent of the Porter-Cologne Act is to protect water quality, and the beneficial uses of water. It applies to both surface and ground water. Under this law, the SWRCB develops statewide water quality plans, and the RWQCBs develop basin plans, which identify beneficial uses, water quality objectives, and implementation plans. The RWQCBs have the primary responsibility to implement the provisions of both statewide and basin plans. Waters regulated under Porter-Cologne, referred to as "Waters of the state," include isolated waters that are no longer regulated by the ACOE. Any person discharging, or proposing to discharge, waste to Waters of the state must file a Report of Waste Discharge and receive either waste discharge requirements (WDRs) or a waiver to WDRs before beginning the discharge.

Natural Community and Conservation Plans (NCCP)

The Natural Community and Conservation Planning Act (California Fish and Wildlife Code Section 2800-2835) allows for the creation of NCCPs to protect state-listed species, usually in connection with the issuance of a Section 2081 take permit under the CESA.

SDG&E Subregional NCCP

The proposed Project falls within the area in which SDG&E's utility operations are governed by SDG&E's Subregional Natural Community Conservation Plan (NCCP) (SDG&E 1995). The NCCP prescribes "protocols" (i.e., various protection, mitigation, and conservation measure) that SDG&E must implement when utilizing the NCCP. Protocols include 61 operation protocols that SDG&E routinely implements with every project to avoid and/or minimize impacts to sensitive resources. The proposed Project will not use the take authority granted by the USFWS and the CDFW in the NCCP for impacts to covered species. Potential take of state and federally listed species will be handled through consultation with the USFWS and CDFW in accordance with applicable sections of the federal ESA and the CESA. However, the proposed Project will implement Project Design Features and Ordinary Construction/Operating Restrictions, which will include applicable impact avoidance and minimization measures that are specified in the NCCP Operational Protocols.

3.3 Local

As provided in CPUC General Order 131-D, the CPUC has exclusive jurisdiction over the siting, design, and construction of the proposed Project, preempting local discretionary authority over the location and construction of electrical utility facilities. Therefore, the Proposed Project is not subject to local discretionary land use regulations. Nonetheless, as part of the environmental review process, SDG&E considers relevant local land use plans and policies that pertain to biological resources as discussed below.

North County Multiple Habitat Conservation Program

The Multiple Habitat Conservation Program (MHCP) is a planning process that addresses plant and animal species in northwestern San Diego County, including Oceanside. The goal of the program is to conserve approximately 19,000 acres of habitat (of which 8,800 acres are already in public ownership and contribute toward the habitat preserve system) to protect over 80 rare, threatened, or endangered species.

Subarea plans for the Cities of Carlsbad, Encinitas, Escondido, Oceanside, San Marcos, and Vista are being prepared and must be adopted by each City Council. Then implementing agreements with the CDFW and the USFWS must be signed before incidental take permits can be issued.

The City of Oceanside is in the process of adopting a Subarea Habitat Conservation Plan/Natural Community Conservation Plan (SAP) that will address how the City will conserve natural biotic communities and sensitive plant and wildlife species pursuant to the California NCCP Act of 1991, the CESA and the federal ESA. If adopted, this could provide landowners with more regulatory certainty and aid in conserving the area's biodiversity.

City of Oceanside General Plan

The Land Use Element has a policy that the City shall protect, maintain, and enhance existing sensitive habitats. The Environmental Resource Management Element is also designed to conserve natural resources and preserve open space. It includes goals and objectives geared toward preservation, including ones specifically to enhance vegetation and wildlife habitats, especially those areas with rare, endangered, or threatened species. Areas with unique vegetation and wildlife habitats receive a high priority in the planning of parks; and in areas where habitat modification is inevitable, mitigating and/or compensatory measures such as native plant restoration, land reclamation, or donation will be considered.

Vegetation and Wildlife Habitats Policies

- A biological survey report, including a field survey, shall be required for a proposed project site if the site is largely or totally in a natural state or if high interest species of plants or animals have been found on nearby properties.
- In areas where vegetation or wildlife habitat modification is inevitable, mitigation and/or compensatory measures such as native plant restoration, land reclamation, habitat replacement, or land interest donation will be considered.
- Areas containing unique vegetation or wildlife habitats shall receive a high priority for preservation.
- Specific plans shall be developed in conjunction with regional and county agencies where appropriate, for areas where there is occurrence of endangered or threatened species.

4.0 METHODS

4.1 Proposed Study Area

The PSA includes a 50-foot survey buffer around the proposed 9.66 acres Ocean Ranch substation site, and associated staging yards (Figure 1).

A study “corridor” was established for biological resource surveys and was designed to study a wide enough area that it would accommodate minor changes in project design (such as changes to the dimensions of workspace and/or additions/deletions or changes to the locations of poles/structures) without the need to conduct additional surveys. The methods used to conduct the studies within the PSA are detailed below.

4.2 Literature and Existing Data Review

Literature Review

A number of recent studies (from reconnaissance-level constraints analyses to site- and species-specific focused surveys) have been conducted within and in the immediate vicinity of the PSA. Prior to conducting the field surveys, existing documentation relevant to the proposed Project and the surrounding areas was reviewed. As part of the initial data review for the proposed Project, a literature review of reference materials was conducted, including existing management plans, aerial photography of the region, the CDFW Natural Diversity Database (CNDDB), a search of the CNPS Inventory of Rare and Endangered

Vascular Plants of California, the USFWS website and Federal Register regarding federally listed species, U. S Geological Survey topographic maps, National Wetland Inventory maps, review of the reports of previous biological resource surveys conducted within and in the vicinity of the project, and manuals, guides, and other environmental documentation and resources for California plants and wildlife. Pertinent planning documents relevant to the proposed Project were also referenced, including SDG&E's Subregional NCCP.

Special Status Species Lists

In order to develop a list of special status plant and wildlife species that occur or could potentially occur within the proposed Project, a search of the CNDDB RareFind 5 program, maintained by the CDFW, was conducted for plant and wildlife species that could be within 1 mile of the Proposed Study Area (Figure 2). Other resources that were queried included the USFWS website, CDFW website (CDFW 2016a, CDFW 2016b) CNPS Inventory of Rare and Endangered Vascular Plants of California, the SDG&E Subregional NCCP, and San Diego County Bird Atlas. Records for known special status plants and wildlife within 1 mile of the proposed Project were compiled and reviewed. Species were considered special status if they met the following criteria:

- Included on CRPR of 1A, 1B, 2A, 2B, or 3 based on the CNPS' Rare Plant Program;
- Designated by the USFWS as Birds of Conservation Concern;
- Federally listed as endangered, threatened, or are a candidate for listing status; or
- State-listed as endangered, threatened, a California Species of Special Concern (SSC), or fully protected.

If formal Section 7 consultation is required, then established with the USFWS, the proposed Project will receive a final list of species (listed or candidate species) that are of concern from the USFWS. Approximately 18 special status plant and wildlife species have been identified as occurring or potentially occurring within or in the immediate vicinity of the proposed Project. These species are described in Section 5.0 Results and Discussion.

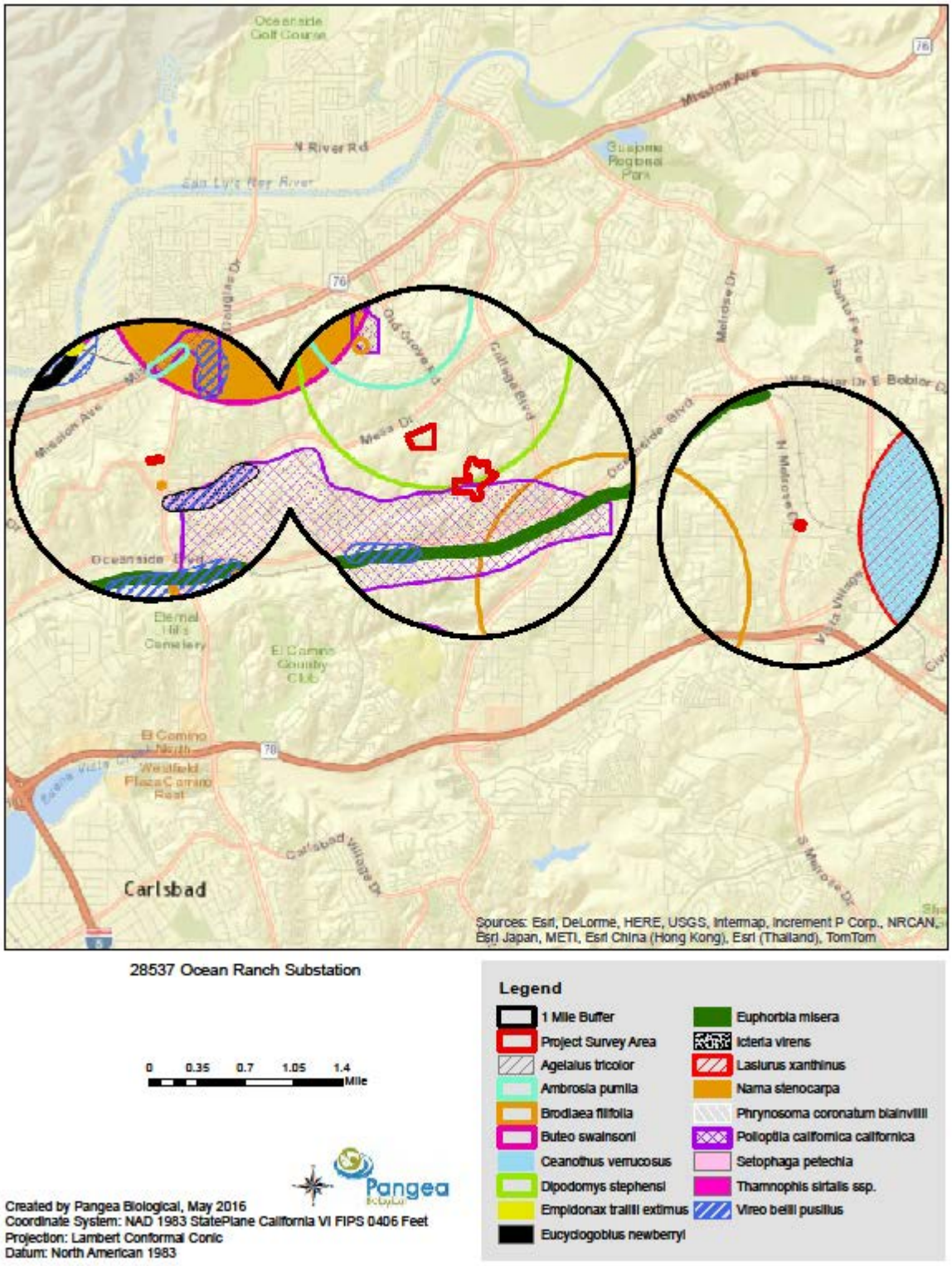

Figure 2: CNDDB Special Status Species within 1 Mile of the Project Survey Area

Determination of the potential for listed, sensitive, or other sensitive plant and/or wildlife species to occur on the proposed Project was assessed based on a few criteria:

- Low Potential for Occurrence – There are no historical records for this species within or in the immediate vicinity of the PSA, and any habitat or specific environmental conditions needed to support the species do not exist or are of poor quality.

- Moderate Potential for Occurrence – 1) Historical records exist for the species within or adjacent to the PSA; however, either no suitable habitat exists, or only poor quality habitat occurs within or in the immediate vicinity of the PSA, or 2) No previous historical records for this species have been recorded within or in the immediate vicinity of the PSA; however, suitable habitat exists for the species within or in the immediate vicinity of the PSA.

- High Potential for Occurrence – Historical records exist for the species within or adjacent to the PSA and suitable habitat for the species exists for the species within or in the immediate vicinity of the PSA.

- Present – The species has been observed within or in the immediate vicinity of the PSA.

Critical Habitat

A search of the USFWS Environmental Conservation Online System - Critical Habitat Portal was conducted to identify whether the PSA is located within any USFWS-designated critical habitat areas. In addition, recovery plans for special status species and Geographic Information System (GIS) data from the USFWS website were also reviewed (USFWS 2015) (Figure 3).

4.4 Field Surveys

During field surveys conducted within the PSA, biologists noted any general and special status plant and wildlife species occurring onsite or in the immediate vicinity. Species were detected by direct observation, but also through the detection of signs such as parts of plants that had grown in previous seasons or earlier in the growing season, and scat, tracks, burrows, and vocalizations of wildlife species.

Biological Resource Surveys/Vegetation Mapping

At the request of SDG&E, general biological resource surveys were conducted by Pangea Biological in March, May, and October 2015, and March 2016 to identify the vegetation communities located within the PSA, as well as determine the potential federal, state, and/or NCCP Sensitive (covered) species that occur or have potential to occur. Surveys were conducted to map vegetation communities, and to determine potential habitat areas for the special status species listed as potentially occurring in the PSA. Vegetation community classifications used in this report follow Holland's Preliminary Descriptions of the Terrestrial Natural Communities of California (1986), as modified by Oberbauer (Oberbauer, Kelly, & Buegge 2008). The vegetation maps are included in Appendix A.

Rare Plant Surveys

Reconnaissance-level field surveys were conducted throughout the PSA to determine the potential habitat for rare plants that could occur on the project.

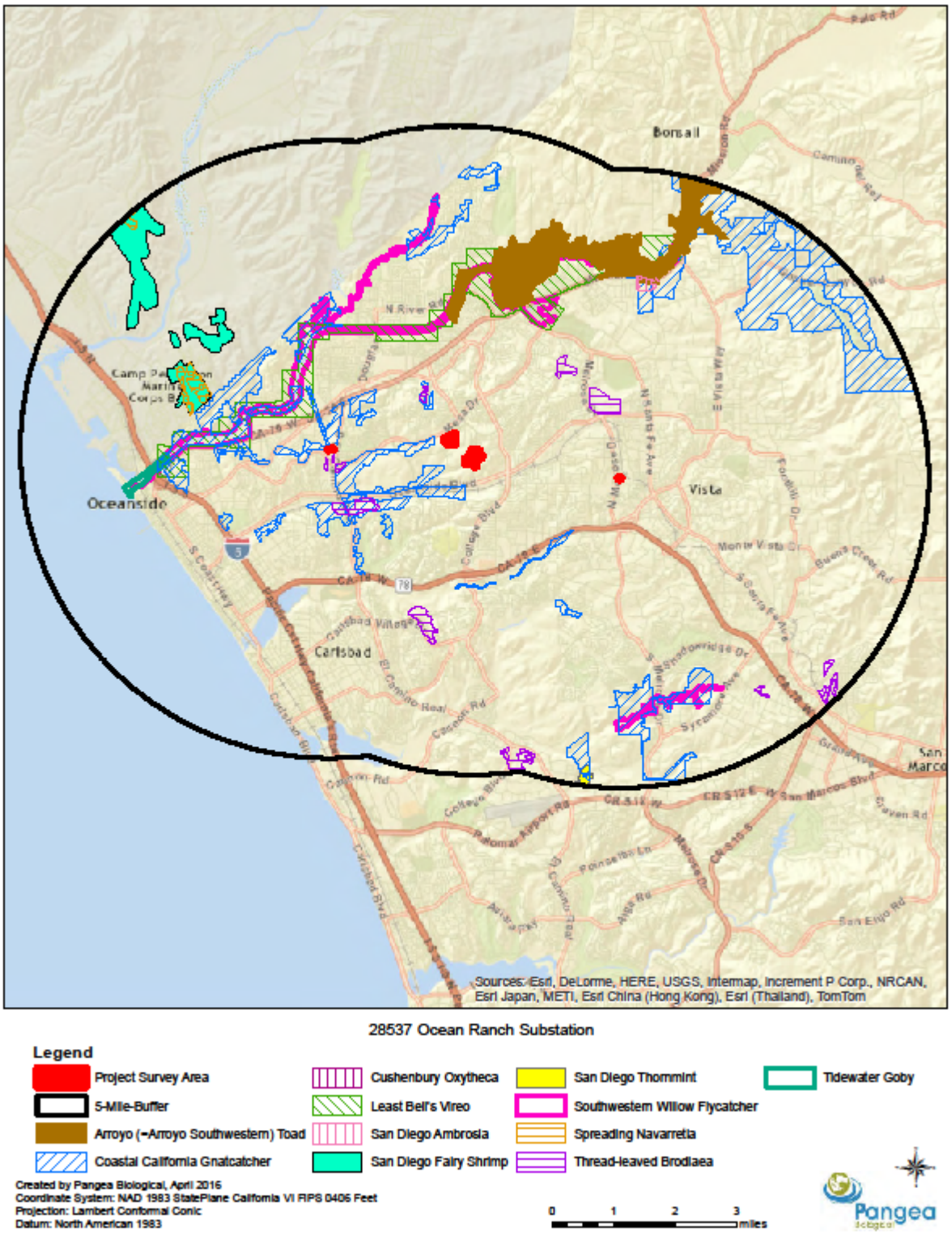

Figure 3: Critical Habitat within 5 Miles of the Project Survey Area

Special Status Wildlife Surveys

Potential suitable habitat for the western burrowing owl (*Athene cunicularia hypugaea*) was identified during the biological surveys of the PSA. Protocol surveys for the western burrowing owl will be conducted prior to construction to determine the presence or absence of this species within the PSA.

Jurisdictional Delineation

The following informational sources were reviewed to evaluate potential ACOE, CDFW, RWQCB, and CCC jurisdictional wetland and non-wetland waters within the PSA:

- SDG&E's Aerial photographs;
- United States Geologic Survey (USGS) 7.5 degree-minute topographic quadrangle maps;
- United States Department of Agriculture Natural Resources Conservation Service (NRCS) soil survey maps;
- United States Fish and Wildlife Service (USFWS) National Wetland Inventory GIS data; and
- USGS National Hydrological Dataset GIS data for modeling of streams to evaluate possible stream features.

In addition, a wetland delineation of wetland and non-wetland waters within the PSA was conducted on May 4, 2015, May 21, 2015 and October 28, 2015 by Pangea and Borcher Environmental Management. The methodology followed the ACOE Regional Supplement Wetland Delineation Manual Arid West Region (Version 2.0, ACOE 2008) guidelines, and consisted of preliminary data gathering and research, field assessment surveys, digital mapping, and documentation of final boundary determinations (Pangea and Borcher 2015). To assist with the field analysis, a customized data dictionary was uploaded onto a Global Positioning System (GPS) unit to allow field surveyors to select specific feature data. No jurisdictional areas were identified as being located within the PSA.

5.0 RESULTS AND DISCUSSION

Biological Resources Setting

The PSA ranges in elevation from 194 feet to 372 feet above mean sea level (MSL). The terrain along the PSA consists primarily of relatively flat topography. The PSA primarily consists of disturbed, undeveloped areas, as well as some developed areas, with a substantial network of existing paved roads providing access to the proposed Project.

The proposed Project is located within San Diego County, which is known for its biological diversity. In addition to the vegetation communities that occur within the survey area, suitable habitat for sensitive plant and wildlife species was also identified. This section identifies the vegetation communities identified within the PSA, as well as the plant and wildlife species that occur or could potentially occur within the PSA.

5.1 Vegetation Communities

The PSA supports three vegetation communities and cover types. Vegetation communities are assemblages of plant species that commonly coexist in the wild. The classification of vegetation communities is based on the life form of the dominant species within that community and the associated flora. Plant community definitions, classifications, and categories are based on Holland (1986) as updated by Oberbauer et al. (2008) for San Diego County.

A description of the plant communities occurring within the PSA are described below. Vegetation communities observed within the PSA and the relative acreages they encompass are provided in Table 5.1.

The PSA and other associated project components generally support three vegetation communities:

- Disturbed Southern Riparian Scrub
- Disturbed Habitat
- Urban/Developed/Landscape/Ornamental/Bare Ground

Table 5.1 Vegetation Communities Located within the PSA

Vegetation Community	Approximate Area In Acres
Riparian/Wetland	
Disturbed Southern Riparian Scrub	0.16
Subtotal	0.16
Urban/Developed/Landscape/Ornamental/Disturbed	
Disturbed Habitat	24.37
Urban/Developed/Landscape/Ornamental/Bare Ground	3.34
Subtotal	27.71
TOTAL	***27.86***

Riparian/Wetland

Disturbed Southern Riparian Scrub (Holland Code 63300)

Disturbed southern riparian scrub is a vegetation community dominated by small trees or shrubs that are associated with drainages or river systems (Oberbauer et al. 2008). The native vegetation can also be mixed with non-native vegetation in previously disturbed areas and can be highly disturbed in some areas. The dominant species in this disturbed southern riparian scrub community within the PSA include arroyo willow (*Salix lasiolepis*), mule-fat (*Baccharis salicifolia*), chrysanthemum (*Chrysanthemum* sp.), wild oat (*Avena fatua*), -thistle (*Salsola tragus*), and iceplant (*Mesembryanthemum crystallinum*). There is one location within the PSA where disturbed riparian scrub was observed.

The proposed site for the Ocean Ranch Substation consists primarily of disturbed (maintained) vegetation, including both native and non-native plant species. Within this site is a human-made drainage basin engineered and installed to minimize offsite storm water runoff from this disturbed area during storm events. The vegetation around this basin does not appear to have been maintained as often as the surrounding area, and an assemblage of native and non-native plant species that also occur in wet areas persist. Although a few of the plant species observed immediately around the drainage basin can also be found in wet areas such as waterbodies and/or wetlands, and during a storm event the drainage basin is capable of retaining surface water, this area was determined to be non-jurisdictional during biological surveys.[1] The area surrounding the drainage basin was initially described as disturbed southern riparian scrub habitat based solely on the plant species composition observed at this disturbed location during biological surveys. However, it is expected that the riparian plant species observed in the vicinity of the

[1] Nor was this area identified as a jurisdictional wetland or non-wetland during the biological surveys.

basin only exist as a result of the water runoff generated and diverted to the drainage basin, and would not occur there if not for the installed basin. Also, due to the highly disturbed and isolated nature of the site, the vegetation immediately surrounding the basin is not functioning as riparian habitat. Therefore, the ecological value of the disturbed southern riparian scrub is considered to be low.

Urban/Developed/Landscape/Ornamental/Disturbed

Disturbed Habitat (Holland Code 11300)

Disturbed habitat includes vegetation and soils characterized by physical disturbance. In these sites, nonnative species are commonly introduced by humans. A physical disturbance may include clearing for fuel management, repeated grading, graded firebreaks, powerline access roads and areas around power poles, construction staging areas, or any repeated use areas. Examples of repeated use areas are trails, access roads, and dirt parking lots. Species commonly found in these communities include black mustard (*Brassica nigra*), sweet fennel (*Foeniculum vulgare*), Russian-thistle, tocalote (*Centaurea melitensis*), fascicled tarweed (*Deinandra fasciculata*), coyote brush (*Baccharis pilularis*), coastal goldenbush (*Isocoma menziesii*), pepper tree (*Schinus* sp.), fan palm (*Washingtonia robusta*), ripgut brome (*Bromus diandrus*), telegraph weed (*Heterotheca grandiflora*), western ragweed (*Ambrosia psilostachya*), tamarisk (*Tamarix* sp.), sea-lavender (*Limonium* sp.), and lupine (*Lupinus* sp.). Annual grasses are not often included in this vegetation community and are considered more typical of non-native annual grassland. Disturbed habitat occurs within the PSA primarily in the form of those areas regularly mowed or maintained.

Urban/Developed (Holland Code 12000)

Urban/developed areas, including landscape/ornamental areas, are those that have been constructed upon or otherwise physically altered to the extent that native vegetation is no longer supported. Urban/developed areas occur within the PSA, and include paved and dirt access roads, bare ground associated with disturbance and/or development, buildings, paved parking lots, road medians and roadsides, as well as landscaped areas that often require irrigation (Oberbauer et al. 2008). Urban/developed areas are not necessarily considered a vegetation community, and typically support none or very few biological resources.

5.2 Plant Species Observed

Approximately 43 general plant species have been observed within the PSA during surveys conducted in the area. A compendium list of plant species observed during studies in support of the proposed Project is included in Appendix B.

5.3 Special Status Plant Species

Five special status plant species were identified during the literature review as having the potential to occur within 1 mile of the PSA. For this analysis, special status plant species include any plant species that are federally listed as endangered, threatened, or candidates for listing status; species that are state-listed as endangered or threatened; CNPS Rare and Endangered Vascular Plants of California; and special status plant species documented in the CNDDB. The five special status plant species with the potential to occur within 1 mile of the PSA are discussed in detail below and are depicted on Figure 2.

Cliff Spurge (Euphorbia misera, CNPS 2B.2)
Cliff spurge is a perennial shrub with a blooming period of December through October that typically occurs in rocky soils in coastal bluff scrub, coastal scrub, and Mojave Desert scrub habitats. No suitable coastal sage scrub habitat occurs within the PSA, therefore, there is no potential for this species to occur within the PSA.

Mud Nama (Nama stenocarpa, CNPS 2B.2)
Mud nama is an annual or perennial herb with a blooming period of January through July that typically occurs in marshes, swamps, margins of lakes, and riverbanks. No suitable habitat for mud nama occurs within the PSA, and therefore there is no potential for this species to occur within the PSA.

San Diego Ambrosia (Ambrosia pumila, Federal Endangered, CNPS 1B.1)
San Diego ambrosia is a perennial herb with a blooming period of April through July (occasionally extending through October) that typically occurs on sandy loam or clay soils in disturbed areas and drainages in grassland, chaparral, coastal scrub, and vernal pool habitats. No suitable habitat for San Diego ambrosia occurs within the PSA, and therefore there is no potential for this species to occur within the PSA.

Wart-stemmed ceanothus (Ceanothus verrucosus, CNPS 2B.2)
Wart-stemmed ceanothus (*Ceanothus verrucosus*) is an evergreen shrub with a blooming period of December through May that typically occurs on rocky slopes in coastal chaparral habitat. Wart-stemmed ceanothus is a woody shrub species that, if present, would likely have been detected during the survey. No suitable habitat for wart-stemmed ceanothus occurs within the PSA, and therefore there is no potential for this species to occur within the PSA.

Thread-leaved Brodiaea (Brodiaea filifolia, Federal Threatened, California Endangered, CNPS 1B.1)
Thread-leaved brodiaea is a perennial bulbiferous herb with a blooming period of April through May (occasionally extending from March through June) that typically occurs in clay soils around vernal pools and in openings in vernally moist grassland habitats. No suitable habitat for thread-leaved brodiaea occurs within the PSA, and therefore there is no potential for this species to occur within the PSA.

While five special status plant species have historically been documented as being located within 1 mile of the PSA, no special status plant species or any suitable habitat for these species were observed within the PSA.

5.4 Wildlife Species Observed

Approximately 21 general wildlife species have been observed within the PSA during surveys conducted in the area. A compendium list of wildlife species observed during studies in support of the proposed Project is included in Appendix B.

5.5 Special Status Wildlife Species

For the purposes of this report, special status wildlife species include those that are either listed or proposed for listing as threatened or endangered under the state or federal ESA, species designated as "Birds of Conservation Concern" by the USFWS, species designated as "fully protected" and SSC by the CDFW, or species considered "species of special concern" by the CDFW. Special status wildlife species

historically documented within 1 mile of the PSA or with potential to occur in the PSA are discussed in further detail below.

Twelve special status wildlife species have historically been documented as having a potential to occur within 1 mile of the PSA. During the biological surveys conducted for the project, no special status wildlife species were observed. However, two special status wildlife species, the western burrowing owl and the western yellow bat (*Lasiurus xanthinus*), have the potential to occur within the PSA (see Table 5.2).

Tidewater Goby (Eucyclogobius newberryi, Federal Endangered, California Species of Special Concern)
The tidewater goby is endemic to California coastal lagoons, estuaries, and coastal marshes. It is a benthic species that prefers brackish waters, shallow lagoons, and lower streams reaches where the water is still but not stagnant. Tidewater gobies are generally found within the fresh-saltwater interface in the upper part of estuaries, but can often migrate as far as 0.5 mile upstream along tributaries from an estuary (USFWS 2005). This species has been documented within 1 mile of the proposed Project, however, no suitable habitat (i.e. waterways or marshes connected to the ocean or within 0.5 mile upstream of a brackish water habitat) is located within the PSA.

San Diego Horned Lizard (Phrynosoma coronatum blainvillii, California Species of Special Concern)
The San Diego (coast) horned lizard is found within a variety of natural habitats in San Diego County that include sage scrub, chaparral, grasslands, woodlands, and coniferous forest, and prefers habitats that are undisturbed, with open areas and patches of loose soils. It primarily feeds on native harvester ants and frequently can be found near anthills. No suitable habitat for the horned lizard was observed within the PSA.

South Coast Garter Snake (Thamnophis sirtalis ssp., California Species of Special Concern)
The south coast garter snake is endemic to California and occurs in scattered locations along the southern California coastal plain, from Ventura County south to San Diego County. The south coast garter snake is a mostly aquatic snake that is restricted to marshes and upland habitats near permanent water sources with riparian vegetation. No suitable habitat for the south coast garter snake was observed within the PSA.

Coastal California Gnatcatcher (Polioptila californica californica, Federal Threatened, California Species of Special Concern)
The coastal California gnatcatcher is only found in southern California within the United States. It is a year-round resident within coastal sage scrub habitat and prefers areas dominated by California sagebrush and California buckwheat. The coastal California gnatcatcher may also forage and nest in other scrub habitats, such as chaparral and riparian scrub, if it is closely associated with nearby coastal sage scrub habitat. The nesting season for coastal California gnatcatcher is typically from March through August. No suitable coastal sage scrub habitat for the coastal California gnatcatcher was observed within the PSA.

Least Bell's Vireo (Vireo bellii pusillus, Federal Endangered, California Endangered)
The least Bell's vireo migrates into southern California during its breeding season from around mid-March through late September and is typically associated with dense riparian woodland habitat with a dense upper canopy, where it forages, and a dense understory, where it nests. It may also forage in upland habitats up to 200 feet from the riparian edge. No suitable riparian habitat for the least Bell's vireo was observed within the PSA.

Table 5.2 Special Status Wildlife Species Potentially Occurring within the PSA

Species	Habitat Requirements	Listing or Status	Potential to Occur within PSA
Birds			
Western burrowing owl (*Athene cunicularia*)	Grassland and open scrub habitat, and occasionally in human-made structures such as culverts, for roosting and nesting	BCC, SSC	Low potential – suitable disturbed habitat observed within the PSA
Mammals			
Western yellow bat (*Lasiurus xanthinus*)	Valley foothill riparian habitat, desert riparian, desert wash, and palm oasis habitats, roosts in trees, and prefers palms for roosting	SSC	Low potential – trees within Melrose Yard may provide suitable habitat for roosting

Notes: BCC= USFWS Birds of Conservation Concern; SSC=California Species of Special Concern

Southwestern Willow Flycatcher (Empidonax traillii extimus, Federal Endangered, California Endangered)

The southwestern willow flycatcher is a migratory species that spends the breeding season in the southwestern United States. The southwestern willow flycatcher is a strict inhabitant of the dense vegetation associated with riparian woodland/forest habitats with some surface water. In San Diego County, southwestern willow flycatchers start arriving to breed in riparian woodland/forest habitats in May and start migrating south by the end of August. No suitable riparian habitat for the southwestern willow flycatcher was observed within the PSA.

Swainson's Hawk (Buteo swainsoni, Federal Birds of Special Concern, California Threatened)

The Swainson's hawk migrates to the western United States to breed and was once seen in large numbers during spring and fall migration in San Diego County. Summer sightings of the Swainson's hawk in San Diego County are now extremely rare and it no longer nests in the region. Swainson's hawks forage in grassland habitats for insects such as grasshoppers, dragonflies, and caterpillars. No suitable habitat for the Swainson's hawk was observed within the PSA.

Tricolored Blackbird (Agelaius tricolor, Federal Birds of Special Concern, California Species of Special Concern)

The tricolored blackbird is a year-round resident in the western half of California and nests and roosts in large colonies in freshwater marshes while foraging in nearby grasslands, fields, or pastures. Nests are most often built in cattail marshes, but also occur in blackberry thickets or stands of black mustard. Their nesting season typically extends from March through June. Outside of the breeding season the tricolored blackbird may disperse further from their nest sites, including foraging in human-made habitats. No suitable habitat for the tricolored blackbird was observed within the PSA.

Western Burrowing Owl (Athene cunicularia, Federal Birds of Special Concern, California Species of Special Concern)

The burrowing owl can be found in grassland and open scrub habitats where it utilizes mammal burrows, and occasionally human-made structures such as culverts, for roosting and nesting. The species occurs in San Diego County year-round, with the breeding season generally from February through August, but is more common in winter. While this species was not identified on the CNDDB database search results for sensitive species occurring within 1 mile of the PSA, open disturbed areas and human-made structures that provide potentially suitable habitat for the burrowing owl were observed in the PSA. Therefore, there is a low potential for this species to occur within the PSA. Protocol surveys for the western burrowing owl will be conducted in early 2017 to determine the presence or absence of this species within the PSA.

Yellow-breasted Chat (Icteria virens, Federal Birds of Special Concern, California Species of Special Concern)

The yellow-breasted chat is a summer visitor to southern California and typically inhabits riparian woodland habitats where it nests in thickets of dense vegetation. The breeding season for yellow-breasted chat occurs as early as April and as late as July. No suitable riparian habitat for the yellow-breasted chat was observed within the PSA.

Yellow Warbler (Setophaga petechia, Federal Birds of Special Concern, California Species of Special Concern)

The yellow warbler is a summer visitor to southern California and typically inhabits riparian woodland habitats where it nests in upright forks of twigs. The breeding season for yellow warbler occurs from mid-April through July. No suitable riparian habitat for the yellow warbler was observed within the PSA.

Western Yellow Bat (Lasiurus xanthinus California Species of Special Concern)

The western yellow bat is found in southern California in valley foothill riparian, desert riparian, desert wash, and palm oasis habitats. It roosts in trees, and often roosts in the dead palm fronds of palm trees. It has been documented below 2,000 feet in elevation. This species occurs year-round in California, and feeds on a variety of insects including ants, wasps, bees, flies, mosquitoes, butterflies, moths, beetles, grasshoppers, and crickets. Potential roosting habitat for the western yellow bat exists within the palm trees and other trees within the PSA (specifically, the Melrose yard). Therefore, there is a low potential for the western yellow bat to occur within the PSA.

Stephens' Kangaroo Rat (Dipodomys stephensi, Federal Endangered, California Threatened)

The Stephens' kangaroo rat is currently found only in western Riverside and northern and central San Diego counties. Like all kangaroo rat species, it is a burrow-dwelling, seed-eating rodent that is active at night. It prefers sparsely vegetated annual grasslands dominated by annual forbs and open, sparsely vegetated sage scrub habitats, but can be found in disturbed habitat. Because they take dust baths to maintain their fur, they require open ground with loose or broken soils, which can include dirt roads. No kangaroo rat burrows were observed during surveys within the PSA. In addition, the most recent documented sighting within 1 mile of the PSA was in 1973 (CNDDB 2015). Therefore, due to the lack of suitable habitat and no recent known occurrence, the Stephens' kangaroo rat is not expected to occur within the PSA.

5.6 Critical Habitat

Under the ESA, to the extent prudent and determinable, the USFWS is required to designate Critical Habitat for endangered and threatened species (16 U.S.C. § 1533 (a)(3)). Critical Habitat is defined as areas of land, water, and air containing the physical and biological features essential for the survival and recovery of endangered and threatened species. Designated Critical Habitat includes sites for breeding and rearing, movement or migration, feeding, roosting, cover, and shelter.

Designated Critical Habitats require special management and protection of existing resources, including water quality and quantity, host animals and plants, food availability, pollinators, sunlight, and specific soil types. Critical habitat designation delineates all suitable habitat, occupied or not, that is essential to the survival and recovery of the species.

The PSA is within 5 miles of Critical Habitat for San Diego ambrosia, San Diego thornmint, spreading navarretia, thread-leaved brodiaea, San Diego fairy shrimp, tidewater goby, arroyo toad, California gnatcatcher, least Bell's vireo, cushenbury oxytheca, and southwestern willow flycatcher (refer to Figure 3).

5.7 Wildlife Movement Corridors

Wildlife corridors are defined as areas that connect suitable habitat in a region otherwise fragmented by rugged terrain, changes in vegetation, or human disturbance. Natural features, such as canyon drainages, ridgelines, or areas with dense vegetation cover can provide corridors for wildlife travel. Wildlife corridors are important to mobile species because they provide access to individuals seeking mates, food, water, and the dispersal of individuals away from high-population-density areas. Wildlife corridors also allow for the immigration and emigration of individuals to other populations, as well as gene flow among populations. Wildlife corridors are considered sensitive by resource and conservation agencies.

While local wildlife movements may be temporarily disrupted during construction of the proposed Project, the temporary and permanent impacts as a result of construction are not expected to significantly affect the movement of wildlife through the region, or along any existing or potential wildlife movement corridors specifically within the PSA. Furthermore, the proposed Project would not occur within or adjacent to existing drainages that can serve as wildlife movement corridors. Therefore, impacts to wildlife movement corridors as a result of construction of the proposed Project are not expected.

Terrestrial wildlife species tend to travel along natural drainages such as Loma Alta Creek and the San Luis Rey River in order to maintain protective cover from predators, as well as to readily access water and food sources. Migrating avian species will use native habitat areas as stopovers on their journey through the area.

The City of Oceanside's SAP identifies the existing overhead transmission line (TL 6966) from the existing San Luis Rey Substation, east along El Camino Real to Rancho Del Oro Road, as being within a designated Wildlife Corridor Planning Zone. This existing transmission line is depicted on the City of Oceanside SAP Figure 2-7 as an existing SDG&E transmission corridor.

5.8 Jurisdictional Resources

The Proposed Project does not contain water resources including ravine, wetland and non-wetland water features that may be considered “waters of the U.S.”.

6.0 IMPACTS

The proposed Project includes construction of a new 69/12 kV substation, and installation of new underground power line to connect the existing power line TL 6966 to the proposed Ocean Ranch substation.

Once the proposed Ocean Ranch Substation is constructed and placed in service, it will not require on-site personnel except during periodic and routine maintenance activities to ensure reliable operation of all equipment within the substation. Therefore, the impact analysis is focused only on construction activities that are required to construct the new substation, install the new underground power line, and establish temporary work areas.

Construction of the proposed Project has the potential to impact special status species and habitat. The discussion below considers impacts to biological resources that may occur from construction (short-term impacts). SDG&E has identified and incorporated Applicant Proposed Measures (APMs) in the development of the proposed Project to avoid or minimize project impacts to biological resources.

Impacts associated with the proposed Project can be classified as temporary or permanent, and direct or indirect. Temporary impacts generally include impacts associated with construction activities, including the use of vehicles and equipment to assemble and install new facilities and remove and/or replace old equipment, the use of temporary workspaces, storage of construction materials and equipment, or vegetation removal in areas to conduct construction activities. These areas are intended to be restored once construction is complete. Permanent impacts generally include impacts associated with construction and installation of the proposed Ocean Ranch Substation.

Direct impacts include the physical loss or removal of vegetation due to the installation of new facilities or work at staging/laydown areas. Indirect impacts during construction may include the interruption of normal nesting or foraging behaviors, loss of prey items, such as insects or food resources, or the suppression of growth due to excessive dust or noise. Impacts to special status species may occur either through temporary or permanent habitat loss, interruption of normal species routines, or through direct mortality.

Potential impacts to special status species associated with the proposed Project were assessed by analyzing species-specific requirements, including necessary vegetative habitat, elevational range, foraging needs, denning or breeding requirements, migratory trends, current ranges, and known occurrences or records.

6.1 Project Specific Impacts

The following describes the potential for impacts to sensitive biological resources during construction of the proposed Project. During the construction and operations and maintenance phases of the proposed Project, SDG&E would operate in compliance with applicable state and federal laws, regulations, permit conditions, and requirements.

The proposed Project has been designed to avoid sensitive habitat areas that may support special status species and sensitive biological resources when possible, including not placing facilities in drainage areas or other sensitive habitats, using existing access roads to the greatest extent possible, and placing staging areas, and laydown areas outside of sensitive habitats, where feasible. Where avoidance of habitat areas supporting special status species is not possible, or where sensitive habitat areas exist adjacent to proposed Project work areas, SDG&E would implement additional mitigation measures to minimize project impacts in these areas.

Permanent Impacts

Permanent impacts include the placement of underground conductor vaults, and construction of the Ocean Ranch Substation.

Underground Conduit Vaults

Four underground conductor vaults are proposed for the underground portion of the proposed Project. The anticipated permanent impacts for the installation of the underground vaults are the dimensions of the vaults themselves (approximately 10 feet by 18 feet in size). Therefore, the estimated permanent impacts for the installation of the underground vaults is 180 square feet per vault or a total of 720 square feet.

Ocean Ranch Substation

Completion of the Ocean Ranch Substation will result in approximately 9.66 acres of permanent impacts for the initial and ultimate substation paved buildout area, which will include a graded pad and permanent access roads within the substation site.

Temporary Impacts

Temporary impact areas may vary because the positioning of construction vehicles, equipment, and materials cannot be accurately anticipated prior to construction, as locations are dependent upon the contractor safely performing the work. The impacts from construction vehicles, equipment, and materials staged outside of delineated temporary work areas would be evaluated by the on-site biological monitor prior to placement. The onsite biological monitor, as appropriate, would assist crews in placement of construction vehicles, equipment, and materials to avoid and minimize impacts to sensitive habitat types.

In general, temporary impact areas were evaluated based on anticipated geometric work spaces around each proposed work location. Construction work spaces are dynamic in nature and may require minor modifications during the construction phase of the Proposed Project to facilitate worker safety and to avoid impacts to natural resources, including sensitive habitats. Therefore, the proposed temporary impact areas below are estimated based on the best information available at the time of preparation of this technical report.

Existing Access Roads

SDG&E will utilize existing access roads during construction. No new access roads are proposed for this Project. Construction would primarily take place within existing SDG&E fee-owned property, franchise or existing easements. Work areas are accessible by vehicle in paved/developed areas or other existing disturbed areas.

Staging Yards

The proposed Project may require the use of approximately four staging yards that may temporarily impact disturbed, developed, and landscaped areas. The total size of the four proposed staging yards is approximately 17.5 acres.

Underground Power Line

The installation of approximately 5,980 linear feet of new underground transmission line will require a 30–foot-wide workspace for the entire length of the line. These impacts will be primarily within existing paved roads and disturbed areas. Impacts associated with trenching and installation of the proposed underground transmission line section will result in approximately 179,400 square feet (4.12 acres) of temporary impacts, primarily to previously developed and disturbed areas.

6.2 Impacts to Vegetation Communities

Estimated permanent and temporary construction impacts to specific vegetation communities associated with the proposed Project were calculated using the anticipated permanent and temporary impact work areas described above. The anticipated impact areas for each vegetation community are shown in detail in Table 6.1 below.

Anticipated project impacts were calculated based on vegetation mapping, site-specific conditions, and proposed impact areas (described above) for features included in the proposed Project design. Construction work spaces are dynamic in nature and may require minor modifications during the construction phase of the proposed Project to facilitate worker safety and avoid impacts to natural resources, including sensitive habitats. Therefore, the proposed permanent and temporary impact areas discussed below are estimations and may shift or be modified within the existing PSA.

Impact to Sensitive Habitats

Non-sensitive habitat types are those typically of a lower biological value and include bare ground, heavily disturbed areas, developed and urban areas (paved), and landscaping. Non-sensitive communities include disturbed and pavement/developed/bare ground. These areas are not typically expected to have a major ecological value, or contribute to the function of natural habitats and open space areas in the region. However, two sensitive wildlife species have a low potential to occur within the disturbed habitat within the PSA and have been addressed in this report. A summary of impacts of habitat types is provided in Table 6.2.

6.3 Special Status Plant Species

Construction activities are not expected to impact sensitive plant species, based on the location of proposed facilities evaluated within the PSA. Five sensitive plant species have been historically documented within the PSA; however, there is no potential for these species to occur within the PSA.

Construction-related dust could also reduce the rates of photosynthesis and hinder normal plant growth.

If found to occur within the proposed Project, impacts to potentially occurring sensitive plant species can be minimized by avoiding these species to the extent possible. Sensitive plant species populations can be avoided by flagging or fencing areas off during construction to minimize impacts.

Table 6.1 Estimated Construction Impacts by Vegetation Community

Vegetation Community	Anticipated Area of Temporary Impact in Acres	Anticipated Area of Permanent Impact in Acres
Disturbed Southern Riparian Scrub	0	0.16
Disturbed Habitat	16.39	7.98
Urban/Developed/Landscape/Ornamental/ Bare Ground	1.82	1.516
Total Estimated Impacts	***18.21***	***9.66***

Table 6.2 Estimated Impacts to Sensitive and Non-Sensitive Habitats

Type of Impact	Total Estimated Area of Impact in Acres
Temporary Impacts	
Total Estimated Temporary Impacts to Sensitive Native Vegetation Communities	0.0
Total Estimated Temporary Impacts to Non-Sensitive Communities (Disturbed, Developed, Bare Ground, and Landscape/ Ornamental)	18.21
Total Estimated Temporary Impacts	***18.21***
Permanent Impacts	
Total Estimated Permanent Impacts to Sensitive Native Vegetation Communities (Disturbed Southern Riparian Scrub)	0.16
Total Estimated Permanent Impacts to Non-Sensitive Communities (Disturbed, Developed, Bare Ground, and Landscape/ Ornamental areas)	9.50
Total Estimated Permanent Impacts	***9.66***

6.4 Special Status Wildlife Species

Construction activities could potentially impact special status wildlife species, depending on the final location of the proposed facilities. Approximately two special status wildlife species have the potential to occur within the PSA. Permanent impacts to special status wildlife species could include the removal of suitable habitat as a result of the installation of project facilities, or direct mortality to individuals, nests, burrows, and young as a result of construction. Temporary impacts may include temporary construction activities that alter normal behavior patterns, including migration and dispersal, courtship and mating, and foraging and roosting.

Fish

The tidewater goby is not expected to occur within the proposed Project due to the lack of potential suitable habitat within temporary and permanent work areas. Although no focused surveys were conducted, this species was not observed during surveys conducted in the area, and the proposed Project has been designed to avoid riparian and jurisdictional areas. Therefore, the tidewater goby is not expected to be impacted as a result of the proposed Project.

Reptiles

The San Diego horned lizard and south coast garter snake are not expected to occur within the proposed Project due to the lack of potential suitable habitat within temporary and permanent work areas. Therefore, the San Diego horned lizard and south coast garter snake are not expected to be impacted as a result of the proposed Project.

Birds

Construction activities could potentially result in impacts to foraging and/or nesting habitat for one sensitive avian species that has the potential to occur within the PSA. Proposed Project activities that could result in impacts include the removal of vegetation to facilitate temporary staging or storage of equipment and construction vehicles and construction of the Ocean Ranch Substation. Other potential impacts to sensitive avian species include noise from construction equipment and vehicles.

Protocol surveys for the western burrowing owl will be conducted within the PSA in early 2017 to determine its presence within the PSA. There is a low potential for this species to occur within the proposed Project due to the presence of suitable habitat (open areas). If the western burrowing owl is not detected during protocol surveys within the PSA, impacts to this species are not expected. The potential for impacts is minimal. If this species is detected during future protocol surveys, protective measures for the western burrowing owl should be implemented during construction to help minimize impacts to it.

Due to the lack of suitable habitat within the PSA, impacts to the coastal California gnatcatcher, least Bell's vireo, southwestern willow flycatcher, Swainson's hawk, tricolored blackbird, yellow warbler, and yellow-breasted chat are not expected as a result of the proposed Project.

Mammals

Proposed construction activities, including the clearing of vegetation to create work areas, may cause both permanent and temporary impacts to one sensitive mammal species, the western yellow bat, if present. Temporary impacts from these activities may include a reduction of roosting habitat as a result of the trimming of trees for temporary work areas; construction noise; and ground vibration, as the western yellow bat may be deterred from inhabiting the trees during construction activities. If this species is detected during future preconstruction surveys, protective measures for the western yellow bat should be implemented during construction to help minimize impacts to it.

6.5 Critical Habitat

The PSA is not located within any critical habitat; therefore, the proposed Project would not result in any impacts to critical habitat.

6.6 Wildlife Movement Corridors

According to the Oceanside SAP, the existing San Luis Rey Substation is located within a Wildlife Corridor Planning Zone. The SAP identifies SDG&E's San Luis Rey Substation as being located along El Camino Real between Mesa Dive and Mission Avenue, and its electrical transmission corridor (comprised of fee-owned rights-of-way and easements) runs north-south through the central portion of the City of Oceanside. Per the City of Oceanside, "the electrical transmission corridor is associated with many of the remaining habitat patches in the City and is anticipated to continue to act as a north-south habitat corridor through the City" (City of Oceanside 2010).

The proposed San Luis Rey Staging Yard consists of a paved area located immediately north of the existing San Luis Rey Substation. The staging yard would be utilized to store equipment needed during the construction phase of the project. While local wildlife movements may be temporarily disrupted during the use of the San Luis Rey Staging Yard, the temporary impacts that result from using the site to store equipment and the additional vehicles traveling to and from the staging yard are not expected to significantly affect the movement of wildlife along any existing or potential wildlife movement corridors within the PSA. Therefore, impacts to wildlife movement corridors are not expected as a result of the proposed Project.

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Appendix A
Biological Constraints Mapbook

28537 Ocean Ranch Substation
Biological Constraints Survey

1 Inch = 200 Feet at 11" x 17"

0 62.5 125 250 375 500 Feet

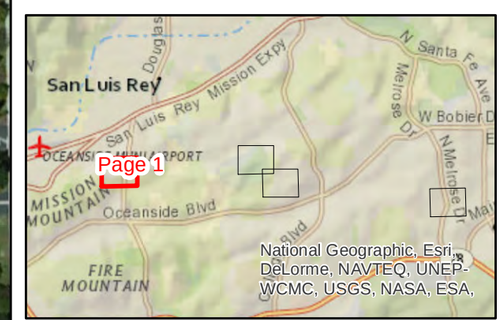
Legend

- Staging Yard
- Project Survey Area

Vegetation

- Disturbed Habitat
- Landscape/Ornamental
- Pavement/Developed

San Luis Rey Staging Yard



N

Created by: Pangea Biological, May 2016
Data Source: SDG&E

Coordinate System: NAD 1983 StatePlane California VI FIPS 0406 Feet
Projection: Lambert Conformal Conic
Datum: North American 1983

Pangea Biological

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

28537 Ocean Ranch Substation
Biological Constraints Survey

1 Inch = 200 Feet at 11" x 17"

0 62.5 125 250 375 500 Feet

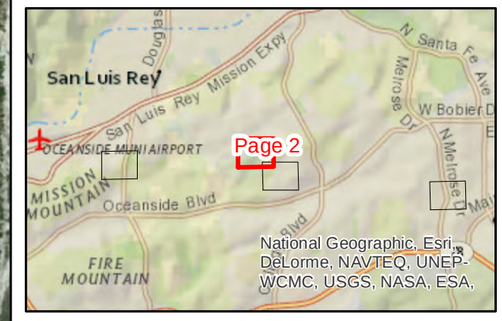
Legend

- Staging Yard
- Project Survey Area

Vegetation

- Disturbed Habitat
- Landscape/Ornamental
- Pavement/Developed

Corporate Centre Staging Yard



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Created by: Pangea Biological, May 2016
Data Source: SDG&E

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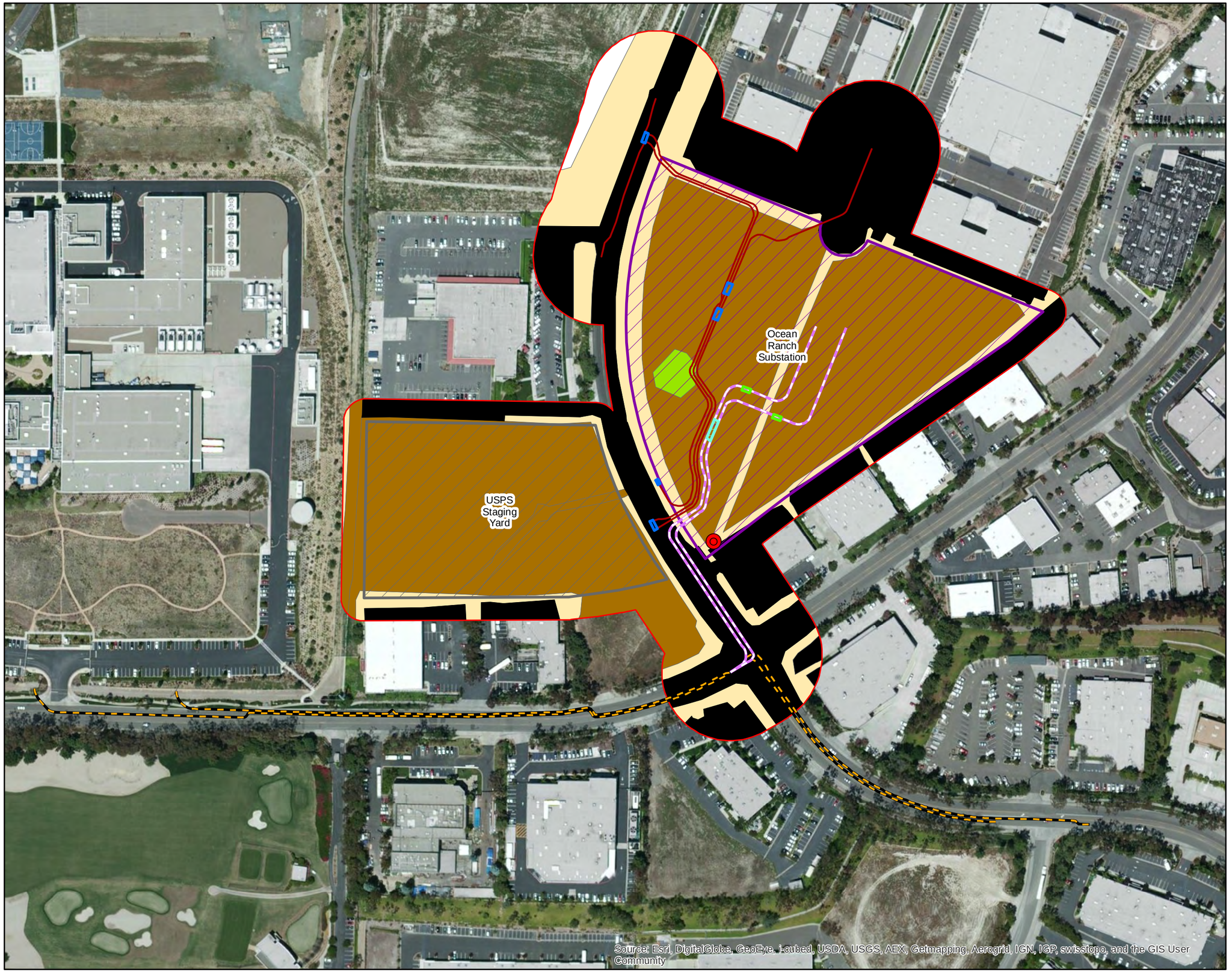
Projection: Lambert Conformal Conic
Datum: North American 1983

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

28537 Ocean Ranch Substation
Biological Constraints Survey

1 Inch = 200 Feet at 11" x 17"

0 62.5 125 250 375 500 Feet



Legend

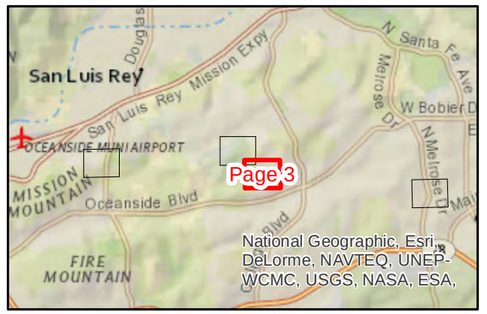
- Monopole

Transmission

- Existing Underground
- Proposed Underground
- Proposed Underground Distribution
- Underground Transmission Structure
- Underground Distribution Structure
- Ocean Ranch Substation
- Staging Yard
- Stringing Site
- Project Survey Area

Vegetation

- Bare Ground
- Disturbed Habitat
- Southern Riparian Scrub (Disturbed)
- Landscape/Ornamental
- Pavement/Developed



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Created by: Pangea Biological, May 2016
Data Source: SDG&E

Coordinate System: NAD 1983 StatePlane California VI FIPS 0406 Feet
Projection: Lambert Conformal Conic
Datum: North American 1983

28537 Ocean Ranch Substation Biological Constraints Survey

1 Inch = 200 Feet at 11" x 17"

0 62.5 125 250 375 500 Feet

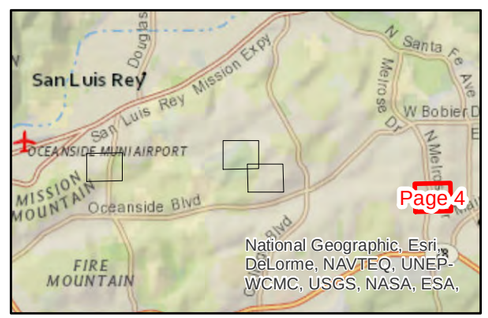
Legend

- Staging Yard
- Project Survey Area

Vegetation

- Bare Ground
- Landscape/Ornamental
- Pavement/Developed

Melrose Substation Staging Yard



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Created by: Pangea Biological, May 2016
Data Source: SDG&E

Coordinate System: NAD 1983 StatePlane California VI FIPS 0406 Feet
Projection: Lambert Conformal Conic
Datum: North American 1983

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Appendix B
Plant and Wildlife Species Lists

Plant Species Observed

Scientific Name	Common Name
AIZOACEAE	
Mesembryanthemum crystallinum	iceplant
ANACARDIACEAE	
Schinus sp.	pepper tree
AMARANTHACEAE	
Salsola tragus	Russian thistle
APIACEAE	
Foeniculum vulgare	fennel
APOCYNACEAE	
Nerium sp.	oleander
ARECACEAE	
Washingtonia robusta	Mexican fan palm
Phoenix dactylifera	date palm
ASTERACEAE	
Ambrosia psilostachya	western ragweed
Artemisia californica	California sagebrush
Helianthus californicus	California sunflower
Chrysanthemum sp.	chrysanthemum
Isocoma menziesii	coastal goldenbush
Baccharis pilularis	coyote brush
Baccharis salicifolia	mule-fat
Deinandra fasciculata	fascicled tarweed
Heterotheca grandiflora	telegraph weed
Centaurea melitensis	tocalote
BRASSICACEAE	
Brassica nigra	black mustard
Nasturtium sp.	nasturtium

Plant Species Observed

Scientific Name	Common Name
BORAGINACEAE	
Heliotropium curassavicum	salt heliotrope
CACTACEAE	
Cylindropuntia californica var. *parkeri*	cane cholla
Opuntia sp.	prickly-pear
FABACEAE	
Lupinus sp.	lupine
Melilotus sp.	sweetclover
MYOPORACEAE	
Myoporum sp.	myoporum
MYRTACEAE	
Callistemon viminalis	bottle brush
Eucalyptus sp.	eucalyptus
OLEACEAE	
Olea europaea	olive tree
OXALIDACEAE	
Oxalis sp.	oxalis
PHRYMACEAEA	
Mimulus sp.	monkeyflower
PINACEAE	
Pinus sp.	pine
PLUMBAGINACEAE	
Limonium sp.	sea-lavender
POACEAE	
Pennisetum setaceum	African fountain grass
Cynodon dactylon	Bermuda grass
Bromus madritensis ssp. *rubens*	foxtail
Hordeum jubatum	foxtail barley

Plant Species Observed

Scientific Name	Common Name
Cortaderia selloana	pampas grass
Vulpia myuros var. myuros	rat-tail fescue
Bromus diandrus	ripgut brome
Bromus hordeaceus	soft chess
Avena fatua	wild oat
SALICACEAE	
Salix lasiolepis	arroyo willow
TAMARICACEAE	
Tamarix sp.	tamarisk

Wildlife Species Observed

Scientific Name	Common Name
BIRDS	
Selasphorus sasin	Allen's hummingbird
Corvus brachyrhynchos	American crow
Falco sparverius	American kestrel
Calypte anna	Anna's hummingbird
Myiarchus cinerascens	ash-throated flycatcher
Thryomanes bewickii	Bewick's wren
Tyrannus vociferans	Cassin's kingbird
Petrochelidon pyrrhonata	cliff swallow
Corvus corax	common raven
Carpodacus mexicanus	house finch
Charadrius vociferus	killdeer
Spinus psaltria	lesser goldfinch
Zenaida macroura	mourning dove
Mimus polyglottos	northern mockingbird
Picoides nuttallii	Nuttall's woodpecker
Buteo jamaicensis	red-tailed hawk
Columba livia	rock pigeon
Sialia mexicana	western bluebird
Sturnella neglecta	western meadowlark
Dendroica coronata	yellow-rumped warbler
MAMMALS	
Spermophilus beecheyi	California ground squirrel

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Appendix H

Additional Special-status Species

Table H-1. Additional Special-status Species Known from the Region; Not Likely to Occur in the Project Study Area (PSA)

Species	Status	Habitat	Potential for Occurrence in the PSA
Plants			
Abronia maritima Red sand-verbena	CRPR 4.2	Perennial herb; coastal dunes below about 330 feet elev. Blooms Feb–Nov.	**Not likely to occur.** PSA does not include suitable habitat.
Abronia villosa var. aurita Chaparral sand-verbena	CRPR 1B.1	Annual herb; sandy soils in chaparral, coastal dunes, desert dunes; 250 to 5250 feet elev. Blooms Jan–Sep.	**Not likely to occur.** PSA does not include suitable habitat.
Acanthomintha ilicifolia San Diego thornmint	FT, SE, CRPR 1B.1, NCCP	Annual; vernal pools and shrubland clay soil depressions below about 3000 ft. elev. Blooms Apr–Jun.	**Not likely to occur.** PSA does not include suitable habitat.
Acmispon prostratus Nuttall's acmispon	CRPR 1B.1	Annual; coastal dunes, sandy areas in coastal scrub; sea level to about 30 feet elev. Blooms Mar–Jul.	**Not likely to occur.** PSA does not include suitable habitat.
Adolphia californica California adolphia	CRPR 2B.1	Shrub; coastal sage scrub and chaparral below about 2500 ft. elev. Blooms Dec–Apr.	**Not likely to occur.** PSA does not include suitable habitat.
Arctostaphylos glandulosa ssp. crassifolia Del Mar manzanita	FE, CRPR 1B.1, NCCP	Perennial evergreen shrub; coastal bluffs and sandstone outcrops below about 1200 ft. elev. Blooms Dec–Apr.	**Not likely to occur.** PSA does not include suitable habitat.
Arctostaphylos rainbowensis Rainbow manzanita	CRPR 1B.1	Perennial evergreen shrub; chaparral; 670 to 2200 feet elev. blooms Dec–Mar.	**Not likely to occur.** PSA does not include suitable habitat.
Artemisia palmeri San Diego sagewort	CRPR 4.2	Coastal sage scrub, mostly within ±mesic washes; sandy soils; below about 2000 ft. elev. Blooms Jul–Sep.	**Not likely to occur.** PSA does not include suitable habitat.
Asplenium vespertinum Western speenwort	CRPR 4.2	Perennial herb; rocky soils in chaparral, woodland, coastal scrub; 600 to 3300 feet elev. Blooms Feb–Jun.	**Not likely to occur.** PSA does not include suitable habitat.
Astragalus tener var. titi Coastal dunes milk-vetch	FE, SE, CRPR 1B.1, NCCP	Annual herb; coastal dunes and scrub; most historic occurrences presumed extinct. Blooms Mar–May.	**Not likely to occur.** PSA does not include suitable habitat.
Atriplex coulteri Coulter's saltbush	CRPR 1B.2	Perennial herb; alkaline or clay soils, open sites in coastal scrub, coastal bluff scrub, coastal dunes, and valley and foothill grasslands. Elev. 0-1,600 ft. Blooms Mar–Oct.	**Not likely to occur.** PSA does not include suitable habitat.
Atriplex pacifica South coast saltscale	CRPR 1B.2	Annual herb; coastal bluff scrub, coastal dunes, coastal scrub, playas. Elev. 0-1,000 ft. Blooms Mar–Oct.	**Not likely to occur.** PSA does not include suitable habitat.
Atriplex parishii Parish's brittlescale	CRPR 1B.1	Annual herb; alkaline soils in chenopod scrub, playas, vernal pools; 80 to 6200 feet elev. Blooms Jun–Oct.	**Not likely to occur.** PSA does not include suitable habitat.
Baccharis vanessae Encinitas baccharis	FT, SE, CRPR 1B.1, NCCP	Perennial deciduous shrub; sandstone areas in maritime chaparral and cismontane woodland; 200 to 2350 feet elev. Blooms Aug–Nov.	**Not likely to occur.** PSA does not include suitable habitat.
Bloomeria clevelandii San Diego goldenstar	CRPR 1B.1	Perennial bulbiferous herb; clay soils in chaparral, coastal scrub, grassland, vernal pools; 160 to 1525 feet elev. Blooms Apr–May.	**Not likely to occur.** PSA does not include suitable habitat.

Table H-1. Additional Special-status Species Known from the Region; Not Likely to Occur in the Project Study Area (PSA)

Species	Status	Habitat	Potential for Occurrence in the PSA
Brodiaea orcuttii Orcutt's brodiaea	CRPR 1B.1, NCCP	Perennial herb; vernal pools, grasslands, seeps, streamsides; heavy soils; near sea level to about 5300 ft. elev. Blooms Apr–Jul.	**Not likely to occur.** PSA does not include suitable habitat.
Camissoniopsis lewisii Lewis' evening-primrose	CRPR 3	Annual; sandy or clay soils in coastal bluff scrub, woodland, coastal dunes, coastal scrub, grassland; sea level to about 980 feet elev. Blooms Mar–Jun.	**Not likely to occur.** PSA does not include suitable habitat.
Caulanthus similans Payson's jewelflower	CRPR 4.2, NCCP	Annual herb; sandy or granitic soils in chaparral and coastal scrub; 300 to 7200 feet elev. Blooms Feb–Jun.	**Not likely to occur.** PSA does not include suitable habitat.
Centromadia parryi ssp. australis Southern tarplant	CRPR 1B.1	Annual herb; marshes, vernally mesic grassland, vernal pools; sea level to 1575 feet elev. Blooms May–Nov.	**Not likely to occur.** PSA does not include suitable habitat.
Centromadia pungens ssp. laevis Smooth tarplant	CRPR 1B.1	Annual herb: alkaline soils in chenopod scrub, meadows and seeps, playas, riparian woodland, grassland; sea level to 2100 feet elev. Blooms Apr–Sep.	**Not likely to occur.** PSA does not include suitable habitat.
Chaenactis glabriuscula var. orcuttiana Orcutt's pincushion	CRPR 1B.1	Annual; sandy places near coast, generally dunes or bluffs below about 350 ft. elev. Blooms Jan–Aug.	**Not likely to occur.** PSA does not include suitable habitat.
Chamaebatia australis Southern mountain misery	CRPR 4.2	Evergreen shrub; gabbroic, metavolcanic soils in chaparral; 980 to 3350 feet elev. Blooms Nov–May.	**Not likely to occur.** PSA is well below elevational range and does not include suitable habitat.
Chorizanthe orcuttiana Orcutt's spineflower	FE, SE, CRPR 1B.1, NCCP	Annual herb; sandy openings in maritime chaparral, coastal scrub, coniferous forest; 10 to 400 feet elevation. Blooms Mar–May.	**Not likely to occur.** PSA does not include suitable habitat.
Chorizanthe polygonoides var. longispina Long-spined spineflower	CRPR 1B.2	Annual herb; chaparral, coastal scrub, meadows, grassland on gabbroic clay at 100 to 5020 feet elevation. Blooms Apr–Jun.	**Not likely to occur.** PSA does not include suitable habitat.
Cistanthe maritima Seaside cistanthe	CRPR 4.2	Annual herb; sandy soils in coastal bluff scrub, coastal scrub, grassland; sea level to 980 feet elev. Blooms Feb–Aug.	**Not likely to occur.** PSA does not include suitable habitat.
Clarkia delicata Delicate clarkia	CRPR 1B.2	Annual herb; often on gabbro soils in chaparral and woodland; 770 to 3280 feet elev. Blooms Apr–Jun.	**Not likely to occur.** PSA is well below elevational range and does not include suitable habitat.
Comarostaphylis diversifolia ssp. diversifolia Summer holly	CRPR 1B.2	Shrub; chaparral below about 1800 ft. elev. Blooms Apr–Jun.	**Not likely to occur.** PSA does not include suitable habitat.
Convolvulus simulans Small-flowered morning-glory	CRPR 4.2	Annual; clay, serpentinite seeps in coastal scrub, grassland, and openings in chaparral; 100 to 2300 feet elev. Blooms Mar–Jul.	**Not likely to occur.** PSA does not include suitable habitat.
Corethrogyne filaginifolia var. incana San Diego sand aster	CRPR 1B.1	Perennial herb; coastal bluff scrub, coastal scrub, chaparral; sea level to 380 feet elev. Blooms Jun–Sep.	**Not likely to occur.** PSA does not include suitable habitat.

Table H-1. Additional Special-status Species Known from the Region; Not Likely to Occur in the Project Study Area (PSA)

Species	Status	Habitat	Potential for Occurrence in the PSA
Corethrogyne filaginifolia var. linifolia Del Mar Mesa sand aster	CRPR 1B.1, NCCP	Perennial herb; sandy soil in coastal bluff scrub, coastal scrub, and openings in maritime chaparral; near sea level to 500 feet elev. Blooms May–Sep.	**Not likely to occur.** PSA does not include suitable habitat.
Cryptantha wigginsii Wiggins' cryptantha	CRPR 1B.2	Annual herb; often on clay soils in coastal scrub; 65 to 900 feet elev. Blooms Feb–Jun.	**Not likely to occur.** PSA does not include suitable habitat.
Deinandra paniculata Paniculate tarplant	CRPR 4.2	Annual; usually vernally mesic, sometimes sandy soils in coastal scrub, grassland, vernal pools; 80 to 3100 feet elev. Blooms Apr–Nov.	**Not likely to occur.** PSA does not include suitable habitat.
Dichondra occidentalis Western dichondra	CRPR 4.2	Perennial herb; chaparral, woodland, coastal scrub, grassland; 160 to 1650 feet elev. Blooms Jan–Jul.	**Not likely to occur.** PSA does not include suitable habitat.
Dudleya blochmaniae ssp. blochmaniae Blochman's dudleya	CRPR 1B.1, NCCP	Perennial herb; open rocky slopes, often in clay or serpentine soil, below about 1500 ft. elev., coastal regions. Blooms Apr–Jun.	**Not likely to occur.** PSA does not include suitable habitat.
Dudleya multicaulis Many-stemmed dudleya	CRPR 1B.2, NCCP	Perennial herb; often on clay soils in chaparral, coastal scrub, grassland; 50 to 2600 feet elev. Blooms Apr–Jul.	**Not likely to occur.** PSA does not include suitable habitat.
Dudleya variegata Variegated dudleya	CRPR 1B.2, NCCP	Perennial herb; various upland habitats; dry hillsides and mesas; sea level to about 1900 ft. elev. Blooms May–Jun.	**Not likely to occur.** PSA does not include suitable habitat.
Dudleya viscida Sticky dudleya	CRPR 1B.2, NCCP	Perennial herb; steep rock slopes; sea level to about 1800 ft. elev. Blooms May–Jun.	**Not likely to occur.** PSA does not include suitable habitat.
Ericameria palmeri var. palmeri Palmer's goldenbush	CRPR 1B.1, NCCP	Evergreen shrub; mesic areas in chaparral and coastal scrub; 100 to 1970 feet elev. Blooms Jul–Nov.	**Not likely to occur.** PSA does not include suitable habitat.
Eryngium aristulatum var. parishii San Diego button-celery	FE, SE, CRPR 1B.1, NCCP	Perennial herb; vernal pools or moist sites in coastal sage scrub or grass-lands; below about 2000 ft. elev. Blooms Apr–Jun.	**Not likely to occur.** PSA does not include suitable habitat.
Eryngium pendletonense Pendleton button-celery	CRPR 1B.1	Perennial herb; clay soils and vernally mesic areas in coastal bluff scrub, grassland, vernal pools; 50 to 360 feet elev. Blooms Apr–Jul.	**Not likely to occur.** PSA does not include suitable habitat.
Ferocactus viridescens San Diego barrel cactus	CRPR 2B.1, NCCP	Shrubland or grassland on open dry slopes below about 500 ft. elev. Blooms May–Jun.	**Not likely to occur.** PSA does not include suitable habitat.
Harpagonella palmeri Palmer's grapplinghook	CRPR 4.2, NCCP	Annual herb. Clay soils; dry, semi-barren sites; chaparral, coastal scrub, valley and foothill grassland. Elev. 65 - 3,200 ft. Blooms Mar–May.	**Not likely to occur.** PSA does not include suitable habitat.
Hazardia orcuttii Orcutt's hazardia	ST, CRPR 1B.1	Perennial evergreen shrub; often on clay soils in maritime chaparral and coastal scrub; around 280 feet elev. Blooms Aug–Oct.	**Not likely to occur.** PSA does not include suitable habitat.

Table H-1. Additional Special-status Species Known from the Region; Not Likely to Occur in the Project Study Area (PSA)

Species	Status	Habitat	Potential for Occurrence in the PSA
Heterotheca sessiliflora ssp. sessiliflora Beach goldenaster	CRPR 1B.1	Perennial herb; coastal dunes, coastal scrub, coastal chaparral; sea level to 4000 feet elev. Blooms Mar–Dec.	**Not likely to occur.** PSA does not include suitable habitat.
Holocarpha virgata ssp. elongata Graceful tarplant	CRPR 4.2	Annual; chaparral, woodland, coastal scrub, grassland; 200 to 3600 feet elev. Blooms May–Nov.	**Not likely to occur.** PSA does not include suitable habitat.
Hordeum intercedens Vernal barley	CRPR 3.2	Annual; coastal dunes, coastal scrub, vernal pools, saline flats and depressions in grassland; sea level to 3300 feet elev. Blooms Mar–June.	**Not likely to occur.** PSA does not include suitable habitat.
Horkelia truncata Ramona horkelia	CRPR 1B.3	Perennial herb; clay and gabbroic soils in chaparral and cismontane woodland; 1300 to 4265 feet elev. Blooms May–Jun.	**Not likely to occur.** PSA is well below elevational range and does not include suitable habitat.
Isocoma menziesii var. decumbens Decumbent goldenbush	CRPR 1B.2	Coastal sage scrub (sandy mesas, often disturbed areas within coastal scrub), below about 500 ft. elev. Blooms Apr–Nov.	**Not likely to occur.** PSA does not include suitable habitat.
Iva hayesiana San Diego marsh-elder	CRPR 2B.2	Perennial herb; marshes, swamps, playas; 30 to 1650 feet elev. Blooms Apr–Oct.	**Not likely to occur.** PSA does not include suitable habitat.
Juncus acutus ssp. leopoldii Southwestern spiny rush	CRPR 4.2	Perennial herb; mesic coastal dunes, alkaline seeps, coastal salt marshes; sea level to 3000 feet elev. Blooms Mar–Jun.	**Not likely to occur.** PSA does not include suitable habitat.
Lasthenia glabrata ssp. coulteri Coulter's goldfields	CRPR 1B.1	Annual herb. Saline places, coastal salt marshes and swamps, playas, vernal pools. Elev. 0-4,000 ft. Blooms Feb-Jun.	**Not likely to occur.** PSA does not include suitable habitat.
Lepidium virginicum var. robinsonii Robinson's pepper-grass	CRPR 4.3	Annual herb. Found on dry soils in chaparral and coastal scrub below 2,900 feet elevation. Blooms Jan-Jul.	**Not likely to occur.** PSA does not include suitable habitat.
Leptosyne maritima Sea dahlia	CRPR 2B.2	Perennial herb; coastal scrub, coastal bluff scrub; sea level to 500 feet elev. Blooms Mar–May.	**Not likely to occur.** PSA does not include suitable habitat.
Lycium californicum California box-thorn	CRPR 4.2	Perennial shrub; coastal bluff scrub, coastal scrub; sea level to 500 feet elev. Blooms Dec–Aug.	**Not likely to occur.** PSA does not include suitable habitat.
Microseris douglasii ssp. platycarpha Small-flowered microseris	CRPR 4.2	Annual; clay soils in woodland, coastal scrub, grassland, vernal pools; near sea level to 3500 feet elev. Blooms Mar–May.	**Not likely to occur.** PSA does not include suitable habitat.
Mimulus diffusus Palomar monkeyflower	CRPR 4.3	Annual herb; sandy or gravelly soils in chaparral and lower montane coniferous forest; 4000 to 6000 feet elev. Blooms Apr–Jun.	**Not likely to occur.** PSA is well below elevational range and does not include suitable habitat.
Mondardella hypoleuca ssp. lanata Felt-leaved monardella	CRPR 1B.2, NCCP	Perennial rhizomatous herb; chaparral and cismontane woodland; 985 to 5165 feet elev. Blooms Jun–Aug.	**Not likely to occur.** PSA is well below elevational range and does not include suitable habitat.

Table H-1. Additional Special-status Species Known from the Region; Not Likely to Occur in the Project Study Area (PSA)

Species	Status	Habitat	Potential for Occurrence in the PSA
Myosurus minimus ssp. apus Little mousetail	CRPR 3.1, NCCP	Annual; vernal pools, alkali grasslands; valley floors, sea level to about 2100 ft. elev. Blooms Mar–May.	**Not likely to occur.** PSA does not include suitable habitat.
Navarretia fossalis Spreading navarretia	FT, CRPR 1B.1, NCCP	Annual; vernal pools and margins, marshes, & playas on saline-alkaline soils; sea level to about 4200 ft. elev. Apr–Jun.	**Not likely to occur.** PSA does not include suitable habitat.
Nemacaulis denudata var. denudata Coast wooly-heads	CRPR 1B.2	Annual herb; beaches and coastal dunes. Elev. 0-300 ft. Blooms Mar–Sep.	**Not likely to occur.** PSA does not include suitable habitat.
Nemacaulis denudata var. gracilis Slender cottonheads	CRPR 2B.2	Annual herb. Coastal dunes, desert dunes, and Sonoran desert scrub in dunes or sand at 150 to 1320 feet elev. Blooms Mar–May.	**Not likely to occur.** PSA does not include suitable habitat.
Nolina cismontana Chaparral nolina	CRPR 1B.2	Perennial evergreen shrub; sandstone or gabbro soils in chaparral and coastal scrub; 460 to 4180 feet elev. Blooms Mar–Jul.	**Not likely to occur.** PSA does not include suitable habitat.
Orcuttia californica California Orcutt grass	FE, SE, CRPR 1B.1, NCCP	Annual herb; vernal pools; 50 to 2200 feet elev. Blooms Apr–Aug.	**Not likely to occur.** PSA does not include suitable habitat.
Orobanche parishii ssp. brachyloba Short-lobed broomrape	CRPR 4.2	Perennial parasitic herb; sandy soils in coastal dunes, coastal bluff scrub, coastal scrub; sea level to 1000 feet elev. Blooms Apr–Oct.	**Not likely to occur.** PSA does not include suitable habitat.
Pentachaeta aurea ssp. aurea Golden-rayed pentachaeta	CRPR 4.2	Annual; chaparral, forest/woodland, coastal scrub, riparian, grassland; 260 to 6000 feet elev. Blooms Mar–Jul.	**Not likely to occur.** PSA does not include suitable habitat.
Phacelia ramosissima var. austrolitoralis South Coast branching phacelia	CRPR 3.2	Perennial herb; sandy and sometimes rocky soils in chaparral, coastal dunes, coastal scrub, coastal salt marsh; sea level to 980 feet elev. Blooms Mar–Aug.	**Not likely to occur.** PSA does not include suitable habitat.
Phacelia stellaris Brand's star phacelia	CRPR 1B.1	Annual herb; open areas in coastal dunes and scrub; sea level to 1300 feet elev. Blooms Mar–Jun.	**Not likely to occur.** PSA does not include suitable habitat.
Pinus torreyana ssp. torreyana Torrey pine	CRPR 1B.2, NCCP	Evergreen tree; sandstone soils in coniferous forest, chaparral; 250 to 500 feet elev.	**Not likely to occur.** PSA does not include suitable habitat.
Polygala cornuta var. fishiae Fish's milkwort	CRPR 4.3	Perennial deciduous shrub; chaparral, cismontane woodland, riparian woodland; 330 to 3280 feet elev. Blooms May–Aug.	**Not likely to occur.** PSA does not include suitable habitat.
Pseudognaphalium leucocephalum White rabbit-tobacco	CRPR 2B.2	Perennial herb; sandy or gravelly soils in chaparral, cismontane woodland, coastal scrub, riparian woodland; sea level to 6900 feet elev. Blooms Jul–Dec.	**Not likely to occur.** PSA does not include suitable habitat.
Psilocarphus brevissimus var. multiflorus Delta woolly-marbles	CRPR 4.2	Annual herb; vernal pools; 30 to 1640 feet elev. Blooms May–Jun.	**Not likely to occur.** PSA does not include suitable habitat.

Table H-1. Additional Special-status Species Known from the Region; Not Likely to Occur in the Project Study Area (PSA)

Species	Status	Habitat	Potential for Occurrence in the PSA
Quercus dumosa Nuttall's scrub oak	CRPR 1B.1	Evergreen shrub; sandy, clay loam in coniferous forest, chaparral, coastal scrub; 45 to 1320 feet elev. Blooms Feb–Aug.	**Not likely to occur.** PSA does not include suitable habitat.
Quercus engelmannii Engelmann oak	CRPR 4.2	Perennial deciduous tree; chaparral, cismontane woodland, riparian woodland, grassland; 160 to 4265 feet elev.	**Not likely to occur.** PSA does not include suitable habitat.
Salvia munzii Munz's sage	CRPR 2B.2	Evergreen shrub; chaparral, coastal scrub; 380 to 3500 feet elev. Blooms Feb–Apr.	**Not likely to occur.** PSA does not include suitable habitat.
Selaginella cinerascens Ashy spike-moss	CRPR 4.1	Perennial herb; chaparral, coastal scrub; 65 to 2100 feet elev.	**Not likely to occur.** PSA does not include suitable habitat.
Senecio aphanactis Chaparral ragwort	CRPR 2B.2	Annual; drying alkaline flats; below about 1300 ft. elev. Blooms Jan–Apr.	**Not likely to occur.** PSA does not include suitable habitat.
Stemodia durantifolia Purple stemodia	CRPR 2B.1	Perennial herb; often in mesic, sandy areas in desert scrub; 590 to 980 feet elev. Blooms Jan–Dec.	**Not likely to occur.** PSA does not include suitable habitat.
Stipa diegoensis San Diego County needle grass	CRPR 4.2	Perennial herb; rocky soils, often mesic areas in chaparral, coastal scrub; near sea level to 2600 feet elev. Blooms Feb–Jun.	**Not likely to occur.** PSA does not include suitable habitat.
Suaeda esteroa Estuary seablite	CRPR 1B.2	Perennial herb; coastal salt marshes and swamps. Elev. 0-15 ft. Blooms May–Jan.	**Not likely to occur.** PSA does not include suitable habitat.
Tetracoccus dioicus Parry's tetracoccus	CRPR 1B.2, NCCP	Shrub; chaparral, coastal sage scrub; generally gabbro or basalt soils; about 500-3300 ft. elev. Blooms Apr–May.	**Not likely to occur.** PSA does not include suitable habitat.
Viguiera laciniata San Diego County viguiera	CRPR 4.2	Perennial shrub; chaparral, coastal scrub; 200 to 2500 feet elev. Blooms Feb–Aug.	**Not likely to occur.** PSA does not include suitable habitat.
Invertebrates			
Bombus crotchii Crotch bumble bee	SA	Colonial insect; open grassland and scrub; underground colonies, often in old rodent burrows. Food plants include *Asclepias, Chaenactis, Lupinus, Medicago, Phacelia, Salvia, Antirrhinum, Clarkia, Dendromecon, Eschscholzia, Eriogonum.* Southern and central CA, parts of N CA, SW Nevada and Baja. Active spring–fall.	**Not likely to occur.** PSA does not include suitable habitat.
Branchinecta lynchi Vernal pool fairy shrimp	FT	Occurs only in cool water shallow vernal pools. Ranges from Riverside County north through Central Valley grasslands and central and south Coast Ranges.	**Not likely to occur.** PSA does not include suitable habitat.

Table H-1. Additional Special-status Species Known from the Region; Not Likely to Occur in the Project Study Area (PSA)

Species	Status	Habitat	Potential for Occurrence in the PSA
Branchinecta sandiegonensis San Diego fairy shrimp	FE, NCCP	Vernal pools, western San Diego Co. and Orange Co., commonly in small, short-lived or relatively shallow pools below about 2300 ft. elev. and within about 40 mi of the coast.	**Not likely to occur.** PSA does not include suitable habitat.
Cicindela senilis frosti Senile tiger beetle	SA	Inhabits marine shoreline, from c Calif. coast south to salt marshes of San Diego, also Lake Elsinore. Inhabits dark-colored mud in the lower zone and dried salt pans in the upper zone.	**Not likely to occur.** PSA does not include suitable habitat.
Danaus plexippus pop. 1 Monarch – California overwintering population	SA	Winter roost sites extend along the coast from n Mendocino to Baja Calif., Mexico. Roosts located in wind-protected tree groves (eucalyptus, Monterey pine, cypress), with nectar and water sources nearby.	**Not likely to occur.** PSA does not include suitable trees for winter roosts. Individuals could potentially be seen in or moving through the area.
Streptocephalus woottoni Riverside fairy shrimp	FE, NCCP	Deep vernal pools and ponds in annual grasslands, which may be interspersed with chaparral or coastal sage scrub vegetation.	**Not likely to occur.** PSA does not include suitable habitat.
Tryonia imitator Mimic tryonia (=California brackishwater snail)	SA	Inhabits coastal lagoons, estuaries, and salt marshes, from Sonoma Co. south to San Diego Co. Found only in permanently submerged areas in a variety of sediment types; able to withstand a wide range of salinities.	**Not likely to occur.** PSA does not include suitable habitat.
Fish			
Gila orcuttii Arroyo chub	SSC	Major cismontane stream systems in S Calif.; extant popns near Riverside and down-stream; introduced populations also occur outside historic native range.	**Absent.** No aquatic habitat in PSA.
Amphibians			
Anaxyrus californicus Arroyo toad	FE, SSC, NCCP	Sandy alluvial washes where surface water available through spring; desert margins and scattered locations in cismontane S Calif.	**Not likely to occur.** PSA does not include suitable habitat.
Spea hammondii Western spadefoot	SSC, NCCP	Primarily grasslands but can be found in valley-foothill hardwood woodlands, sage scrubs, and chaparral where pooled or ponded water remains through early spring (April/May). Vernal pools, stock ponds, and road pools are essential for breeding, egg-laying, and larval development.	**Not likely to occur.** PSA does not include suitable habitat.

Table H-1. Additional Special-status Species Known from the Region; Not Likely to Occur in the Project Study Area (PSA)

Species	Status	Habitat	Potential for Occurrence in the PSA
Reptiles			
Aspidoscelis hyperythra Orangethroat whiptail	SSC, NCCP	Prefers washes and other sandy areas with patches of brush and rocks, in chaparral, coastal sage scrub, juniper woodland, and oak woodland from sea level to 3,000 feet elevation. Perennial plants required.	**Not likely to occur.** PSA does not include suitable habitat.
Aspidoscelis tigris stejnegeri Coastal whiptail	SA	Found in deserts and semi-arid areas with sparse vegetation and open areas; also found in woodland and riparian habitats; substrates may be firm soil, sandy, or rocky.	**Not likely to occur.** PSA does not include suitable habitat.
Charina trivirgata Rosy boa	SA, NCCP	Rocky chaparral and desert shrubland; gen below about 4500 ft. elev.	**Not likely to occur.** PSA does not include suitable habitat.
Crotalus ruber Red-diamond rattlesnake	SSC, NCCP	Desert scrub, thorn scrub, open chaparral and woodland; occasional in grassland and cultivated areas. Prefers rocky areas and dense vegetation.	**Not likely to occur.** PSA does not include suitable habitat.
Diadophis punctatus similis San Diego ringneck snake	SA, NCCP	Open, often rocky areas in woodlands, shrublands, and grasslands; sea level to about 7200 ft. elev.; W San Diego and Riverside Cos., NW Baja Calif.	**Not likely to occur.** PSA does not include suitable habitat.
Emys marmorata Western pond turtle	SSC, NCCP	Inhabits a wide variety of aquatic habitats, including rivers, streams, lakes, ponds, wetlands, and reservoirs; requires emergent basking sites.	**Absent.** No aquatic habitat in PSA.
Plestiodon skiltonianus interparietalis Coronado Island skink	SSC, NCCP	Grasslands, woodlands, chaparral; clearings and stream sides.	**Not likely to occur.** PSA does not include suitable habitat.
Salvadora hexalepis virgultea Coast patch-nosed snake	SSC, NCCP	Occurs in coastal chaparral, desert scrub, washes, sandy flats, rocky areas; broad generalist.	**Not likely to occur.** PSA does not include suitable habitat.
Thamnophis hammondii Two-striped garter snake	SSC, NCCP	Highly aquatic; found in or near permanent fresh water; often along streams with rocky beds and riparian growth.	**Not likely to occur.** PSA does not include aquatic habitat.
Birds			
Aimophila ruficeps canescens Southern California rufous-crowned sparrow	WL, NCCP	Resident in southern California coastal sage scrub and sparse mixed chaparral; frequents relatively steep, often rocky hillsides with grass and forb patches.	**Not likely to occur.** PSA does not include suitable habitat.
Aquila chrysaetos Golden eagle	BGEPA, FP, WL, NCCP	Nests in remote trees and cliffs; forages over shrublands and grasslands; breeds throughout W N America, winters to E coast.	**Not likely to occur.** PSA does not include suitable habitat.

Table H-1. Additional Special-status Species Known from the Region; Not Likely to Occur in the Project Study Area (PSA)

Species	Status	Habitat	Potential for Occurrence in the PSA
Artemisiospiza belli belli Bell's sage sparrow	WL	Coastal sage scrub, chaparral, saltbush scrub, cismontane cent. and S Calif., NW Baja Calif.	**Not likely to occur.** PSA does not include suitable habitat.
Campylorhynchus brunneicapillus sandiegensis Coastal cactus wren	SSC, NCCP	Coastal sage scrub with cactus patches.	**Not likely to occur.** PSA does not include suitable habitat.
Charadrius alexandrinus nivosus Western snowy plover	FT, SSC, NCCP	Breeds on barren to sparsely vegetated flats and along shores of alkaline and saline lakes, reservoirs, ponds, river channels, and salt evaporation ponds.	**Not likely to occur.** PSA does not include suitable habitat.
Coccyzus americanus occidentalis Western yellow-billed cuckoo	FT, SE	Nests along the broad, lower flood-bottoms of larger river systems; also nests in riparian forests and riparian jungles of willow often mixed with cottonwoods, with an understory of blackberry, nettles, or wild grape.	**Not likely to occur.** PSA does not include suitable habitat.
Ixobrychus exilis Least bittern	SSC	Cattail and bulrush marshes.	**Not likely to occur.** PSA does not include suitable habitat.
Laterallus jamaicensis coturniculus California black rail	ST	Freshwater and saltwater marsh.	**Not likely to occur.** PSA does not include suitable habitat.
Passerculus sandwichensis beldingi Belding's savannah sparrow	SE, NCCP	Inhabits coastal salt marshes, from Santa Barbara south through San Diego Co. Nests in *Salicornia* on and about margins of tidal flats.	**Not likely to occur.** PSA does not include suitable habitat.
Plegadis chihi White-faced Ibis	WL, NCCP	Widespread during migration. Roosts in colonies in fresh emergent wetland. Feeds in wetlands, marshes, and irrigated or flooded pastures.	**Not likely to occur.** PSA does not include suitable habitat.
Rallus longirostris levipes Light-footed clapper rail	FE, SE, NCCP	Found in salt marshes traversed by tidal sloughs, where cordgrass and pickleweed are the dominant vegetation. Requires dense growth of either pickleweed or cordgrass for nesting or escape cover; feeds on molluscs and crustaceans.	**Not likely to occur.** PSA does not include suitable habitat.
Sternula antillarum browni California least tern	FE, SE, NCCP	Nests along the coast from San Francisco Bay south to n Baja California. Forages for small fish in harbors, lagoons, and nearshore marine habitat. Colonial breeder on bare or sparsely vegetated, flat substrates: sand beaches, alkali flats, landfills, or paved areas.	**Not likely to occur.** PSA does not include suitable habitat.

Table H-1. Additional Special-status Species Known from the Region; Not Likely to Occur in the Project Study Area (PSA)

Species	Status	Habitat	Potential for Occurrence in the PSA
Mammals			
Antrozous pallidus Pallid bat	SSC	Deserts, grasslands, shrublands, woodlands, and forests; most common in open, dry habitats with rocky areas for roosting.	**Not likely to occur.** PSA does not include suitable habitat.
Chaetodipus californicus femoralis Dulzura pocket mouse	SSC, NCCP	Variety of habitats, including coastal scrub, chaparral, and grassland; attracted to grass-chaparral edges.	**Not likely to occur.** PSA includes potentially suitable habitat, but potential for occurrence in the Oceanside area is low.
Choeronycteris mexicana Mexican long-tongued bat	SSC	Desert and montane riparian, desert succulent scrub, desert scrub, and pinyon-juniper woodland. Roosts in caves, mines, and buildings. Feeds on nectar and pollen from agave and night-blooming cacti, may also eat insects; has been observed foraging from hummingbird feeders.	**Not likely to occur.** PSA does not include suitable roosting or foraging habitat; potential for occurrence in the Oceanside area is very low.
Corynorhinus townsendii Townsend's big-eared bat	SC	Ranges from southwestern Canada through the western United States to southern Mexico. Requires caves, mines, tunnels, buildings, or other similar structures for roosting. Occasionally roosts in hollow spaces of bridges or buildings or hollow trees. Highly sensitive to disturbance. Found in all but alpine and subalpine habitats; most abundant in mesic habitats. Extremely sensitive to disturbance of roosting sites. Feeds primarily on small moths.	**Not likely to occur.** PSA does not include suitable roosting habitat; marginal foraging habitat may be present, but potential for occurrence in the Oceanside area is low.
Eumops perotis californicus Western mastiff bat	SSC	Roosts in deep rock crevices, forage over wide area. Found in a variety of habitats, generally roosts on natural substrates, less commonly on buildings or other artificial substrates.	**Not likely to occur.** PSA does not include suitable roosting habitat; marginal foraging habitat may be present, but potential for occurrence in the Oceanside area is low.
Lasiurus cinereus Hoary bat	SA	Prefers deciduous and coniferous woodlands; primarily roosts in tree foliage.	**Not likely to occur.** PSA does not include suitable habitat.
Leptonycteris (curasoae) yerbabuenae Lesser long-nosed bat	FE	Colonial roosting species found in desert scrub habitat in Arizona, New Mexico, and Mexico. Feeds on the fruit and nectar of columnar cacti and agaves. Roosts in caves and mines.	**Not likely to occur.** Single report from Oceanside in 1996 probably a vagrant during migration.
Lepus californicus bennettii San Diego black-tailed jackrabbit	SSC, NCCP	Intermediate canopy stages of shrub habitats and shrub, tree, herbaceous edges; primarily coastal sage scrub habitats.	**Not likely to occur.** PSA does not include suitable habitat.
Myotis yumanensis Yuma myotis	SA	Open habitats with rocks or caves for roosting.	**Not likely to occur.** PSA does not include suitable habitat.

Table H-1. Additional Special-status Species Known from the Region; Not Likely to Occur in the Project Study Area (PSA)

Species	Status	Habitat	Potential for Occurrence in the PSA
Neotoma lepida intermedia San Diego desert woodrat	SSC, NCCP	Coastal scrub; prefers moderate to dense canopies; particularly abundant in rock outcrops, rocky cliffs, and slopes. Coastal Calif. from San Luis Obispo south through the Transverse and Peninsular Ranges into Baja California, Mexico.	**Not likely to occur.** PSA does not include suitable habitat.
Nyctinomops femorosaccus Pocketed free-tailed bat	SSC	Variety of arid areas in s Calif.; pine-juniper woodlands, desert scrub, palm oasis, desert wash, desert riparian in rocky areas with high cliffs.	**Not likely to occur.** PSA does not include suitable habitat.
Perognathus longimembris pacificus Pacific pocket mouse	FE, SSC, NCCP	Inhabits the narrow coastal plains from the Mexican border north to El Segundo, Los Angeles Co. Seems to prefer soils of fine alluvial sands near the ocean, but little is known about life history.	**Not likely to occur.** PSA does not include suitable habitat, not within coastal plains.
Taxidea taxus American badger	SSC, NCCP	Mountains, deserts, interior valleys; areas with friable soil and available prey.	**Not likely to occur.** PSA does not include suitable habitat.

Definitions Regarding Potential Occurrence:

Present:	Species or sign of its presence observed on the site
High:	Species or sign not observed on the site, but reasonably certain to occur on the site
Moderate:	Species or sign not observed on the site, conditions suitable for occurrence
Low:	Species or sign not observed on the site, conditions marginal for occurrence
Not likely to occur:	Species or sign not observed on the site, conditions unsuitable for occurrence
Absent:	Required habitat not present (e.g., aquatic species are absent from terrestrial habitats)

STATUS CODES:

FE	Federally Endangered
FT	Federally Threatened
FC	Federal Candidate
BGEPA	Federal Bald and Golden Eagle Protection Act
SE	State Endangered
ST	State Threatened
SC	State Candidate
SR	State Rare
SSC	California Species of Special Concern
FP	California Fully Protected
WL	CDFW Watch List
SA	CDFW Special Animal
NCCP	Regionally Sensitive Species covered under the SDG&E Subregional NCCP
CRPR	California Rare Plant Rank
1B	Plants Rare, Threatened, or Endangered in California and elsewhere
2	Plants Rare, Threatened, or Endangered in California, but more common elsewhere
3	Plants about which we need more information – a review list
4	Plants of limited distribution – a watch list
.1	Seriously threatened in California (high degree/immediacy of threat)
.2	Fairly threatened in California (moderate degree/immediacy of threat)
.3	Not very threatened in California (low degree/immediacy of threats or no current threats known)

Appendix I

Preliminary Jurisdictional Delineation

SAN DIEGO GAS & ELECTRIC COMPANY
OCEAN RANCH SUBSTATION PROJECT

PRELIMINARY JURISDICTIONAL DELINEATION REPORT

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

1.0 INTRODUCTION

Project Summary

The San Diego Gas & Electric Company (SDG&E) is a regulated public utility that provides electric service to 3.4 million people within its 4,100 square mile service territory, covering parts of two counties and 25 cities and unincorporated communities in the San Diego area. In an effort to serve existing customers and anticipate customer-driven load, and maintain reliability of the electrical distribution system, SDG&E proposes to construct a new substation (Figure 1). The proposed substation site is located on land owned by SDG&E and the transmission line is located primarily within existing SDG&E rights-of-way (ROW) and franchise position within the City of Oceanside public streets.

The proposed Project includes the following main components:

Ocean Ranch Distribution Substation: Construction a new 69/12 kV low profile substation in City of Oceanside. The substation will have an initial capacity of 60 megavolt ampere (MVA) rating, and an ultimate capacity of 120 MVA.

TL 6966 Loop-In: TL 6966 is an existing underground 69 kV circuit which has termination points at San Luis Rey Substation (to the west) and Melrose Substation (to the east). It will be intercepted at the intersection of Avenida De La Plata and Rancho Del Oro and extended to the proposed substation via the construction of an underground power line duct bank with a total length of approximately 1,330 feet. This will reconfigure the existing tie line into TL 6966 (San Luis Rey to Ocean Ranch) and TL 6979 (Ocean Ranch to Melrose).

12 kV Distribution System: Four new underground distribution circuits will be installed and will intercept four existing circuits. A portion of the existing circuits will be offloaded to the new Ocean Ranch circuits. Approximately 4,650 feet of new 12 kV distribution line will be constructed, most of which will be on the Ocean Ranch Substation site. The proposed Project includes construction of four new manholes and one new handhole to access the new segment of underground 12 kV distribution line.

Telecommunication Systems: A 40-foot monopole will be installed in the southwest corner of the Ocean Ranch substation property for a proposed microwave radio communication system. A fiber optic cable will be installed on the existing overhead poles and in the underground duct structures connecting the Ocean Ranch substation and the San Luis Rey substation. Two pad-mounted pedestals, approximately 3 feet high, will be installed to enclose the communications equipment at or near the property line.

Purpose

This report documents a preliminary jurisdictional delineation performed by Pangea Biological (Pangea) and Borcher Environmental Management in support of SDG&E's proposed Ocean Ranch Substation Project. The purpose of the delineation was to identify wetlands and waters under jurisdiction of the Army Corps of Engineers (ACOE) pursuant to Section 404 of the Clean Water Act (CWA), Regional Water Quality Control Board (RWQCB) pursuant to Section 401 of the CWA, and California Department of Fish and Wildlife (CDFW) pursuant to Section 1602 of the Fish and Game

Figure 1: Project Location Map

Code. This jurisdictional delineation report describes the project site and existing conditions; discusses the regulations that govern the jurisdictional resources located on the site; outlines the methodology used to conduct the delineation and presents the results of the study.

The survey area contains jurisdictional resources subject to regulation by the ACOE, RWQCB, and CDFW.

2.0 METHODS

Methodology followed the ACOE Regional Supplement Wetland Delineation Manual: Arid West Region (Version 2.0) guidelines, and consisted of preliminary data gathering and research, field assessment surveys, digital mapping, and documentation of final boundary determinations.

Preliminary Review

Prior to conducting the field delineation assessment, the following information sources were reviewed to evaluate potential ACOE, CDFW, and RWQCB jurisdiction:

- SDG&E's aerial photographs;
- United States Geologic Survey (USGS) 7.5-degree minute topographic quadrangle maps;
- United States Department of Agriculture Natural Resources Conservation Service (NRCS) soil survey maps;
- United States Fish and Wildlife Service (USFWS) National Wetland Inventory GIS data; and
- USGS National Hydrological Dataset GIS data for modeling of streams to evaluate possible stream features.

Regulatory Jurisdiction Overview

U.S. Army Corps of Engineers Waters

Section 404 of the Clean Water Act gives the U.S. Environmental Protection Agency (EPA) and the ACOE regulatory and permitting authority regarding discharge of dredged or fill material into "waters of the United States". The term "waters of the United States" is defined by 33 Code of Federal Regulations (CFR) Part 328. In 2015 ACOE finalized the Clean Water Rule to clarify the definition of "waters of the United States" and currently includes:

- waters used for commerce;
- interstate waters and wetlands;
- "other waters" such as intrastate lakes, rivers, streams, and wetlands;
- impoundments of waters;
- tributaries, containing a bed and bank, and an "ordinary high water mark", to the above waters;
- territorial seas;
- wetlands and riparian areas adjacent to waters; and
- lakes and ponds located in the riparian zone or floodplain of waters.

In December 2008, in response to the Supreme Court's decision in the combined cases of Rapanos v. U.S. and Carabell v. U.S. (126 S. Ct. 2208; 2006), the EPA and ACOE issued final guidance on the scope of regulatory jurisdiction under the CWA, including Section 404 (EPA and ACOE 2007). The guidance specifies that EPA and ACOE will assert jurisdiction over the following waters:

- ***Traditional Navigable Waters (TNWs)*** - TNWs are all waters subject to the ebb and flow of the tides, and waters that are presently used, have been used in the past, or may be susceptible for use to transport interstate or foreign commerce (33 CFR 328.3(a)(1)).

- ***Wetlands adjacent to TNWs*** - Wetlands are defined as cited above (see also Methodology below). The term "adjacent" means bordering, contiguous, or neighboring, meeting one of the following criteria: 1) there is an unbroken surface or shallow sub-surface connection to the TNW; 2) the wetland is physically separated from the TNW artificially by a human-made dike, or by natural barrier such as a berm or dune; or 3) the wetland is reasonably close to the TNW, such that direct ecological interconnections are present (40 CFR Part 230).

- ***Non-navigable, but relatively permanent waters (RPWs) that are tributaries to TNWs*** - These are waters that typically flow year-round or continuously for at least three months. The boundaries of such waters are determined by the limits of ordinary high water (33 CFR part 328.3).

- ***Wetlands adjacent to RPWs*** - The guidance stipulates that a continuous surface connection must be present between the wetland and RPW. If such connection is not present, additional criteria must be satisfied (see next bullet).

- ***Non-RPWs and adjacent wetlands with a significant nexus to TNWs*** - To establish (or rule out) a significant nexus requires an assessment of the flow characteristics and functions of the tributary and any adjacent wetland to determine if they significantly affect the chemical, physical, and biological integrity of downstream navigable waters.

Previous guidance states that swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent or short-duration flow) and ditches excavated in uplands are generally not jurisdictional because they are not tributaries or do not have a significant nexus to downstream TNWs. The same reasoning would indicate that isolated bodies of water and isolated wetlands without a demonstrated relationship to interstate commerce would generally not be considered jurisdictional. The Supreme Court ruling in SWANCC v. U.S. (121 S. Ct. 751; 2001) indicated that the movement of migratory birds to/from an isolated body of water was not sufficient evidence of interstate commerce. The recent Clean Water Rule includes a list of features that are not jurisdictional, including erosional features, upland ditches, rills, and non-wetland swales.

The waters of the U.S. do not include 1) waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA, and 2) prior converted cropland.

U.S. Army Corps of Engineers Wetlands

Wetlands are defined by 33 CFR 328.3(b) as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support ... a prevalence of vegetation typically adapted for life in saturated soil conditions." In 1987, the ACOE published a manual to

guide its field personnel in determining jurisdictional wetland boundaries. This manual was amended in 2008 by the ACOE 2008 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0). Currently, the 1987 Wetland Manual and the 2008 Arid West Supplement provide the legally accepted methodology for identification and delineation of ACOE-jurisdictional wetlands in southern California.

The methodology set forth in the 1987 Wetland Manual and updated by the Arid West Supplement generally requires that, in order to be considered a wetland, the vegetation, soils, and hydrology of an area must exhibit at least minimal hydric characteristics. Wetlands are determined by and delineated using three parameters: hydrophytic vegetation, wetland hydrology, and hydric soils. Additional details regarding these parameters include:

- Greater than 50 percent of the dominant plant species at the site must be typical of wetlands (i.e., rated as facultative or wetter in the Arid West 2012 Final Regional Wetland Plant List: National Wetland Plant List (2016). These plants are known as "hydrophytic vegetation."

- 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*" (Environmental Laboratory 1987). Inundation or saturation must occur for at least five percent of the growing season to qualify as wetland hydrology with the degree of saturation varying from year to year depending on rainfall patterns.

- Soils must exhibit physical and/or chemical characteristics indicative of saturation (e.g., a gleyed color or mottles with a matrix of low chroma indicating a relatively consistent fluctuation between aerobic and anaerobic conditions). Such soils, known as "hydric soils," have characteristics that indicate they are developed in conditions where soil oxygen is limited by the presence of saturated soil for long periods during the growing season. Other typical characteristics of areas with hydric soils include: high groundwater table and evidence of prolonged soil saturation.

Hydrophytic Vegetation

When conducting jurisdictional evaluations, plants are categorized according to their probabilities to occur in wetlands versus non-wetlands in accordance with the categories in the Arid West 2012 Final Regional Wetland Plant List: National Wetland Plant List (Lichvar 2016). The hydrophytic categories are:

- ***Obligate Wetland (OBL)*** – occur almost always (estimated probability >99 percent) under natural conditions in wetlands.
- ***Facultative Wetland (FACW)*** – usually occur in wetlands (estimated probability 67 to 99 percent), but occasionally found in non-wetlands.
- ***Facultative (FAC)*** – equally likely to occur in wetlands or non-wetlands (estimated probability 34 to 66 percent).

Plant species and absolute percent covers are recorded by stratum (i.e., tree, sapling/shrub, herb, woody vine) and evaluated for dominance and prevalence according to guidelines in the 1987 Manual and Arid West Supplement. Naming conventions follow the Jepson Manual (Hickman 1993).

Hydrology

Pangea and Borcher Environmental Management reviewed hydrologic information for the survey area including USGS topographic maps and hydrology indicators identified in the field. Indicators of hydrology evaluated in the field include; standing or flowing water, water drainage patterns, water-logged soils during the growing season, water marks present on trees or other objects associated with a drainage, drift lines, flow lines or small piles of debris oriented in the direction of water movement through an area, destruction of terrestrial vegetation by water flow, and/or thin layers of sediments deposited on leaves or other objects. Other indicators evaluated (based on the 2008 Arid West Supplement) include; surface soil cracks, inundation visible on aerial imagery, salt and biotic crusts, aquatic invertebrates, hydrogen sulfide odor and evidence of oxidation/reduction reactions within the soil profile.

Hydric Soils

Areas that had hydrophytic vegetation and/or primary wetland hydrological indicators were evaluated and inspected for the potential presence of hydric soils. These areas were examined closely to determine if there was evidence of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions and/or the presence of a high groundwater table.

California Department of Fish and Wildlife

Under sections 1600-1607 of the Fish and Game Code, CDFW regulates all activities that would divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake, which supports fish or wildlife.

CDFW defines a “stream” (including creeks and rivers) as “a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having surface or subsurface flow that supports or has supported riparian vegetation.” CDFW’s definition of “lake” includes “natural lakes or man-made reservoirs.” CDFW limits of jurisdiction include the outer edge of riparian vegetation drip line or at the top of the uppermost bank-to-bank distance, whichever is wider.

Regional Water Quality Control Board

The State of California (State) regulates discharge of material into waters of the State pursuant to Section 401 of the CWA and the California Porter-Cologne Water Quality Control Act (California Water Code, Division 7, §13000 et seq.). State waters are all waters that meet one of three criteria; hydrology, hydric soils, or wetland vegetation, and generally include all waters under the jurisdiction of ACOE and CDFW.

Preliminary Jurisdictional Determination

Under RGL 08-02, dated June 26, 2008, ACOE established an alternative to the approved JD process: the "preliminary JD." A preliminary JD is a non-binding written indication that there may be Waters of the US (WUS), including wetlands, on a project site and identifies the approximate location of these features. Preliminary JDs are used when a landowner, permit applicant, or other affected party elects to voluntarily waive or set aside questions regarding CWA jurisdiction over a particular site, usually in the interest of allowing the landowner to move ahead expeditiously to obtain 404 authorization where the party determines that it is in his or her best interest to do so. A preliminary JD is not an official determination regarding the jurisdictional status of potentially jurisdictional features and has no bearing on approved JDs. A preliminary JD cannot be used to confirm the absence of jurisdictional waters or wetlands, is advisory in nature, and cannot be appealed. It is considered "preliminary" because a recipient can later request an approved JD if one is necessary or appropriate.

Field Assessment Surveys

Field assessment surveys were conducted to confirm the potential jurisdictional areas identified in the in-office reconnaissance process and to delineate those areas of interest within the survey area for the potential presence of water resources. To assist with the field analysis, a customized data dictionary was uploaded onto the Global Positioning System (GPS) unit to allow field surveyors to select specific feature data.

In the field, boundaries and dimensions of jurisdictional wetland and water features were recorded utilizing a sub-meter GPS unit, on field maps, and field notes. Features within the survey area were investigated for the presence of drainages, including culverts, water bodies, riparian vegetation, potential wetlands, and connectivity to jurisdictional waters.

3.0 RESULTS

The results presented in this report illustrate the site conditions at the time of the investigation. This wetland delineation was performed during a period of severe drought that has lasted four years. Therefore, site conditions, especially related to hydrological indicators, are naturally problematic. However, for this project hydrological indicators were generally clear and present.

Field Assessment Surveys and Conditions

Pangea biologist Dawn Huss and Borcher Environmental Management biologist Andrew Borcher conducted a wetlands and waters determination and delineation assessment of the project area on May 4, 2015. Weather conditions were fair throughout the survey window, consisting of temperatures ranging from 66 to 70 degrees Fahrenheit, wind speeds were from 1 to 5 miles per hour, and partly cloudy skies. A subsequent survey was performed on May 21, 2015 by A. Borcher, and A. Borcher and D. Huss on October 28, 2015. Weather conditions were fair throughout the survey window, consisting of a temperature range between 68 to 71 degrees Fahrenheit, wind speeds were from 2 to 6 miles per hour, and partly to mostly cloudy skies. Areas with and without hydrophytic vegetation were observed within the survey area. Areas with hydrophytic vegetation, in general, were considered potential wetland sites. Areas without hydrophytic vegetation were considered upland, unless evidence suggested that a wetland or other jurisdictional water might occur at the particular location. Sample point locations were determined based on the potential presence of water features and analyzed for the presence or absence of jurisdictional limits. A total

of two sample points were evaluated (Appendix A). The results of the analysis regarding vegetation, soils, and hydrology are presented in the following section. In addition to jurisdictional features, nine other water conveyance features were identified and mapped (Appendix A). These include erosional gulls/rills, concrete brow/v-ditches, and storm drain inlets/outlets.

The proposed Ocean Ranch Substation and four staging yards were evaluated. The areas evaluated consist of commercial development, landscaped and/or paved urban areas, and graded earthen pads. The four staging yards evaluated include: San Luis Rey Staging Yard, located immediately adjacent to the San Luis Rey Substation, Corporate Centre Staging Yard, located adjacent to Ocean Ranch Boulevard, USPS Staging Yard, located immediately adjacent to Avenida del Oro, and Melrose Substation Staging Yard, located immediately adjacent to the Melrose Substation.

Vegetation

The majority of the survey area consists of developed land and disturbed habitat including adjacent landscaped slopes.

Hydrology

No hydrological indicators were observed within the survey area.

Soils

The Soil Survey of San Diego County and digital soil maps from NRCS' SSURGO 2.2 Database were consulted for this jurisdictional evaluation (NRCS 2015) and the mapped soil units occurring within the survey area are summarized in Table 1. Four soil series were identified within the survey area (see table below). (USDA 1973).

Data Sample Points

A total of two sample locations were evaluated (Appendix A). Sample points 1 and 2 (USPS Staging Yard and Ocean Ranch Substation Site were taken to evaluate the potential presence of jurisdictional features.

A sub-meter GPS was used to record sample locations, and along the wetland upland boundary. Supporting photographs and data forms are included in Appendix B and Appendix C, respectively. Observations and data in support of the delineation are summarized below. Appendix A shows the Aquatic Mapbook prepared for the project.

No jurisdictional features were identified within the proposed Project. Non-jurisdictional features are shown in Appendix A.

Jurisdictional Resources

No jurisdictional resources were identified within the survey area.

Table 1: Mapped Soils within Survey Area Evaluated

Unit #	Unit Name	Drainage Class	Runoff Class	Taxonomic Class
DaC	Diablo clay, 2 to 9% slopes	Well	Very High	Fine, smectitic, thermic Aridic Haploxererts
DaD	Diablo clay, 9 to 15% slopes	Well	Very High	Fine, smectitic, thermic Aridic Haploxererts
LeC2	Las Flores loamy fine sand, 5 to 9% slopes	Moderately Well	Very High	Fine, smectitic, thermic Natric Palexeralfs
LeD	Las Flores loamy fine sand, 9 to 15% slopes	Moderately Well	Very High	Fine, smectitic, thermic Natric Palexeralfs
LeE	Las Flores loamy fine sand, 15 to 30% slopes	Moderately Well	Very High	Fine, smectitic, thermic Natric Palexeralfs
LsE	Linne clay loam, 9 to 30% slopes	Well	Very High	Fine-loamy, mixed, superactive, thermic Calcic Pachic Haploxerolls
LsF	Linne clay loam, 30 to 50% slopes	Well	Very High	Fine-loamy, mixed, superactive, thermic Calcic Pachic Haploxerolls
SbA	Salinas clay loam, 0 to 2% slopes	Well	Low	Fine-loamy, mixed, superactive, thermic Calcic Pachic Haploxerolls
SbC	Salinas clay loam, 2 to 9% slopes	Well	High	Fine-loamy, mixed, superactive, thermic Calcic Pachic Haploxerolls

Source: NRCS 2015

Non Jurisdictional Features

Several non-jurisdictional water conveyance features are located within the survey area including erosional rills/gulls, concrete brow/v-ditches, and sedimentation basins (Appendix A). Linear features were given a number and shown in Appendix A. Sedimentation basins are located within each of the proposed yards.

Concrete V-Ditch/Concrete Channel

The majority of the features mapped were concrete v-ditches and brow ditches. These were found throughout the survey area with the majority occurring perpendicular to and on landscaped slopes above roadways. These concrete channels are not built to replace existing natural channels but rather provide a controlled runoff system that does not erode urban slopes. Individually, these concrete channels do not contribute to down grade and off-site jurisdictional channels. Within the survey area, concrete ditches were mapped throughout and shown in Appendix A.

Erosional Features

Erosional features occur within the Ocean Ranch Substation site. They are generally created by one-time or repeated rapid surface flows in areas that were disturbed and not properly compacted, or areas with erosive soil. They are not usually continuous, and tend to blink in and out depending on surface material and slope. Erosional features that were mapped can vary in size, approximately 1 to 2 feet wide (Appendix A).

Sedimentation Basins

Sedimentation basins occur on the proposed staging yards (Appendix A). Each yard is generally flat but does gradually slope towards human-made basins. Each basin has a drop drain that connects to the underground storm system. These temporary storm water management features are usually built on graded pads to capture eroded or disturbed soil that is washed off the surrounding graded site. All basins were completely dry during the time of the survey and appear to be mostly ephemeral in nature. All basins have some hydrophytic vegetation including scattered mule fat and salt cedar (*Tamarix ramossima*). However, sample points taken at each basin did not reveal hydric soils. One exception was the proposed USPS Yard. Emergent wetland including cattail (*Typha latifolia*) occurred in a small patch on the slope at the southwestern edge of the sedimentation basin (Appendix A). Although the sample point had both hydrophytic vegetation and hydric soils, it is not a naturally occurring wetland that will persist. It is entirely caused by an irrigation leak observed on the slope above. All other hydrophytic vegetation that occurred within the sedimentation basins was limited; not consistent or abundant enough to be considered wetland. The runoff collected in the basins during rain events does not appear to be significant, and pooled water mostly soaks into the soil before reaching the height of the drain.

4.0 CONCLUSION

With the absence of jurisdictional features within the proposed Project area, no further investigation or permits would be required for the proposed Project.

5.0 REFERENCES

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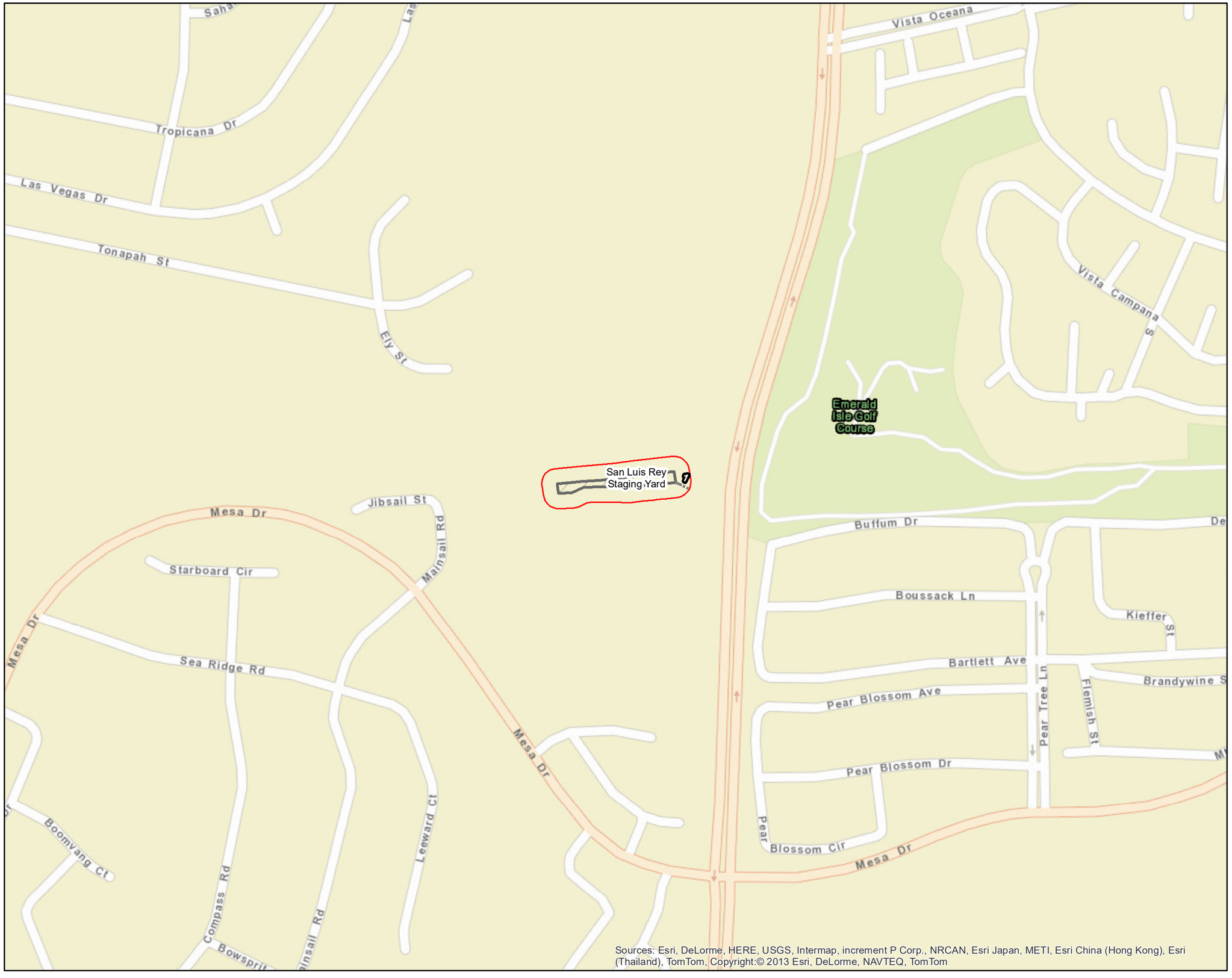
Appendix A – Jurisdictional Delineation Mapbook

Ocean Ranch Substation and Tie Line Aquatic Delineation Mapbook

Page 1 of 4

1 Inch = 300 Feet at 11" x 17"

0 95 190 380 570 760 Feet



Sources: Esri, DeLorme, HERE, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, Copyright:© 2013 Esri, DeLorme, NAVTEQ, TomTom

Aquatic Sample Point

Storm Drain/Culvert

Delineated Features

Concrete V-Ditch/Concrete Channel

Erosional Feature

Non-jurisdictional Swale

Project Features

Monopole

Proposed Underground Distribution

Project Survey Area

Ocean Ranch Substation

Underground Distribution Structure

UG_transmission

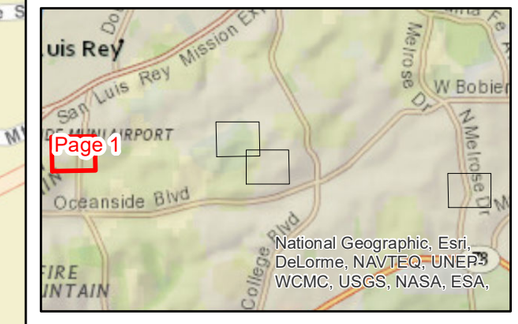
Transmission

Existing Underground

Proposed Underground

Underground Transmission Structure

Staging Yard



N

Created by: Pangea Biological, November 2016
Data Source: SDG&E

Coordinate System: NAD 1983 StatePlane California VI FIPS 0406 Feet
Projection: Lambert Conformal Conic
Datum: North American 1983

Ocean Ranch Substation and Tie Line Aquatic Delineation Mapbook

Page 2 of 4

1 Inch = 300 Feet at 11" x 17"

0 95 190 380 570 760 Feet

Sources: Esri, DeLorme, HERE, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, Copyright:© 2013 Esri, DeLorme, NAVTEQ, TomTom

- Aquatic Sample Point
- Storm Drain/Culvert

Delineated Features

- Concrete V-Ditch/Concrete Channel
- Erosional Feature
- Non-jurisdictional Swale

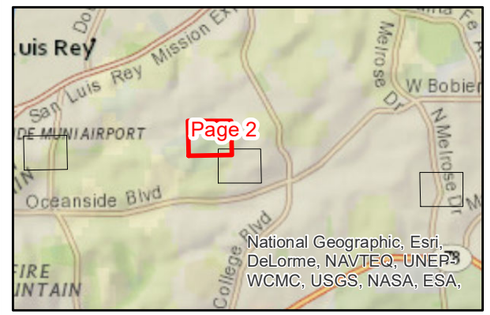
Project Features

- Monopole
- Proposed Underground Distribution
- Project Survey Area
- Ocean Ranch Substation
- Underground Distribution Structure

UG_transmission

Transmission

- Existing Underground
- Proposed Underground
- Underground Transmission Structure
- Staging Yard



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Pangea Biological

Created by: Pangea Biological, November 2016
Data Source: SDG&E

Coordinate System: NAD 1983 StatePlane California VI FIPS 0406 Feet
Projection: Lambert Conformal Conic
Datum: North American 1983

Ocean Ranch Substation and Tie Line Aquatic Delineation Mapbook

1 Inch = 300 Feet at 11" x 17"

0 95 190 380 570 760 Feet

Corporate Centre Staging Yard
Ocean Ranch Blvd
Windansea St
Rocky Point
Avenida del Oro
Avenida de La Plata
Plaza Real
Ocean Ranch Substation
USPS Staging Yard
sp1
sp2
Avenida de La Plata
Avenida del Oro
Calle Platino
Citibank
Jiffy Lube
KFC

Aquatic Sample Point
Storm Drain/Culvert

Delineated Features

Concrete V-Ditch/Concrete Channel
Erosional Feature
Non-jurisdictional Swale

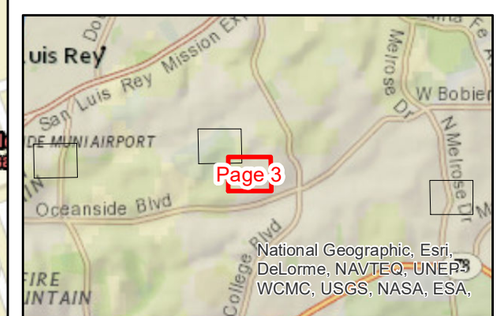
Project Features

Monopole
Proposed Underground Distribution
Project Survey Area
Ocean Ranch Substation
Underground Distribution Structure

UG_transmission

Transmission

Existing Underground
Proposed Underground
Underground Transmission Structure
Staging Yard



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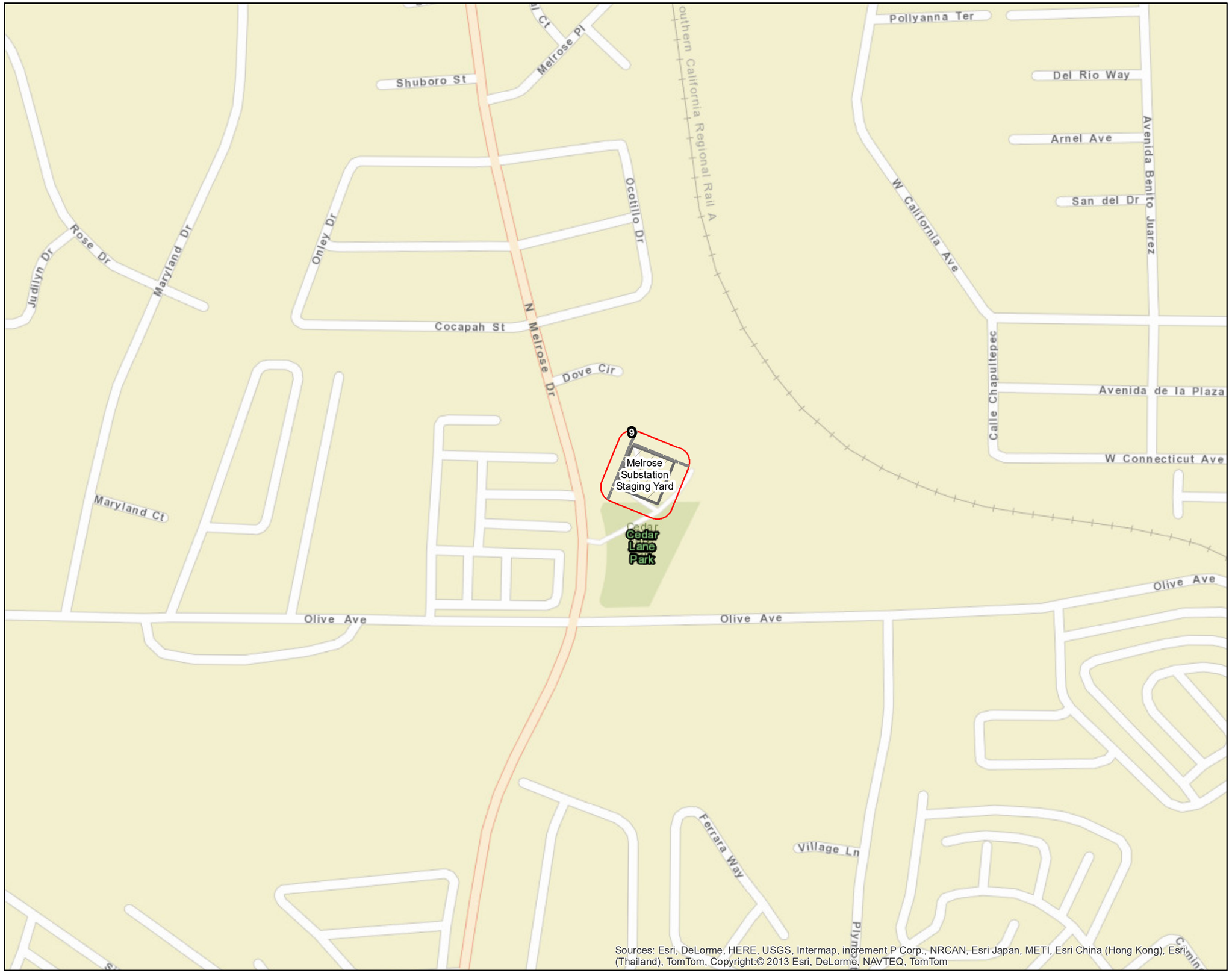
Data Source: SDG&E

Coordinate System: NAD 1983 StatePlane California VI FIPS 0406 Feet
Projection: Lambert Conformal Conic
Datum: North American 1983

Ocean Ranch Substation and Tie Line Aquatic Delineation Mapbook

1 Inch = 300 Feet at 11" x 17"

0 95 190 380 570 760 Feet



- Aquatic Sample Point
- Storm Drain/Culvert

Delineated Features

- Concrete V-Ditch/Concrete Channel
- Erosional Feature
- Non-jurisdictional Swale

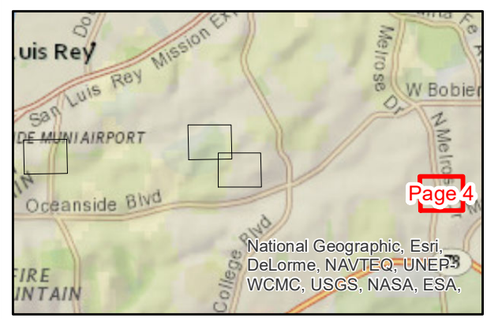
Project Features

- Monopole
- Proposed Underground Distribution
- Project Survey Area
- Ocean Ranch Substation
- Underground Distribution Structure

UG_transmission

Transmission

- Existing Underground
- Proposed Underground
- Underground Transmission Structure
- Staging Yard



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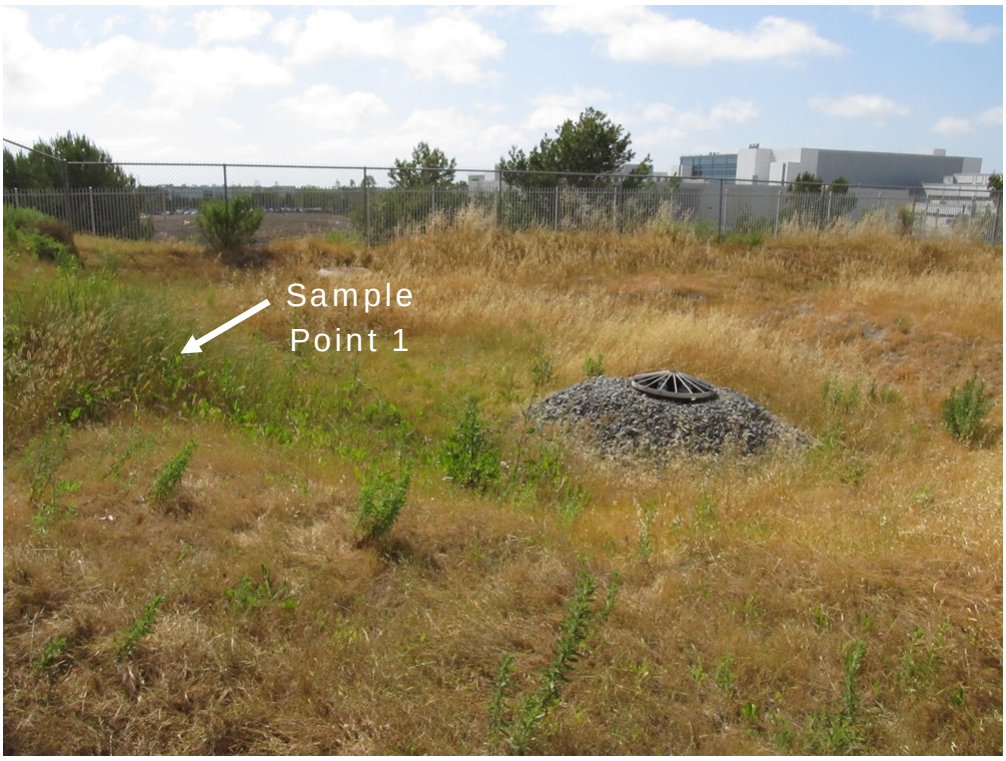
Created by: Pangea Biological, November 2016
Data Source: SDG&E

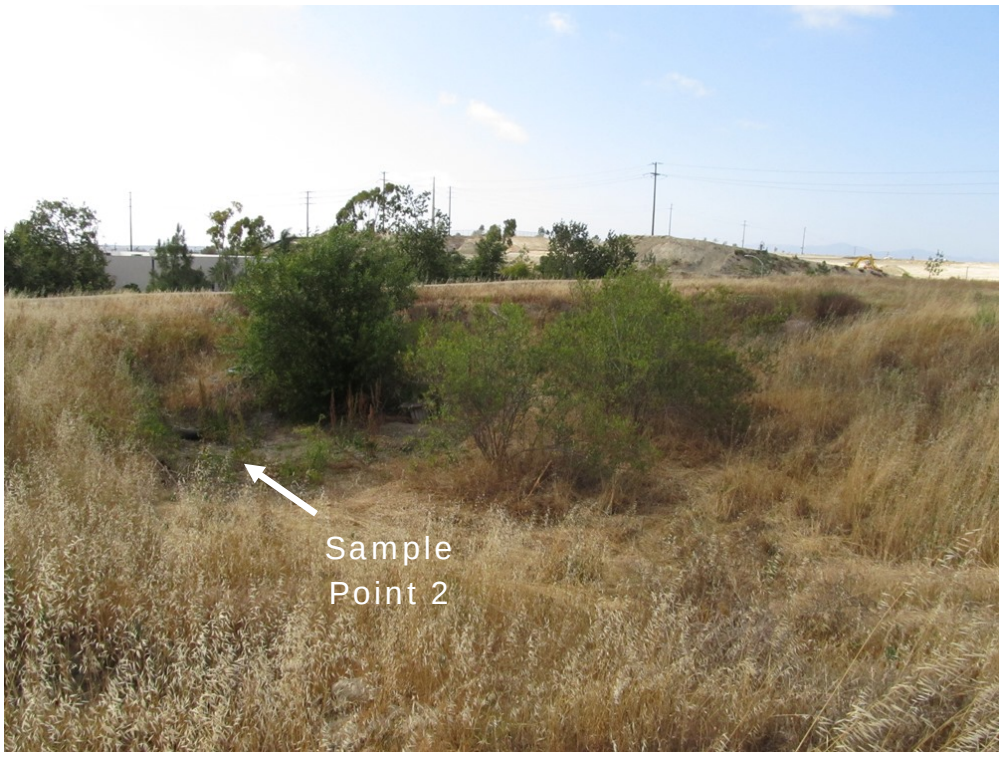
Coordinate System: NAD 1983 StatePlane California VI FIPS 0406 Feet
Projection: Lambert Conformal Conic
Datum: North American 1983

Appendix B – Photo Documentation

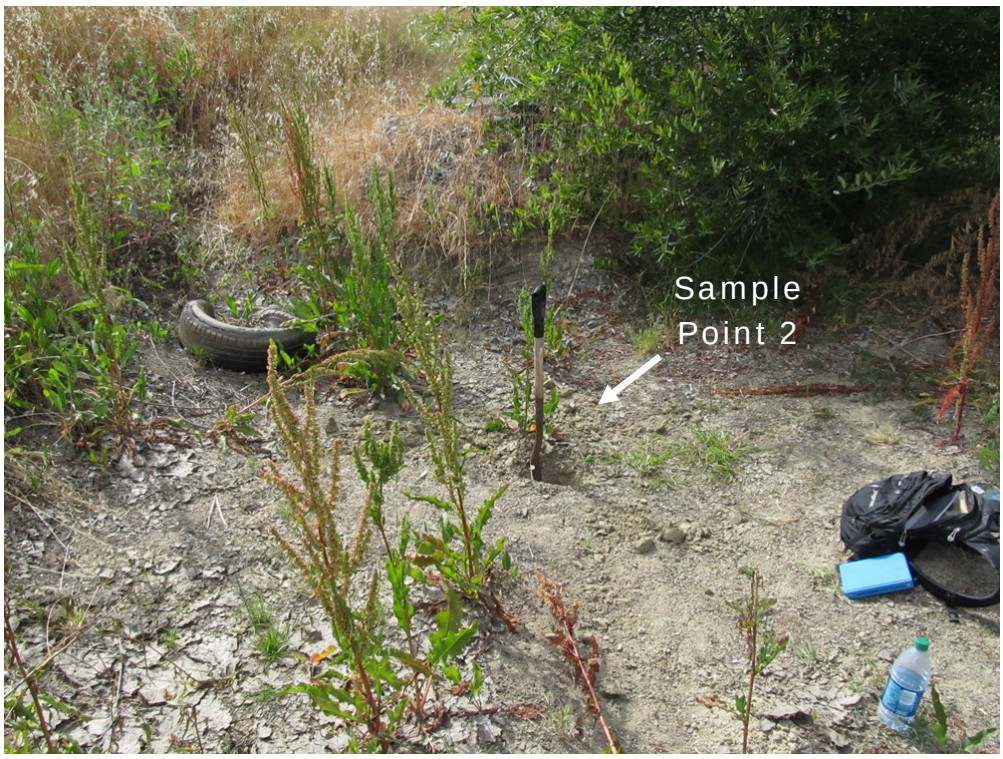


Photograph 1: Sample Point 1, sedimentation basin, USPS Staging Yard. View west.

Photograph 2: Sample Point 1, emergent wetland vegetation created by upslope irrigation leak, USPS Staging Yard. View east.



Photograph 3: Sample Point 2, sedimentation basin, Ocean Ranch Substation site. View west.



Photograph 4: Sample Point 2, sedimentation basin, Ocean Ranch Substation Site. View west.

Photograph 5: Feature 8, human-made earthen swale adjacent to Ocean Ranch Substation site. View east.

Appendix C – Wetland Determination Data Sheets

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: OLEAN RANCH, 28537 City/County: OCEANSIDE, SD Sampling Date: 5-4-15

Applicant/Owner: SDGE State: CA Sampling Point: SP-3-1

Investigator(s): A. BOKLEMER, D. HASS Section, Township, Range: S22 T11S R4W

Landform (hillslope, terrace, etc.): BASIN Local relief (concave, convex, none): CONCAVE Slope (%): 10

Subregion (LRR): LRR-C Lat: 33.20932623 Long: -117.27675137 Datum: WGS

Soil Map Unit Name: Linne clay loam, 30 - 50 % slope NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation 1, Soil 1, or Hydrology 4 significantly disturbed? Are "Normal Circumstances" present? Yes ____ No X

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 X No ____

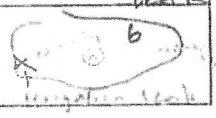
Hydric Soil Present? Yes X No ____

Wetland Hydrology Present? Yes X No ____

Is the Sampled Area within a Wetland? Yes ____ No X * Unnatural condition created by irrigation leak

Remarks:

- Irrigation leak down into dirt basin
- Fairly new >2 / years based on vegetation development



VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. Typha latifolia	5	N	OBL
2.			
3.			
4.			
5.			
Total Cover: 5			
Herb Stratum			
1. Lolium perenne	40	Y	FAC*
2. Rumex crispus	40	Y	FAC*
3. Polypogon monspeliensis	5	N	FACW
4. Bromus hordeaceus	10	N	NI
5.			
6.			
7.			
8			
Total Cover: 95			
Woody Vine Stratum			
1			
2			
Total Cover:			

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (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.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

- First year veg, natural watering from irrigation leak

SOIL

Sampling Point: SP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	7.5YR 6/1	85	7.5YR 6/8	7	C	M	silt loam	
		15	Gley 1 6-10Y	8	D	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, 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)
- X 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.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

- induced by irrigation leak

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X 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 Plowed Soils (C6)
- ___ 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)
- ___ Thin Muck Surface (C7)
- ___ 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 X No ___ Depth (inches): 1

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

- Induced by irrigation leak.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: OCEAN RANCH 28537 City/County: OCEANSIDE, SD Sampling Date: 5-21-15

Applicant/Owner: SDGE State: CA Sampling Point: SP #2

Investigator(s): A. BOUCHET, D. HUSS Section, Township, Range: S22 T11S R4W

Landform (hillslope, terrace, etc.): Basin Local relief (concave, convex, none): CONCAVE Slope (%): <5

Subregion (LRR): LRR-C Lat: 33.21052120 Long: 117.29-0.3414 Datum: WGS

Soil Map Unit Name: Salinas clay, 0 to 2 % slopes NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

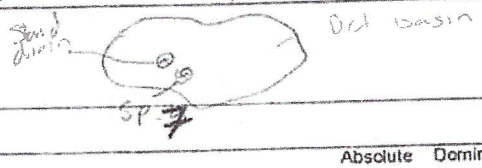
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ No X

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 X	No ____	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:



VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. Salix sp.	15	Y	FACW
2.			
3.			
4.			
5.			
Total Cover:	15		
Herb Stratum			
1. Polypogon monspeliensis	5	N	OBL
2. Kunzea ericoides	20	Y	~~FACW~~
3. Polypogon monspeliensis	7	N	~~FAW~~
4.			
5.			
6.			
7.			
8.			
Total Cover:	33		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (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.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: SP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	2.5Y 5/2		2.5Y 6/6	42	C		silty clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, 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.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- X Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- X 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 Plowed Soils (C6)
- ___ 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)
- ___ Thin Muck Surface (C7)
- ___ 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 X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

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