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DOCKET
08-AFC-4
DATE AUG 18 2008
RECD. AUG 26 2008

August 18, 2008

Ms. Felicia Miller
Project Manager
California Energy Commission
1516 Ninth Street MS-15
Sacramento, CA 95814-5512

Ref: California Department of Fish and Game Section 1602 Streambed Alteration Agreement Application for the Orange Grove Project (08-AFC-4)

Dear Ms. Miller:

Pursuant to your request, enclosed are two paper copies and two compact disc copies of the California Department of Fish and Game (CDFG) Section 1602 Streambed Alteration Agreement application for the Orange Grove Project (08-AFC-4). Please note that the compact disc copies of the application are included as Attachment H of the application package. The application was submitted to CDFG on August 11, 2008.

If you have any questions, please call me at the phone number in the letterhead.

Sincerely,

Joseph L. Stenger

Joseph L. Stenger, PG, REA
Project Director

Enclosure:
CDFG Section 1602 Application (2 paper copies, 2 CD copies)

cc. Steve Thome, J-Power USA (w/o enclosure)
Mike Jones, J-Power USA (w/o enclosure)
Jane Luckhardt, Downey Brand (w/o enclosure)

Each of the Orange Grove Project linear facilities has been located and designed to minimize impacts to sensitive environmental resources to the extent practical, and most of the pipeline alignment is located within areas characterized as urban developed.

The total Orange Grove Project disturbance footprint, including construction easement and all construction laydown areas will be approximately 36 acres. The total project disturbance footprint is comprised of: 1) On-Site facilities (8.3 acres); 2) Site access (1.0 acres); 3) Site fire protection Fuel Modification Zone (2.2 acres); 4) the Site construction laydown area (5.0 acres); 5) the Linear Facilities construction zone, including staging areas and meter station (18.9 acres); 6) Fresh water pickup station (0.2 acres); and 7) reclaim water pickup station (0.4 acres).

Project construction activities along the linear facilities will require 15 to 120 feet of construction zone space surrounding the pipeline trench, plus equipment and materials staging areas at two locations. Refer to Figure 2, Attachment B (Aerial Overview) for a graphical representation of the pipeline route and construction zone areas.

Per LSAA application Box #8(M), Table 1 below lists the coordinates for each of the six jurisdictional crossings.

Table 1: Coordinates for Jurisdictional WSC Crossings

Crossing Number[1]	Parcel Number(s)	Latitude	Longitude
1	110-072-06	117° 6’ 45.203” W	33° 21’ 31.947” N
2	110-072-06	117° 6’ 46.42” W	33° 21’ 31.702” N
3	110-072-06	117° 6’ 46.944” W	33° 21’ 30.561” N
4	110-370-01	117° 6’ 44.029” W	33° 21’ 18.934” N
5	110-150-02	117° 6’ 56.247” W	33° 21’ 10.383” N
6	CalTrans SR 76 right-of-way	117° 7’ 52.083” W	33° 20’ 37.15” N

[1] Refer to Figure 3 (Jurisdictional “waters of the State of California”) in Attachment B for crossing locations.

Project Background

Orange Grove Energy is proposing to construct the Orange Grove Project in response to a Request for Offers (RFO) by San Diego Gas & Electric Company (SDG&E) for new generating resources to be built to support reliability within the service territory. The Orange Grove Project is designed as a peaking facility to serve loads during peak demand. Pursuant to the Warren-Alquist State Energy Resources Conservation and Development Act [California Public Resources Code (PRC) Division 15, Section 25000 et seq.] and PRC Section 21080.5 if the California Environmental Quality Act (CEQA) statute, the California Energy Commission (CEC) will be the lead agency for review of the Orange Grove Project under CEQA.

Project Description

The Orange Grove Project includes construction and operation of the following facilities:

- a 96 MW electric generating plant located on an approximately 8.5 acre site;
- an approximately 0.3 mile underground electric transmission line that will connect the Site to the existing Pala substation; and
- an approximately 2.4 mile long 10-inch natural gas pipeline that will connect the Site to an existing SDG&E regional natural gas transmission line.

The Orange Grove Project also includes the construction of water pickup stations located within the community of Fallbrook. There will be one pickup station for fresh water and one for reclaimed water. These facilities will be constructed, owned, and operated by the Fallbrook Public Utility District (FPUD). Potable and reclaimed water will be trucked to the Site from these facilities. The construction and operation of these water pickup stations will not result in any impacts to WSC.

The proposed natural gas pipeline will originate near the intersection of Rice Canyon Road and SR 76, approximately 1.6 (air) miles southwest of the Site, and will generally parallel SR 76 north and east to its terminus at the Site location near the intersection of SR 76 and Pala Del Norte Road. The underground transmission line will be constructed in the same trench as the gas pipeline or an adjacent parallel trench leaving the Site and along Pala Del Norte Road until turning west off of the pipeline alignment into the existing Pala Substation. Please refer to Figures 2 and 3 in Attachment B.

The pipeline and underground transmission line will be installed utilizing "open trench" cut and backfill construction except for locations where the pipeline will be installed utilizing horizontal boring. The locations where the linear facilities will be installed by horizontal drilling include the four jurisdictional crossings (Figure 3, Attachment B). Where the pipeline is installed in an open trench, the bottom of the trench will be backfilled with imported sand below and surrounding the pipeline to a minimum of six inches above the pipe. The remainder of the trench will be backfilled with native soils removed during the trench digging process. Typical cross sections of the pipe trench at crossings of jurisdictional waters and other locations are included in Attachment C and are referenced within Figure 3 in Attachment B.

The width of construction disturbance along the gas pipeline and underground transmission line route will vary dependent upon the terrain and the sensitivity of the surrounding area. Disturbance will be maintained to the minimum amount practical considering construction safety and efficiency. Where Project Linear Facilities cross a jurisdiction waterway, there will not be any streambed disturbance do to the utilization of horizontal boring. Where the pipeline traverses mountainous terrain, outside of the WSC, the maximum construction disturbance width will be 120 feet to allow for grading of a safe construction work surface and side-casting of excavated material for temporary stockpiling. In relatively flat terrain where sensitive habitat is not present in the work area, the standard width of construction disturbance will be 60 feet. Narrower construction zone footprints will be required where work will occur adjacent to SR 76 and Pala Del Norte Road, and at locations where sensitive resources are present adjacent to

the pipeline route. Construction of the gas pipeline and underground transmission line will be completed utilizing standard construction equipment such as excavators (e.g., Caterpillar 330), rubber tire and track loaders (tracks for mountain areas), a large pettibone (i.e., rough terrain forklift), dump trucks, jack-and-bore equipment and horizontal directional drilling (HDD) equipment.

Two staging areas will be used along the gas pipeline route (Figure 2, Attachment B). The staging areas will be located on existing developed land so that they will not result in disturbance to natural habitat or WSC.

A gas metering station will be constructed on private property south of SR 76, approximately 2,000 feet east of Rice Canyon Road (Figure 2, Attachment B). The metering station will be approximately 0.50 acre in size and will not impact any jurisdictional WSC.

Construction of the Orange Grove Project is expected to begin once required approvals are received from regulatory agencies in Spring 2009 and will take approximately six months to complete.

Horizontal Directional Drilling

Some or all of the horizontal borings may utilize the HDD technique. HDD utilizes a hydraulically-powered HDD rig mounted on a portable steel skid. Support equipment includes a drilling mud tank and a power unit for the hydraulic pumps and mud pumps. The variable-angle drilling unit will be adjusted to the proper design angle for each crossing, and a small diameter cutting head will be used initially to drill a pilot boring. The boring is initiated at a sub-horizontal angle through the sidewall of a bore pit. The bore pit is approximately 30 feet long, 10 feet wide and is excavated several feet deep. The first section of drill stem has an articulating joint near the drill cutting head that would be controlled by the bore operator. Successive drill stem sections would be added as the drill head makes its way under the crossing. Once the drill head reaches the midpoint and deepest point of the crossing, the drill head is articulated slightly by the operator to begin its upward climb toward the exit point. The boring will exit through the side wall of a receiving pit. The receiving pit is approximately 10 feet long, 10 feet wide and is excavated several feet deep. Once through, the boring is reamed to the appropriate size using larger diameter cutting heads.

During the HDD, drilling mud is pumped through the drill stem and cutting head and the pumped mud returns the soil cuttings to the surface where it is contained in an excavated pit. The mud is pumped from the pit to a separating unit where the cuttings are removed from the mud, and then the mud recycled to the drill stem. Under some geologic conditions not expected at this project, the soil or rock above the bore may be fractured or weak and the pressure of the drilling mud can allow it to seep to the surface. If this occurs, the boring operation must be stopped immediately. This situation is termed a “frac-out” and is usually resolved by reducing the mud system pressure or increasing the mud viscosity. The HDD for this project will be monitored for frac-outs at all times. A vacuum truck along with cleanup and containment supplies will be maintained on site in the case of any surface frac-outs. A draft frac-out contingency plan is included as Attachment D.

While the bore is being completed, casing for the bore is prepared by welding pipe segments together on pipe supports and coating the joints. Once the bore hole is the correct diameter, a pulling head is welded on the end of the pipeline sections, and the pipes are pulled through the bore until they surface on the other side. Bulldozers with sidebooms and slings support the pipes as they are slowly pulled through the bore hole. For the gas pipeline, the HDD sections will be connected to the trenched sections of pipe and the boring and exit pits are backfilled. For the transmission line interconnection, pull boxes will be installed at the ends of the bore casings and the pits will be backfilled. After completion of the work, the bore and exit pit areas will be contoured to blend with surrounding topography and the area will be stabilized. All disturbances is designed to be outside of the top of bank of the drainages so planned work will not result in any impacts to WSC.

Jack and Bore

Some or all of the horizontal borings may utilize the jack and bore horizontal drilling technique. For jack and bore horizontal boring, a casing pipe is jacked into a horizontal boring as the boring is being drilled with an auger. Jack and bore operations typically do not fall under CDFG's jurisdiction because this method does not have the potential for frac-out. The risk of frac-out is minimized because drilling mud is not injected at high pressure to return the soil cuttings. As for HDD, if the jack and bore method is used, all surface disturbance will be outside the limits of WSC. There will be no disturbance to the channel beds or banks at the wash crossings.

Special Status Species

A biological assessment was conducted for the power plant site and ancillary facilities. As a result of the initial biological assessment it was determined that many special status species could potentially occur on the Site or within the Project region. Section 6.6.1.3 (Regional Wildlife – Pgs. 6.6-3 through 6.6-30) of the enclosed Biological Resources Section of the Orange Grove AFC (Attachment E) lists and describes all of these species. Furthermore, the following special status species have been confirmed to be present either on the Project Site, the linear facilities route, or within Project survey areas:

- Coastal California gnatcatcher (*Polioptila californica californica*),
- Least Bell's vireo (*Vireo bellii pusillus*),
- Parry's tetracoccus *(Tetracoccus dioicus),*
- Engelmann oak *(Quercus engelmannii),*
- Southern California rufous-crowned sparrow *(Aimophila ruficeps canescens)*
- San Diego horned lizard *(Phrynosoma coronatum blainvillii),* and
- Northern red diamond rattlesnake *(Crotalus ruber ruber).*

Impacts to Vegetation

Pursuant to Box 11(B) of the notification of lake or streambed alteration form (Attachment A) Table 2 below outlines the Project impacts to vegetation.

Table 2: Impacts to Vegetation

Vegetation Type	Temporary Impact	Permanent Impact
Diegan Coastal Sage Scrub	7.5 acres	1.8 acres
Non-native grasslands	2.6 acres	0.8 acres
Orchard	None	11.2 acres
Agriculture	1.0 acres	None
Urban developed	8.3 acres	0.7 acres
Disturbed	2.0 acres	0.1 acres
Sub-totals	21.4 acres	14.6
Total Impact	**36 acres**	

Impacts to Waters of the State of California

A delineation of jurisdictional waters was completed for areas within 250 feet of the Site and Orange Grove Project linear facilities. A copy of the Delineation Report is included as Attachment F. Due to the utilization of horizontal drilling to install the gas pipeline and electric transmission line under jurisdictional waterways, no impacts to WSC will occur from construction of the Orange Grove Project. Please refer to the Attachment C - Photo Exhibit of the Jurisdictional Delineation Report included as Appendix 6.5-B of the enclosed Water Resources Section of the Orange Grove Project AFC for photographic representation of the six drainages. The Water Resources Section of the Orange Grove Project AFC has been included as Attachment F.

Impact Avoidance and Minimization

The following measures will be implemented to avoid or minimize impacts to sensitive resources including biological resources as a result of the construction activities of the transmission and natural gas pipeline:

<u>Prior to the Commencement of Construction Activities:</u>

1. Workers will be given special instruction in protection of listed species that may occur in work areas including occurrence, sensitivity, and activity patterns. Instruction will also include information on legal protection and penalties for violation of federal and state laws.

2. Nesting bird surveys will be conducted within 1 week of the start of construction, pursuant to the Migratory Bird Treaty Act, in all areas that contain potential nesting

habitat for construction activities occurring within the bird nesting season (March 1 to August 31). All nests shall be evaluated by a qualified biologist to determine whether or not construction will impact nesting activities. Nests shall be monitored during construction activities, if deemed necessary by the biologist.

3. Soil erosion and water quality Best Management Practices (BMPs) will be implemented prior to construction activities, as applicable. BMPs will include silt fencing, fiber rolls and check damns (cross barriers). BMPs will be placed around stockpiled materials and bordering all sides of construction sites, as appropriate.

4. A habitat loss permit (HLP) shall be acquired from the County as allowed under Section 4(d) of the Federal Endangered Species Act (ESA). The HLP will require mitigation for diegan coastal sage scrub impacted by the Project at an expected ratio of 2:1.

5. Impacted Parry's tetracoccus will be relocated prior to the start of construction activities.

<u>During Construction Activities:</u>

1. Crews will prevent raw cement, concrete, or washings thereof, asphalt, paint, or other coating material, oil or other petroleum products, or any other substance which can be deleterious to aquatic life from contaminating soil and/or entering a river, stream, lake or other waters of the state or WSC.

2. Vehicles will remain on existing access roads or within approved construction disturbance areas. Speed within the construction site will not exceed 20 miles per hour and speed limits will be posted. Workers will be instructed that this limit will be enforced.

3. Construction areas will be reduced to the greatest extent consistent with safe and efficient work in areas with sensitive habitat or presence of protected species.

4. All trash and food items generated by construction and maintenance activities will be promptly contained and regularly removed from the Orange Grove Project site to reduce the attractiveness of the area to common ravens and other scavengers. Portable toilets will be provided for construction personnel.

5. A qualified monitor will monitor during construction for any sensitive species found to be present or potentially present to ensure compliance with regulatory permits.

6. Construction through occupied least Bell's vireo habitat located along the gas pipeline route will take place outside of the least Bell's vireo breeding season (September 16 to March 14). If the breeding season cannot be avoided, HDD will be utilized in order to physically avoid breeding habitat.

7. Construction within 500 feet of any nesting coastal California gnatcatcher pairs shall only occur during the non-breeding season (June 30 to March 15).

8. A limited construction period (August 1 to January 31) shall be utilized along portions of the pipeline route to avoid potential impacts to arroyo toad during their active season.

9. Engleman oak species will be included as an element of the Project landscaping plan and will minimize the impact from removing the existing mature individual located onsite.

10. Work will not occur within any "jurisdictional WSC".

11. The Frac-out Contingency Plan, and measures outlined within, shall be followed during HDD work involving WSC. A draft Frac-out Contingency Plan is included as Attachment D.

Mitigation for Impacts to Waters of the State of California

No impacts to jurisdictional WSC will result from construction or operations activities. All crossing locations will be avoided utilizing horizontal drilling. Frac-outs at the HDD locations will be avoided and minimized as outlined in the Draft Frac-out Contingency Plan included as Attachment D. Therefore, no mitigation for impacts to WSC is necessary.

Other Permits/Notifications/Coordination

Pursuant to Box 13 of the notification of lake or streambed alteration form, required federal, state, and local permits are described below.

<u>California Energy Commission – Power Plant Site Certification</u>

An Application for Certification (AFC) has been submitted to the CEC for the Orange Grove Project. The AFC process is functionally equivalent to an Environmental Impact Report (EIR) under CEQA with the CEC acting as lead agency.

<u>San Diego County – Habitat Loss Permit</u>

A HLP shall be acquired from the County in order to mitigate impacts to diegan coastal sage scrub impacted by project construction activities, as allowed under Section 4(d) of the Federal ESA. A Copy of the HLP application will be forwarded to the CDFG upon submittal to the County.

<u>San Diego County – Septic System Permit</u>

A septic system permit will be required from San Diego County in order to construct onsite septic system. The septic system permit application has not yet been submitted.

<u>San Diego County – Grading Permit</u>

A grading permit will be required from San Diego County prior to the initiation of any project grading activities. The grading permit application has not yet been submitted.

San Diego County – Hazardous Materials Permit

A hazardous materials permit will be required form San Diego County in order to store hazardous materials on the Project Site. The hazardous materials permit application has not yet been submitted.

San Diego Air Pollution Control District – Authority to Construct and Operate

An authority to construct and operate permit will be required from the San Diego Air Pollution Control District (SDAPCD). The authority to construct and operate permit application is currently under consideration by the SDAPCD.

San Diego Air Pollution Control District – Acid Rain Permit

An acid rain permit will be required from the SDAPCD. The acid rain permit Application has not yet been submitted.

San Diego Air Pollution Control District – Title V Operating Permit

Within one year of facility start-up, a Title V operating permit will be required from the SDAPCD. The Title V operating permit will be application will be submitted following project start-up.

CalTrans – Encroachment Permits

CalTrans will require an encroachment permits in order to construct the natural gas pipeline within the CalTrans right-of-way and to connect the project access driveway to SR 76. The CalTrans encroachment permit applications have not yet been submitted.

San Diego Regional Water Quality Control Board – NPDES Stormwater Permit

Project construction will be required to operate under the State General NPDES permit for construction sites. A notice of intent (NOI) shall be submitted to the San Diego Regional Water Quality Control Board prior to the start of construction.

Requested Actions

TRC, on behalf of Orange Grove Energy, respectfully requests that you process the attached LSAA application for regulatory approval of the Orange Grove Project. Please find a check for $4,000 included (Attachment G) for the Lake or Stream Application Fee. Pursuant to Box 16 of the Notification of Lake or Streambed Alteration form, this application package has also been included on compact disc (Attachment H). We greatly appreciate your review of this information and your timely response.

Please do not hesitate to contact me if you have any questions regarding this submittal or need any additional information.

Sincerely,

Elisha Back
Principal
Irvine Natural Resources and Permitting

cc: Mr. Steve Thome, J-Power
Mr. Joe Stenger, TRC

Attachments

A Notification of Lake or Streambed Alteration
B Project Figures
- Figure 1 – Vicinity Map
- Figure 2 – Aerial Overview
- Figure 3 – Jurisdictional "Waters of the State of California"

C Project Construction Plans and Drawings
D Draft Frac-out Contingency Plan
E Biological Resources Section of the Orange Grove Project AFC
F Water Resources Section of the Orange Grove Project AFC
G Application Fee Check for $4,000
H Compact Disc Copy of LSAA Application Package

TRC

Attachment A
Notification of Lake or Streambed Alteration

FOR DEPARTMENT USE ONLY				
Date Received	Amount Received	Amount Due	Date Complete	Notification No.
	$	$		

STATE OF CALIFORNIA

DEPARTMENT OF FISH AND GAME

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

Complete EACH field, unless otherwise indicated, following the enclosed instructions and submit ALL required enclosures. Attach additional pages, if necessary.

1. APPLICANT PROPOSING PROJECT

Name	Steve Thome		
Business/Agency	Orange Grove Energy, L.P.		
Street Address	1900 East Gulf Road, Suite 1030		
City, State, Zip	Schaumburg, Illinois, 60173		
Telephone	(847) 226-9134	Fax	(847) 908-2888
Email	sthome@jpowerusa.com		

2. CONTACT PERSON (*Complete only if different from applicant*)

Name	TRC, Attn: Elisha Back		
Street Address	21 Technology Drive		
City, State, Zip	Irvine, California, 92618		
Telephone	(949) 727-7390	Fax	(949) 727-7399
Email	eback@trcsolutions.com		

3. PROPERTY OWNER (*Complete only if different from applicant*)

Name	San Diego Gas & Electric, Attn: Steve Taylor		
Street Address	8315 Century Park Court, CP 21D		
City, State, Zip	San Diego, California, 92123-1548		
Telephone	(858) 654-6361	Fax	
Email	srtaylor@semprautilities.com		

4. PROJECT NAME AND AGREEMENT TERM

A. Project Name	Orange Grove Project
B. Agreement Term Requested	☑ Regular (*5 years or less*) ☐ Long-term (*greater than 5 years*)

C. Project Term		D. Seasonal Work Period		E. Number of Work Days
Beginning (*year*)	Ending (*year*)	Start Date (*month/day*)	End Date (*month/day*)	
2009	2009	04/01	10/31	210.00

Box 3. Property Owner

Name	CalTrans District 11, Attn: Pedro Orso-Delgado – District 11 Director
Street Address	4050 Taylor Street
City, State, Zip	San Diego, CA 92110
Telephone	(619)688-6699

5. AGREEMENT TYPE

Check the applicable box. If box B, C, D, or E is checked, complete the specified attachment.

A.	☑ Standard *(Most construction projects, excluding the categories listed below)*	
B.	☐ Gravel/Sand/Rock Extraction (*Attachment A*)	*Mine I.D. Number:* _____
C.	☐ Timber Harvesting (*Attachment B*)	THP *Number:* _____
D.	☐ Water Diversion/Extraction/Impoundment (*Attachment C*)	*SWRCB Number:* _____
E.	☐ Routine Maintenance (*Attachment D*)	
F.	☐ DFG Fisheries Restoration Grant Program (FRGP)	*FRGP Contract Number:* _____
G.	☐ Master	
H.	☐ Master Timber Harvesting	

6. FEES

Please see the current fee schedule to determine the appropriate notification fee. Itemize each project's estimated cost and corresponding fee. ***Note: The Department may not process this notification until the correct fee has been received.***

	A. Project	B. Project Cost	C. Project Fee
1	Orange Grove Project	$93,000,000.00	$4,000.00
2			
3			
4			
5			
		D. Base Fee *(if applicable)*	
		E. TOTAL FEE ENCLOSED	$4,000.00

7. PRIOR NOTIFICATION OR ORDER

A. Has a notification previously been submitted to, or a Lake or Streambed Alteration Agreement previously been issued by, the Department for the project described in this notification?

☐ Yes (*Provide the information below*) ☑ No

Applicant: _____ Notification Number: _____ Date: _____

B. Is this notification being submitted in response to an order, notice, or other directive ("order") by a court or administrative agency (including the Department)?

☑ No ☐ Yes (*Enclose a copy of the order, notice, or other directive. If the directive is not in writing, identify the person who directed the applicant to submit this notification and the agency he or she represents, and describe the circumstances relating to the order.*)

☐ *Continued on additional page(s)*

8. PROJECT LOCATION

A. Address or description of project location.

(*Include a map that marks the location of the project with a reference to the nearest city or town, and provide driving directions from a major road or highway*)

The proposed 10-inch gas line will originate at the intersection of Rice Canyon Road and State Route (SR) 76, approximately 1.6 (air) miles southwest of the Project site, and generally parallel SR 76 northeast to its terminus at the site location at the intersection of SR 76 and Pala Del Norte Road (Figure 2, Attachment B). Total pipeline length is approximately 2.4 miles. The power plant site is located approximately 2 miles west of the town of Pala in San Diego County, California. The underground transmission line will extend approximately 0.3 mile between the power generation facility and the existing Pala Substation. The transmission line will be adjacent to the gas line until it turns west to enter the substation (Figure 2, Attachment B and Drawing GP850, Attachment C).

To drive to the site from the intersection of I-15 and SR 76 (Pala Road), take SR 76 east to Pala Del Norte Road. Turn left on Pala Del Norte Road and drive approximately 0.2 mile north. The site is located off of the right (east) side of Pala Del Norte Road.

☑ *Continued on additional page(s)*

B. River, stream, or lake affected by the project. Unnamed drainages - Please see Figure 3, Attachment B.

C. What water body is the river, stream, or lake tributary to? San Luis Rey River

D. Is the river or stream segment affected by the project listed in the state or federal Wild and Scenic Rivers Acts? ☐ Yes ☑ No ☐ Unknown

E. County San Diego

F. USGS 7.5 Minute Quad Map Name	G. Township	H. Range	I. Section	J. ¼ Section
Pala, California	9 South	2 West	32	Southwest
Pala, California	9 South	2 West	29	Northwest
Bonsall, California	10 South	2 West	6	Southeast

☐ *Continued on additional page(s)*

K. Meridian (*check one*) ☐ Humboldt ☐ Mt. Diablo ☑ San Bernardino

L. Assessor's Parcel Number(s)

110-072-06, 110-370-01, 110-150-02, & CalTrans SR 76 right-of-way.

☐ *Continued on additional page(s)*

M. Coordinates (*If available, provide at least latitude/longitude or UTM coordinates and check appropriate boxes*)

Latitude/Longitude	*Latitude:* See Table 1 in cover letter	*Longitude:* See Table 1 in cover letter	
	☑ Degrees/Minutes/Seconds	☐ Decimal Degrees	☐ Decimal Minutes
UTM	*Easting:*	*Northing:*	☐ Zone 10 ☐ Zone 11
Datum used for Latitude/Longitude or UTM	☐ NAD 27	☑ NAD 83 or WGS 84	

9. PROJECT CATEGORY AND WORK TYPE *(Check each box that applies)*

PROJECT CATEGORY	NEW CONSTRUCTION	REPLACE EXISTING STRUCTURE	REPAIR/MAINTAIN EXISTING STRUCTURE
Bank stabilization – bioengineering/recontouring	☐	☐	☐
Bank stabilization – rip-rap/retaining wall/gabion	☐	☐	☐
Boat dock/pier	☐	☐	☐
Boat ramp	☐	☐	☐
Bridge	☐	☐	☐
Channel clearing/vegetation management	☐	☐	☐
Culvert	☐	☐	☐
Debris basin	☐	☐	☐
Dam	☐	☐	☐
Diversion structure – weir or pump intake	☐	☐	☐
Filling of wetland, river, stream, or lake	☐	☐	☐
Geotechnical survey	☐	☐	☐
Habitat enhancement – revegetation/mitigation	☐	☐	☐
Levee	☐	☐	☐
Low water crossing	☐	☐	☐
Road/trail	☐	☐	☐
Sediment removal – pond, stream, or marina	☐	☐	☐
Storm drain outfall structure	☐	☐	☐
Temporary stream crossing	☐	☐	☐
Utility crossing : Horizontal Directional Drilling	☑	☐	☐
Jack/bore	☐	☐	☐
Open trench	☐	☐	☐
Other *(specify)*:	☐	☐	☐

10. PROJECT DESCRIPTION

A. Describe the project in detail. Photographs of the project location and immediate surrounding area should be included.

- Include any structures (e.g., rip-rap, culverts, or channel clearing) that will be placed, built, or completed in or near the stream, river, or lake.
- Specify the type and volume of materials that will be used.
- If water will be diverted or drafted, specify the purpose or use.

Enclose diagrams, drawings, plans, and/or maps that provide all of the following: site specific construction details; the dimensions of each structure and/or extent of each activity in the bed, channel, bank or floodplain; an overview of the entire project area (i.e., "bird's-eye view") showing the location of each structure and/or activity, significant area features, and where the equipment/machinery will enter and exit the project area.

See the Project Description section of the attached cover letter.

☑ *Continued on additional page(s)*

B. Specify the equipment and machinery that will be used to complete the project.

Construction of the gas pipeline and underground transmission line will be completed with standard construction equipment such as excavators (e.g., Caterpillar 330), rubber tire and track loaders (tracks for mountain areas), a large pettibone (i.e., rough terrain forklift), dump trucks, and horizontal directional drilling (HDD) equipment.

☐ *Continued on additional page(s)*

C. Will water be present during the proposed work period (specified in box 4.D) in the stream, river, or lake (specified in box 8.B).	☐ Yes ☑ No (*Skip to box 11*)
D. Will the proposed project require work in the wetted portion of the channel?	☐ Yes (*Enclose a plan to divert water around work site*) ☑ No

11. PROJECT IMPACTS

A. Describe impacts to the bed, channel, and bank of the river, stream, or lake, and the associated riparian habitat. Specify the dimensions of the modifications in length (linear feet) and area (square feet or acres) and the type and volume of material (cubic yards) that will be moved, displaced, or otherwise disturbed, if applicable.

No impacts will occur do to the utilization of HDD. Refer to the Impacts section of the attached cover letter.

☑ *Continued on additional page(s)*

B. Will the project affect any vegetation? ☑ Yes (*Complete the tables below*) ☐ No

Vegetation Type	Temporary Impact	Permanent Impact
See Table 2 in attached cover letter.	Linear feet: _____ Total area: _____	Linear feet: _____ Total area: _____
	Linear feet: _____ Total area: _____	Linear feet: _____ Total area: _____

Tree Species	Number of Trees to be Removed	Trunk Diameter (range)
Engelmann Oak	1	not measured

☑ *Continued on additional page(s)*

C. Are any special status animal or plant species, or habitat that could support such species, known to be present on or near the project site?

☑ Yes *(List each species and/or describe the habitat below)* ☐ No ☐ Unknown

See the Protected Species section of the attached cover letter and Biological Resources Section of the Orange Grove Project Application for Certification (AFC) (Attachment E).

☑ *Continued on additional page(s)*

D. Identify the source(s) of information that supports a "yes" or "no" answer above in Box 11.C.

See attached Biological Resources Section of the Orange Grove Project AFC (Attachment E).

☑ *Continued on additional page(s)*

E. Has a biological study been completed for the project site?

☑ Yes (*Enclose the biological study*) ☐ No

Note: A biological assessment or study may be required to evaluate potential project impacts on biological resources.

F. Has a hydrological study been completed for the project or project site?

☑ Yes (*Enclose the hydrological study*) ☐ No

Note: A hydrological study or other information on site hydraulics (e.g., flows, channel characteristics, and/or flood recurrence intervals) may be required to evaluate potential project impacts on hydrology.

12. MEASURES TO PROTECT FISH, WILDLIFE, AND PLANT RESOURCES

A. Describe the techniques that will be used to prevent sediment from entering watercourses during and after construction.

Jurisdictional waters of the State of California will be avoided by utilizing HDD. A stormwater management plan has been prepared for the Project and has been included as Appendix 6.5-D of the Water Resources Section of the Orange Grove AFC (Attachment F). The stormwater management plan outlines the sediment control measures for the Project.

☑ *Continued on additional page(s)*

B. Describe project avoidance and/or minimization measures to protect fish, wildlife, and plant resources.

See the Impact Avoidance and Minimization Section of the attached cover letter. Section 6.6.2.5 (Project Design Features) of the enclosed Biological Resources Section of the Orange Grove Project AFC (Attachment E) discusses site characteristics and Project design features which limit the impact to biological resources from the Project. Section 6.6.2.2 (Construction Impacts and Mitigation - Pg. 6.6-44) and Section 6.6.2.3 (Operations and Maintenance Impacts and Mitigation - Pg. 6.6-52) of the enclosed Biological Resources Section of the Orange Grove AFC also describe impact mitigation and minimization.

☑ *Continued on additional page(s)*

C. Describe any project mitigation and/or compensation measures to protect fish, wildlife, and plant resources.

See the Impact Avoidance and Minimization Section of the attached cover letter and Biological Resources Section of the Orange Grove AFC (Attachment E). Section 6.6.2.2 (Construction Impacts and Mitigation - Pg. 6.6-44) and Section 6.6.2.3 (Operations and Maintenance Impacts and Mitigation - Pg. 6.6-52) of the enclosed Biological Resources Section of the Orange Grove AFC fully describe impact mitigation for the Project.

☑ *Continued on additional page(s)*

13. PERMITS

List any local, state, and federal permits required for the project and check the corresponding box(es). Enclose a copy of each permit that has been issued.

A. See Other Permits/Notifications/Coordination section of attached cover letter ☐ Applied ☐ Issued

B. _____ ☐ Applied ☐ Issued

C. _____ ☐ Applied ☐ Issued

D. Unknown whether ☐ local, ☐ state, or ☐ federal permit is needed for the project. (*Check each box that applies*)

☐ *Continued on additional page(s)*

14. ENVIRONMENTAL REVIEW

A. Has a draft or final document been prepared for the project pursuant to the California Environmental Quality Act (CEQA), National Environmental Protection Act (NEPA), California Endangered Species Act (CESA) and/or federal Endangered Species Act (ESA)?

☐ Yes (*Check the box for each CEQA, NEPA, CESA, and ESA document that has been prepared and enclose a copy of each*)

☑ No (*Check the box for each CEQA, NEPA, CESA, and ESA document listed below that will be or is being prepared*)

☐ Notice of Exemption	☐ Mitigated Negative Declaration	☐ NEPA document (*type*): _____
☐ Initial Study	☑ Environmental Impact Report	☐ CESA document (*type*): _____
☐ Negative Declaration	☐ Notice of Determination *(Enclose)*	☐ ESA document (*type*): _____
☐ THP/ NTMP	☐ Mitigation, Monitoring, Reporting Plan	

B. State Clearinghouse Number (*if applicable*)			
C. Has a CEQA lead agency been determined?	☑ Yes (*Complete boxes D, E, and F*)	☐ No (*Skip to box 14.G*)	
D. CEQA Lead Agency	California Energy Commission		
E. Contact Person	Felicia Miller	F. Telephone Number	(916) 654-4640

G. If the project described in this notification is part of a larger project or plan, briefly describe that larger project or plan.

See the Project Description section of the attached cover letter.

☑ *Continued on additional page(s)*

H. Has an environmental filing fee (Fish and Game Code section 711.4) been paid?

☐ Yes (*Enclose proof of payment*) ☑ No (*Briefly explain below the reason a filing fee has not been paid*)

The Project has only recently come under environmental review. The Fish and Game Code 711.4 filing fee, if required, has not yet been paid.

Note: If a filing fee is required, the Department may not finalize a Lake or Streambed Alteration Agreement until the filing fee is paid.

15. SITE INSPECTION

Check one box only.

☐ In the event the Department determines that a site inspection is necessary, I hereby authorize a Department representative to enter the property where the project described in this notification will take place at any reasonable time, and hereby certify that I am authorized to grant the Department such entry.

☑ I request the Department to first contact (*insert name*) Elisha Back at (*insert telephone number*) (949) 727-7390 to schedule a date and time to enter the property where the project described in this notification will take place. I understand that this may delay the Department's determination as to whether a Lake or Streambed Alteration Agreement is required and/or the Department's issuance of a draft agreement pursuant to this notification.

16. DIGITAL FORMAT

Is any of the information included as part of the notification available in digital format (i.e., CD, DVD, etc.)?

☑ Yes (Please enclose the information via digital media with the completed notification form)

☐ No

17. SIGNATURE

I hereby certify that to the best of my knowledge the information in this notification is true and correct and that I am authorized to sign this notification as, or on behalf of, the applicant. I understand that if any information in this notification is found to be untrue or incorrect, the Department may suspend processing this notification or suspend or revoke any draft or final Lake or Streambed Alteration Agreement issued pursuant to this notification. I understand also that if any information in this notification is found to be untrue or incorrect and the project described in this notification has already begun, I and/or the applicant may be subject to civil or criminal prosecution. I understand that this notification applies only to the project(s) described herein and that I and/or the applicant may be subject to civil or criminal prosecution for undertaking any project not described herein unless the Department has been separately notified of that project in accordance with Fish and Game Code section 1602 or 1611.

Signature of Applicant or Applicant's Authorized Representative

30 JULY 2008
Date

Steve Thome
Print Name

Attachment B
Project Figures

G:\Orange_Grove-125158\MXD\Vicinity Map.mxd

Figure 1

Vicinity Map
Orange Grove Project
San Diego County, CA

N
W E
S

1" = 15 Miles

15 7.5 0 15 30
Miles

Source:
Data obtained from ESRI Generic Base
Data included with ArcMap 9.2

TRC

Horizontal Drilling Under Jurisdictional WSC

Horizontal Drilling Under Jurisdictional WSC

SR 76

Horizontal Drilling Under Jurisdictional WSC

Former Mine Pits

Horizontal Drilling Under Jurisdictional WSC

Horizontal Drilling Under SR 76

G:\Orange_Grove-125158\MXD\Aerial Tiles ACE.mxd

Legend

- Proposed Gas Line
- Underground Electrical Transmission Line
- Staging Area
- Construction Zone
- Power Plant Site Boundary
- Gas Metering Station

N
W E
S

Figure 2

Sheet: A

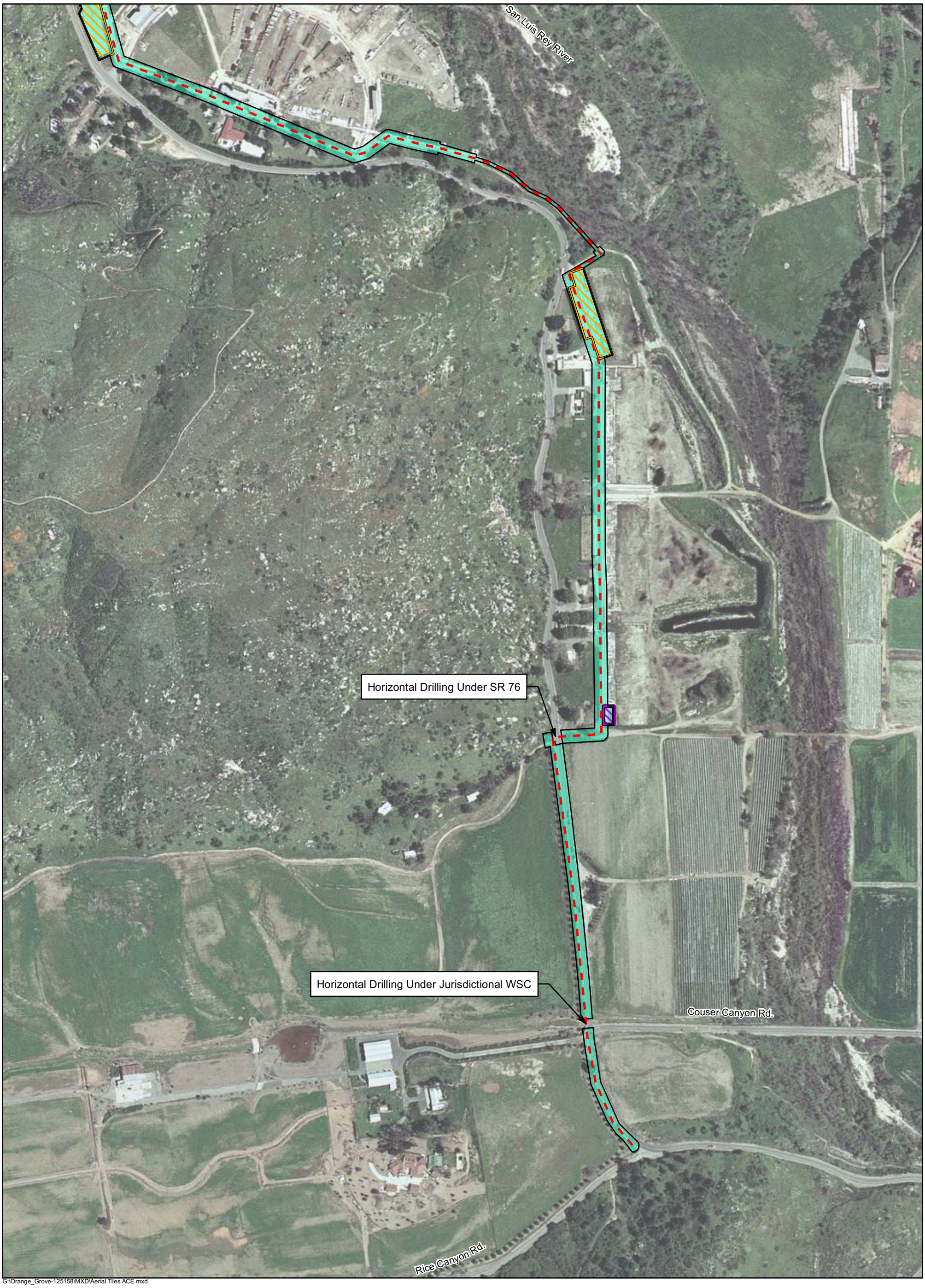
Aerial Overview
Orange Grove Project
San Diego County, CA

Source:
USGS Topographical Quardrangles: Pala, Bonsall
Aerial Photographs from ESRI_Imagery_World_2D

1" = 400'

400 200 0 400 800 1,200 Feet

TRC



G:\Orange_Grove-125158\MXD\Aerial Tiles ACE.mxd

Legend

- Proposed Gas Line
- Underground Electrical Transmission Line
- Staging Area
- Construction Zone
- Power Plant Site Boundary
- Gas Metering Station

Figure 2

Sheet: B

Aerial Overview
Orange Grove Project
San Diego County, CA

1" = 400'

400 200 0 400 800 1,200 Feet

Source:
USGS Topographical Quardrangles: Pala, Bonsall
Aerial Photographs from ESRI_Imagery_World_2D

TRC

Horizontal Drilling Jurisdictional Waters
See Detail 7, Drawing C851

Horizontal Drilling Jurisdictional Waters
See Detail 7, Drawing C851

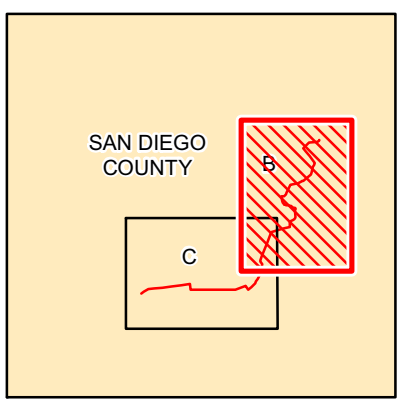
Horizontal Drilling Jurisdictional Waters
See Detail 7, Drawing C851

Horizontal Drilling Jurisdictional Waters
See Detail 7, Drawing C851

Horizontal Drilling Jurisdictional Waters
See Detail 7, Drawing C851

State Road 76 Cross Section
See Detail 8, Drawing C851

Tributary 1.3
Tributary 1.2
Tributary 1.1
Pala Del Norte Rd.
DRAINAGE 1
DRAINAGE 2
Crossing 1
Crossing 2
Crossing 3
Existing Storage Area
Existing Pala Substation
Tributary 3.1
Tributary 3.2
DRAINAGE 3
Crossing 4
State Route 76
Former Mine Pits (Ponds)
Crossing 5
DRAINAGE 4
Jamie's Lane
Former Dairy Farm
San Luis Rey River



Proposed Gas Line
Proposed Underground Electrical Transmission Line
Power Plant Footprint
Survey Boundary Area
Jurisdictional Drainage (Survey)
San Luis Rey River With Wetland Areas
USFWS NWI Mapped Wetlands/Ponds
Riparian Area (Survey)

Source:
USGS Topographical Quardrangles: Pala, Bonsall.
Wetlands data from National Wetlands Inventory (http://www.fws.gov/nwi/)
Aerial Photography from California Spatial Information Library-Remote Sensing 2005
Surveys conducted as part of Jurisdictional
Delineation Report for the Project.

1 " equals 400 '
400 200 0 400 800 1,200 Feet

Figure 3

Sheet: 1

Jurisdictional "Waters
of the State of California"

Orange Grove Project

San Diego County

TRC

G:\Orange_Grove-125158\MXD\Bio_Tiles ACE.mxd

Former Dairy Farm

Former Dairy Farm

StateRoad 76 Cross Section
See Detail 8, Drawing C851

State Route 76

San Luis Rey River

Horizontal Drilling Jurisdictional Waters
See Detail 7, Drawing C851

Crossing 6

DRAINAGE 5

Couser Canyon Road

Rice Canyon Creek

DRAINAGE 6

Rice Canyon Road

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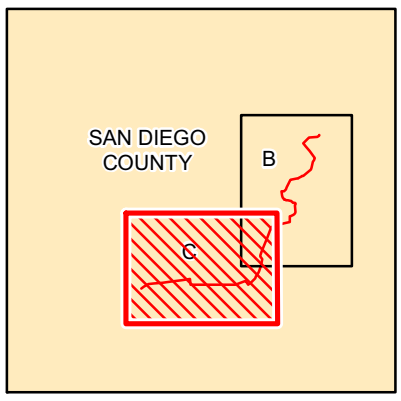


Proposed Gas Line
Proposed Underground Electrical Transmission Line
Power Plant Footprint
Survey Boundary Area
Jurisdictional Drainage (Survey)
San Luis Rey River With Wetland Areas
USFWS NWI Mapped Wetlands/Ponds
Riparian Area (Survey)

Figure 3

Sheet: 2

Jurisdictional "Waters of the State of California"

Orange Grove Project

San Diego County

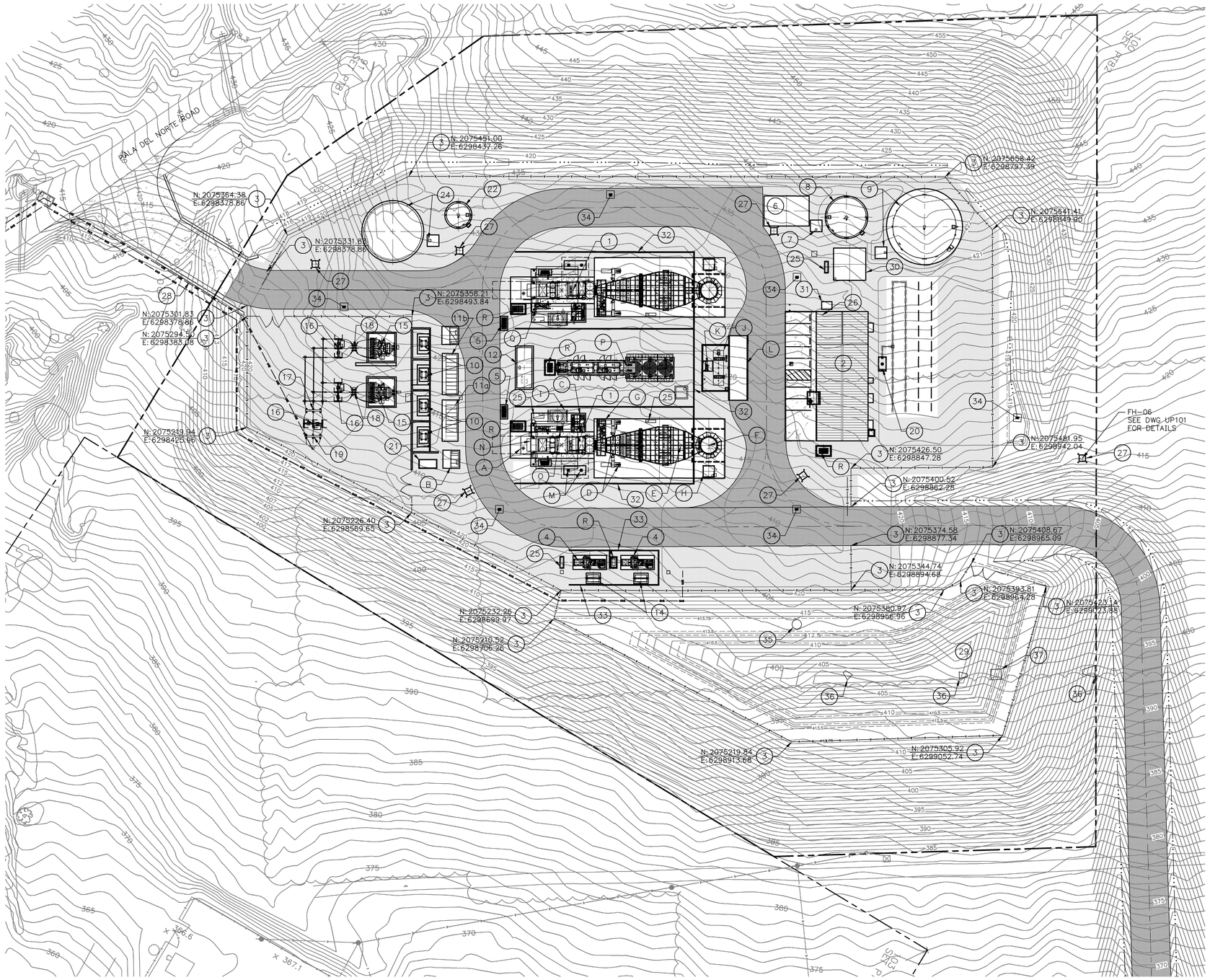
Source:
USGS Topographical Quardrangles: Pala, Bonsall.
Wetlands data from National Wetlands Inventory (http://www.fws.gov/nwi/)
Aerial Photography from California Spatial Information Library-Remote Sensing 2005
Surveys conducted as part of Jurisdictional
Delineation Report for the Project.

1 " equals 400 '

400 200 0 400 800 1,200 Feet

TRC

Attachment C
Project Construction Plans and Drawings



SITE LAYOUT PLAN

PLAN NORTH IS 29°55'46" CCW OF TRUE NORTH

40 0 40 80

SCALE IN FEET

EMISSION COORDINATES SYMBOL		
DESCRIPTION	NORTHING	EASTING
COMBUSTION TURBINE #1 (NORTH)	2075491	6298683
COMBUSTION TURBINE #2 (SOUTH)	2075387	6298743
DIESEL FIRE PUMP (±2')	2075517	6298766
BLACK START GENERATOR (±2')	2075379	6298582

KEYNOTES:

1. COMBUSTION TURBINE (CT), GENERATOR, AND AUXILIARY EQUIPMENT. (FOR EACH UNIT): (HEIGHT = 43' AT THE TOP OF VBV DUCT).
   - A MAIN TURBINE GENERATOR SKID ENCLOSURE.
   - B 13.8KV ELECTRICAL SWITCHGEAR.
   - C CT AUXILIARY EQUIPMENT SKID.
   - D TEMPERING AIR FANS (2).
   - E EMISSION CONTROL SYSTEM–SCR (HEIGHT = ±33').
   - F STACK (HEIGHT = 80').
   - G AMMONIA VAPORIZATION SKID.
   - H CEMS ENCLOSURE WITH TRANSFORMER AND CALIBRATION GAS STORAGE.
   - I CT LUBE OIL COOLER.
   - J AMMONIA STORAGE TANK (COMMON TO BOTH CT UNITS).
   - K AMMONIA FORWARDING PUMP SKID (COMMON TO BOTH CT UNITS).
   - L AMMONIA UNLOADING PAD, SPILL CONTAINMENT (COMMON TO BOTH CT UNITS).
   - M TURBINE REMOVAL SUPPORTS.
   - N AIR INLET FILTER (HEIGHT = 34').
   - O SPRINT SKID.
   - P INLET AIR CHILLER AND COOLING TOWER (COMMON TO BOTH CT UNITS) (HEIGHT = 30').
   - Q WATER INJECTION SKID.
   - R OILY DRAIN TANK.
2. SERVICE BUILDING FOR CONTROL ROOM, ELECTRICAL EQUIPMENT, FIRE PUMPS, COMPRESSED AIR. (HEIGHT = 18').
3. SITE SECURITY CHAINLINK FENCE AND GATES.
4. FUEL GAS COMPRESSORS.
5. GAS COALESCING FILTER SKID.
6. CONCRETE PAD FOR TEMPORARY WATER TREATMENT TRAILER.
7. DEMIN. WATER PUMP SKID AND RELATED EQUIPMENT.
8. DEMIN. WATER STORAGE TANK (HEIGHT = 24').
9. RAW WATER/FIREWATER STORAGE TANK & PUMP SKID (HEIGHT = 44').
10. AUXILIARY TRANSFORMERS.
11a. 4160V ELECTRICAL SWITCHGEAR.
11b. 480V ELECTRICAL SWITCHGEAR.
12. BLACKSTART GENERATOR.
13. NOT USED.
14. FUEL GAS COMPRESSOR RECYCLE FIN–FAN COOLER.
15. 13.8KV–69KV GENERATOR STEP–UP TRANSFORMER (GSU).
16. 69KV DISCONNECT SWITCH AND SUPPORTS.
17. 69KV CT/VT METERING UNIT.
18. 69KV CIRCUIT BREAKER.
19. 69KV TRANSITION STRUCTURE & POTHEAD.
20. UNDERGROUND SANITARY SYSTEM.
21. TRANSFORMER DELUGE VALVE ENCLOSURE.
22. WASTEWATER STORAGE TANK (HEIGHT = 24').
23. NOT USED.
24. COOLING TOWER MAKEUP TANK AND PUMP SKID (HEIGHT = 36').
25. 480V MCC.
26. DIESEL FIRE PUMP ROOM.
27. YARD FIRE HYDRANTS WITH HYDRANT MOUNT FIRE MONITORS.
28. BRIDGE.
29. STORMWATER DETENTION BASIN.
30. RO WATER TREATMENT AREA.
31. DIESEL STORAGE TANK – DIESEL FIRE PUMP.
32. GAS TURBINE SOUND WALL (HEIGHT = 48').
33. GAS COMPRESSOR SOUND WALL (HEIGHT = 24').
34. AREA INLET.
35. STORM MANHOLE.

KEYNOTES CONT.:

36. STORM END SECTION.
37. STORMWATER OUTLET CONTROL STRUCTURE.

REV.	DATE	DESCRIPTION	DWN	CHK
A	10–23–07	ISSUED FOR REVIEW	BGG	WHR
B	10–30–07	ISSUED FOR REVIEW	BGG	WHR
C	11–8–07	ISSUED FOR WESTPOWER APPROVAL	BGG	WHR
D	11–19–07	ISSUED FOR AIR MODEL	BGG	WHR
E	11–29–07	RE–ISSUED FOR AIR MODEL	BGG	WHR
F	11–30–07	ISSUED FOR MILESTONE 4	BGG	WHR
G	12–19–07	ISSUED FOR AMENDED SPPE APPLICATION	BGG	WHR
H	12–28–07	RE–ISSUED FOR MILESTONE 4	BGG	WHR
J	1–17–08	ISSUED PER FPP COMMENTS	BGG	MJB
K	02–29–08	FINAL ISSUE FOR APPROVAL	BGG	WHR
L	6–2–08	ISSUED FOR AFC PERMIT	BGG	MJB

Sealed Only When Signed in Blue Ink

Sega ®
Engineers – Architects – Technicians
Design – Construction – Field Service
16041 Foster
P.O. Box 1000
Stilwell, Kansas 66085–1000

ORANGE GROVE ENERGY L.P.
Schaumburg, IL

ORANGE GROVE POWER PLANT

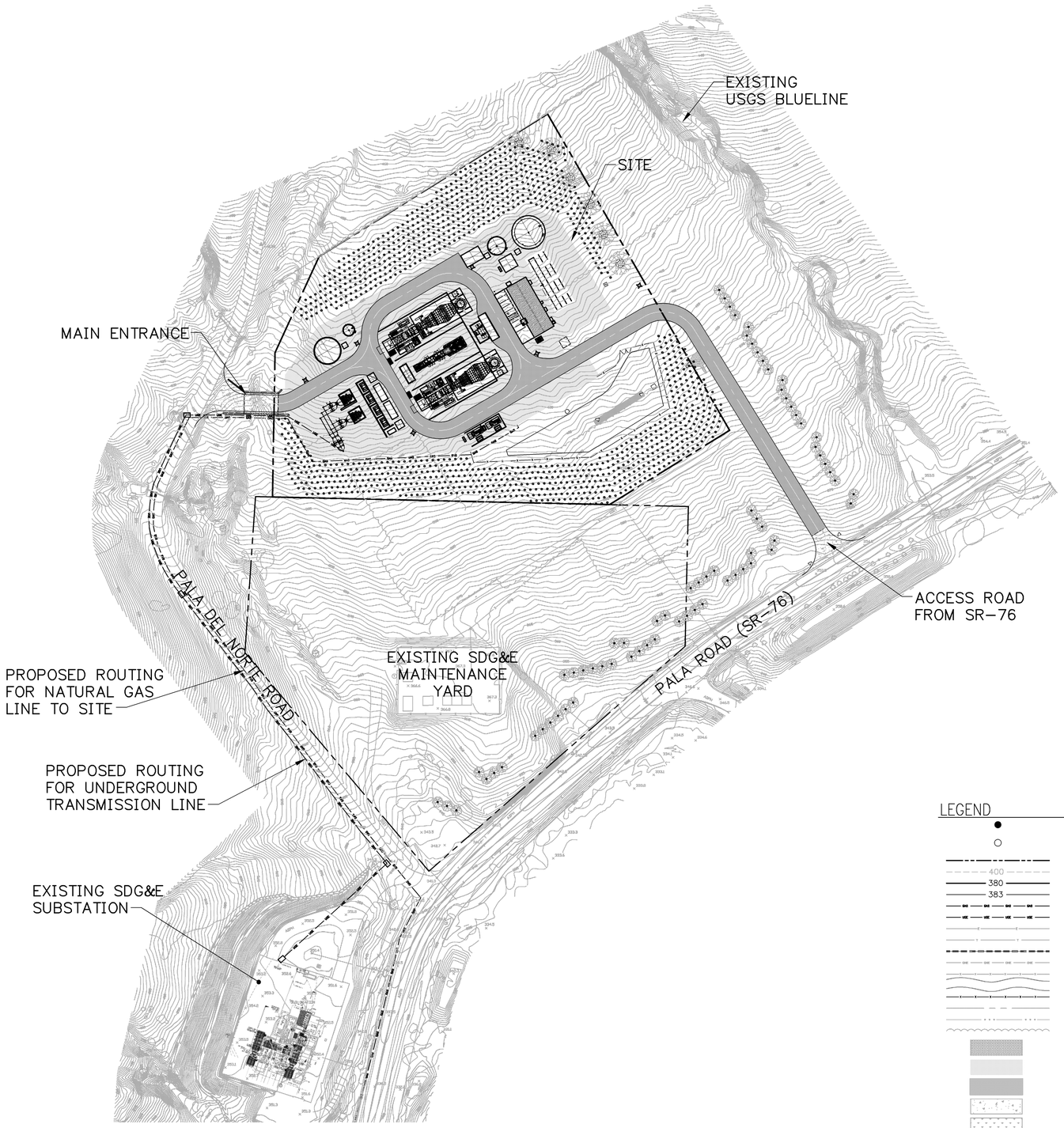
SITE LAYOUT PLAN

DESIGN BY: B. ROMINES	CHECKED BY: J. BONDANK
DRAWN BY: B. GASPERS	DATE: 9–12–07
CLIENT I.D. ICC00101	SEGA PROJECT NO. 07–201

CADD FILE NAME: 07201–C100.dwg

DRAWING NO. C100 REV. L

N:\2007\07201\dwgs\ce\07201–C100.dwg 6/2/08 1:25pm bgaspers



YARD LAYOUT PLAN

N

100 0 100 200

SCALE IN FEET

GENERAL NOTES:

1. THE LOCATION OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO BEGINNING CONSTRUCTION IN ORDER TO PROVIDE FOR NON-INTERRUPTION OF SERVICE AND TO ENSURE PROPER CLEARANCES.
2. WHERE THE NEW IMPROVEMENTS ABUT EXISTING IMPROVEMENTS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR MATCHING THE ELEVATION OF THE EXISTING IMPROVEMENTS.
3. ALL CONSTRUCTION PERFORMED ON THIS PROJECT SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF SAN DIEGO COUNTY, CALIFORNIA. WHERE DISCREPANCIES EXIST BETWEEN THE PROJECT SPECIFICATIONS AND COUNTY STANDARDS, THE CONTRACTOR SHALL ABIDE BY THE GREATER OR MORE RESTRICTIVE REQUIREMENTS.
4. PLACEMENT OF CONCRETE AND REINFORCEMENT SHALL COMPLY WITH THE REQUIREMENTS OF ACI 301. DETAILING AND FABRICATION OF REINFORCEMENT SHALL COMPLY WITH THE CRSI MANUAL OF STANDARD PRACTICE, LATEST EDITION.
5. PRECAST AND CAST-IN-PLACE CONCRETE FOR PAVING AND SITE STRUCTURES SHALL BE CLASS V, PORTLAND CEMENT CONCRETE, WITH THE FOLLOWING PROPERTIES:

28-DAY COMPRESSIVE STRENGTH MIN.	MIN. 4,500 PSI
WATER/CEMENT RATIO	0.45
MAXIMUM AGGREGATE SIZE	0.75"
SLUMP	3" +/- 1"

6. ALL WELDED WIRE FABRIC (W.W.F.) SHALL CONFORM TO A185. NO ALUMINUM SHALL BE EMBEDDED IN ANY CONCRETE.
7. CONTRACTOR SHALL PROVIDE FOR CONTROL OF SURFACE EROSION DURING CONSTRUCTION AND UNTIL THE OWNER ACCEPTS THE WORK AS COMPLETE. THE CONTRACTOR SHALL PROVIDE BERMS, SILT FENCE, STRAW BALES, SILT BASINS, OR OTHER MEANS TO PREVENT EROSION FROM REACHING THE PUBLIC RIGHT-OF-WAY OR ADJACENT PROPERTY. IN THE EVENT THE PREVENTION MEASURES ARE NOT EFFECTIVE, THE CONTRACTOR SHALL REMOVE ANY DEBRIS AND EROSION AND RESTORE THE RIGHT-OF-WAY AND ADJACENT PROPERTY TO ORIGINAL OR BETTER CONDITION.
8. CONTRACTOR SHALL, BY HIS OWN INVESTIGATION AND PRIOR TO COMMENCING WORK, SATISFY HIMSELF AS TO THE SURFACE AND SUBSURFACE CONDITIONS TO BE ENCOUNTERED.
9. A TOPOGRAPHIC SURVEY WAS PREPARED BY PSOMAS SURVEYING DATED OCTOBER 2007. THE ENGINEER WILL NOT BE RESPONSIBLE FOR THE COMPLETENESS OR ACCURACY OF THE DATA AND NO EXPRESSED OR IMPLIED GUARANTEE IS GIVEN OF THE INTERPRETATION THEREOF.
10. THE OWNER SHALL EMPLOY AN INDEPENDENT ENGINEERING TESTING AGENCY TO VERIFY SOIL COMPACTION AND PAVEMENT MATERIAL PROPERTIES. THE CONTRACTOR SHALL ALLOW THE TESTING AGENCY TO PERFORM TESTING AND RETESTING AS NECESSARY TO VERIFY COMPLIANCE WITH THE PROJECT SPECIFICATIONS.
11. REFERENCE IS MADE TO THE REVISED GEOTECHNICAL EXPLORATION REPORT BY PSI AND DATED DECEMBER 2007. NEITHER THE OWNER NOR THE ENGINEER WILL BE RESPONSIBLE FOR THE COMPLETENESS OR ACCURACY, NOR THE INTERPRETATION THEREOF. ALL SITE PREPARATION AND EARTHWORK CONSTRUCTION SHALL BE IN CONFORMANCE WITH THE GEOTECHNICAL RECOMMENDATIONS AND THEIR "STANDARD GUIDELINES FOR GRADING PROJECTS."
12. FOUNDATION DESIGNS ARE BASED ON THE GEOTECHNICAL ENGINEERING REPORT. ALL FOOTINGS AND PIERS SHALL BEAR AT THE ELEVATIONS SHOWN ON THE PLANS, DETAILS, SECTIONS, AND SCHEDULES. ALL SITE PREPARATION, REQUIREMENTS FOR EXCAVATIONS AND SLOPE STABILITY, STRUCTURAL FILL AND TRENCH BACKFILL, FOUNDATIONS, AND SUBGRADE PREPARATION FOR BUILDING FLOOR SLABS SHALL BE IN ACCORDANCE WITH THE PSI GEOTECHNICAL ENGINEERING REPORT.
13. TOPSOIL AND ALL ORGANIC MATTER SHALL BE REMOVED FROM THE LOCATION OF PROPOSED IMPROVEMENTS. UNSTABLE OR SPONGY AREAS SHALL BE OVEREXCAVATED AND REPLACED WITH COMPACTED FILL IN ACCORDANCE WITH THE PSI GEOTECHNICAL REPORT.
14. SUBGRADE SHALL BE SCARIFIED A MINIMUM OF 12", MOISTURE CONDITIONED TO WITHIN ±2% OF OPTIMUM MOISTURE CONTENT (BASED ON ASTM D1557 TEST) AND ROLLED WITH A HEAVY ROLLER TO ACHIEVE A MINIMUM OF 95% RELATIVE COMPACTION PRIOR TO BACKFILLING.
15. COMPACTED FILL SHALL NOT CONTAIN ROCK LARGER THAN 3 INCHES. FILL SLOPES SHALL BE BENCHED INTO NATIVE MATERIAL OR AS REQUIRED BY THE PSI GEOTECHNICAL REPORT.
16. COMPACTED FILL SHALL BE PLACED IN NO GREATER THAN 8 INCH LOOSE LIFTS AND COMPACTED TO AT LEAST 95% OF MAXIMUM DRY DENSITY AT ± 2% OPTIMUM MOISTURE CONTENT (BASED ON ASTM D1557 TEST). FIELD DENSITY TESTS SHALL BE TAKEN AT A FREQUENCY OF AT LEAST ONE TEST FOR EACH 2500 SQUARE FEET OF FILL LIFT. IN PAVEMENT AREAS, THE TESTING FREQUENCY MAY BE ONE FIELD DENSITY TEST FOR EACH 5000 SQUARE FEET OF FILL LIFT, BUT NO LESS THAN 3 TESTS PER LIFT.
17. IF CUT/FILL TRANSITIONS ARE ENCOUNTERED ACROSS A PROPOSED STRUCTURE FOOT PRINT, THE ENTIRE CUT PORTION WITHIN THAT FOOT PRINT AND FIVE FEET OUT LATERALLY SHALL BE OVER-EXCAVATED TO A MINIMUM DEPTH OF TWO FEET BELOW THE BOTTOM OF THE DEEPEST PROPOSED FOUNDATION OR A MINIMUM OF ONE HALF THE DEPTH OF THE DEEPEST FILL IN THE STRUCTURE FOOT PRINT, WHICHEVER IS DEEPER. OVER-EXCAVATIONS SHALL EXTEND LATERALLY IN ALL DIRECTIONS A MINIMUM OF FIVE FEET FROM THE PROPOSED STRUCTURE FOOTPRINT.
18. SUBGRADE BELOW PROPOSED CRUSHED ROCK PAVEMENT SHALL BE OVER-EXCAVATED TO A MINIMUM DEPTH OF 24" MOISTURE CONDITIONED TO SLIGHTLY OVER OPTIMUM MOISTURE CONTENT, AND COMPACTED TO A MINIMUM OF 95% TO 98% OF RELATIVE COMPACTION (BASED ON ASTM D1557).
19. CRUSHED ROCK PAVEMENT (ALSO CALLED CRUSHED ROCK BASE OR CRUSHED ROCK SURFACE) SHALL BE COMPACTED WELL GRADED, CLASS II AGGREGATE ROAD BASE AND MEET THE REQUIREMENTS FOR THE COUNTY OF SAN DIEGO, IT SHALL BE PLACED IN LIFTS NO GREATER THAN 9" AND COMPACTED TO A MINIMUM 95% RELATIVE COMPACTION (BASED ON ASTM TEST METHOD D1557).
20. ALL SITE STRUCTURES SHALL BE DESIGNED FOR HS-20 LOADING.
21. ON ALL ELECTRICAL DRAWING LAYOUT PLANS, THE LOCATIONS OF SOME EQUIPMENT, GROUNDING, AND UNDERGROUND CONDUITS, AND DEVICES AT WHICH CONDUIT CIRCUITS TERMINATE ARE APPROXIMATE. THE CONTRACTOR SHALL INSTALL EACH CONDUIT CIRCUIT TO THE INTENDED EQUIPMENT TERMINATION POINT WITHOUT ADDITIONAL CHARGE TO THE OWNER, ALTHOUGH ITS FINAL LOCATION MAY SHIFT SOMEWHAT FROM THAT WHICH IS SHOWN.

LEGEND

- FOUND MONUMENT AS NOTED
- SET 1" IRON PIPE WITH "PSOMAS" PLUG UNLESS NOTED OTHERWISE
- PROPERTY LINE
- 400 EXISTING CONTOUR
- 380 PROPOSED MAJOR CONTOUR
- 383 PROPOSED MINOR CONTOUR
- PROPOSED GAS LINE
- PROPOSED UNDERGROUND ELECTRICAL
- EXISTING ELECTRIC LINE
- EXISTING TELEPHONE (COMMUNICATIONS) LINE
- PROPOSED RCP STORMWATER PIPE
- EXISTING T&D LINE
- EXISTING FENCE
- EXISTING ROAD
- PROPOSED FENCE
- PARCEL LINE
- DRAINAGE PATH (FLOWLINE)
- EXISTING ORCHARD LINE
- PROPOSED RIPRAP
- PROPOSED CRUSHED ROCK SURFACE
- PROPOSED CRUSHED ROCK PAVEMENT
- PROPOSED CONCRETE
- PROPOSED NATIVE GROUND COVER
- PROPOSED LANDSCAPING
- EXISTING USGS BLUELINE

REV.	DATE	DESCRIPTION	DWN	CHK
A	11-30-07	ISSUED FOR MILESTONE 4	BGG	WHR
B	12-19-07	ISSUED FOR AMENDED SPPE APPLICATION	BGG	WHR
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D	1-17-08	ISSUED PER FPP COMMENTS	BGG	MJB
E	02-29-08	FINAL ISSUE FOR APPROVAL	BGG	WHR
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Sealed Only When Signed in Blue Ink

Sega ®
Engineers – Architects – Technicians
Design – Construction – Field Service
16041 Foster
P.O. Box 1000
Stilwell, Kansas 66085-1000

ORANGE GROVE ENERGY L.P.
Schaumburg, IL

ORANGE GROVE POWER PLANT

YARD LAYOUT PLAN

DESIGN BY: B. ROMINES	CHECKED BY: J. BONDANK
DRAWN BY: B. GASPERS	DATE: 9-12-07
CLIENT I.D. ICC00101	SEGA PROJECT NO. 07-201

CADD FILE NAME: 07201-Y100.dwg

DRAWING NO.	REV.
Y100	F

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SITE LANDSCAPING PLAN

PLAN NORTH IS 29°55'46" CCW OF TRUE NORTH

60 0 60 120

SCALE IN FEET

KEYNOTES:

1. FUEL MODIFICATION ZONE A (DEFENSIBLE SPACE): 50' AROUND ALL SIDES OF ALL EQUIPMENT OR STRUCTURES. PLEASE REFERENCE THE FIRE PROTECTION PLAN FOR DETAILS.
2. FUEL MODIFICATION ZONE B: 50' TO 125' AROUND ALL SIDES OF EQUIPMENT OR STRUCTURES EXCEPT FOR SPECIAL PROVISIONS AT WEST SIDE OF FACILITY AS NEEDED TO MINIMIZE DISTURBANCE TO SENSITIVE HABITAT. PLEASE REFERENCE THE FIRE PROTECTION PLAN FOR DETAILS.
3. ROADWAY FUEL MODIFICATION ZONE: FROM EDGE OF ROADWAY TO 50' OUTSIDE EDGE OF ROADWAYS. PLEASE REFERENCE THE FIRE PROTECTION PLAN FOR DETAILS.
4. ROADWAY FUEL MODIFICATION ZONE: FROM EDGE OF ROADWAY TO 30' OUTSIDE EDGE OF ROADWAYS. PLEASE REFERENCE THE FIRE PROTECTION PLAN FOR DETAILS.

SITE SCREENING LEGEND:

- CL — COAST LIVE OAK, POTENTIAL MATURE SIZE
- EO — ENGELMANN OAK, POTENTIAL MATURE SIZE
- TY — TOYON, POTENTIAL MATURE SIZE
- SHRUBS OF AT LEAST 1 GALLON MIN. SIZE OR TREES OF A 5 GALLON MIN. SIZE PER SECTION 87.417(B) OF THE COUNTY OF SAN DIEGO GRADING ORDINANCES.

NOTES:

1. THIS DRAWING IS A CONCEPTUAL LANDSCAPING PLAN. A CALIFORNIA REGISTERED LANDSCAPING ARCHITECT WILL PROVIDE A FINAL LANDSCAPING PLAN, BASED ON THE CONCEPTUAL LAYOUT. THE FINAL LANDSCAPING PLAN MAY INCLUDE ADDITIONAL USE OF CEC AND FIRE MARSHALL APPROVED NATIVE SPECIES FOR IMPROVED VISUAL SCREENING.

LEGEND

- FOUND MONUMENT AS NOTED
- SET 1" IRON PIPE WITH "PSOMAS" PLUG UNLESS NOTED OTHERWISE
- PROPERTY LINE
- 400 — EXISTING CONTOUR
- 380 — PROPOSED MAJOR CONTOUR
- 383 — PROPOSED MINOR CONTOUR
- GAS — PROPOSED GAS LINE
- UGE — PROPOSED UNDERGROUND ELECTRICAL
- E — EXISTING ELECTRIC LINE
- T — EXISTING TELEPHONE (COMMUNICATIONS) LINE
- PROPOSED RCP STORMWATER PIPE
- OHE — EXISTING T&D LINE
- X — EXISTING FENCE
- EXISTING ROAD
- X — PROPOSED FENCE
- PARCEL LINE
- DRAINAGE PATH (FLOWLINE)
- EXISTING ORCHARD LINE
- PROPOSED RIPRAP
- PROPOSED CRUSHED ROCK SURFACE
- PROPOSED CRUSHED ROCK PAVEMENT
- PROPOSED CONCRETE
- PROPOSED NATIVE GROUND COVER
- FUEL MODIFICATION ZONE A
- FUEL MODIFICATION ZONE B
- ROADWAY FUEL MODIFICATION ZONE
- LIMIT OF DISTURBED AREA

REV.	DATE	DESCRIPTION	DWN	CHK
A	11-30-07	ISSUED FOR MILESTONE 4	BGG	WHR
B	12-11-07	ISSUED FOR TRC COMMENTS	BGG	WHR
C	12-17-07	ISSUED FOR FPP	BGG	WHR
D	12-18-07	ISSUED PER TRC COMMENTS	BGG	MJB
E	12-19-07	ISSUED FOR AMENDED SPPE APPLICATION	BGG	WHR
F	12-20-07	RE-ISSUED FOR AMENDED SPPE APPLICATION	BGG	WHR
G	12-28-07	RE-ISSUED FOR MILESTONE 4	BGG	WHR
H	1-17-08	ISSUED PER FPP COMMENTS	BGG	MJB
J	02-29-08	FINAL ISSUE FOR APPROVAL	BGG	WHR
K	5-9-08	ISSUED FOR REVIEW	BGG	MJB
L	6-2-08	ISSUED FOR AFC PERMIT	BGG	MJB

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Schaumburg, IL

ORANGE GROVE POWER PLANT

LANDSCAPING PLAN

DESIGN BY: M. BLAKE	CHECKED BY: B. ROMINES
DRAWN BY: B. GASPERS	DATE: 9-12-07
CLIENT I.D. ICC00101	SEGA PROJECT NO. 07-201
CADD FILE NAME: 07201-L100.dwg	
DRAWING NO. L100	REV. L

N:\2007\07201\dwgs\ce\07201-L100.dwg 6/2/08 1:31pm bgaspers

NATIVE TREE AND SHRUB SPECIES LIST

QTY.	SYM.	SIZE	COMMON NAME BOTANICAL NAME	REMARKS
TREES				
4	CL	LATER	COAST LIVE OAK QUERCUS AGRIFOLIA .	GROWS TO 30'–100' TALL
2	EO	LATER	ENGELMANN OAK QUERCUS ENGELMANNII .	GROWS TO 20'–50' TALL

NOTES:
1. ALL LANDSCAPING SHALL BE PLANTED AND MAINTAINED IN ACCORDANCE WITH THE FIRE PROTECTION PLAN, TREES TO BE LIMBED UP TO ⅓ HEIGHT OR 6', WHICHEVER IS GREATER, EXCEPT TOYON AND BLUE ELDERBERRY PLANTED FOR VISUAL SCREENING SHALL INSTEAD BE PROVIDED WITH CRUSHED ROCK AT LESS THAN 4" DEPTH TO 2' OUTSIDE THE DRIP LINE.
2. NO SHRUBS, PLANTS, OR BUSHES UNDER THE DRIP LINE.
3. CALTRANS #2 CHIPPED BIOMASS TO BE USED (LESS THAN: 1/2" DIAMETER X 4" TO 6" LONG) UNDER ENTIRE DRIP LINE AT LESS THAN 4" DEPTH. CHIPPED BIOMASS TO BE AT LEAST 30' FROM FENCELINE, BUILDINGS AND EQUIPMENT. CRUSHED ROCK MAY BE SUBSTITUTED FOR CHIPPED BIOMASS.
4. MATURE CANOPY NO CLOSER THAN 30' TO WEST AND SOUTH SECURITY FENCE AND NO CLOSER THAN 40' TO EAST SECURITY FENCE.

QTY.	SYM.	SIZE	COMMON NAME BOTANICAL NAME	REMARKS
SHRUBS				
69	TY	LATER	TOYON HETEROMELES ARBUTIFOLIA (LIND.) M. ROEMER .	GROWS 15'–25' TALL
–	SS	LATER	SUGAR SUMAC RHUS OVATA S. WATS. .	GROWS TO 12' TALL AREAS OUTSIDE OF FUEL MODIFICATION ZONES
SEE PLAN	N/A	LATER	SHRUBS OF AT LEAST 1 GALLON MIN. SIZE OR TREES OF 5 GALLON MIN. SIZE	SIZE AND LOCATION PER SECTION 87.417(B) OF THE COUNTY OF SAN DIEGO GRADING ORDINANCES.

NOTES:
1. ALL LANDSCAPING SHALL BE PLANTED AND MAINTAINED IN ACCORDANCE WITH THE FIRE PROTECTION PLAN.

QTY.	SYM.	SIZE	COMMON NAME BOTANICAL NAME	REMARKS
GRASSES				
–	N/A	N/A	PURPLE NEEDLEGRASS NASSELLA PULCHRA	AREAS OUTSIDE OF FUEL MODIFICATION ZONES
–	N/A	N/A	FOOTHILL NEEDLEGRASS NASSELLA LEPIDA	AREAS OUTSIDE OF FUEL MODIFICATION ZONES

NOTES:
1. ALL LANDSCAPING SHALL BE PLANTED AND MAINTAINED IN ACCORDANCE WITH THE FIRE PROTECTION PLAN.

QTY.	SYM.	SIZE	COMMON NAME BOTANICAL NAME	REMARKS
COASTAL SAGE SCRUB SEED MIX				
–	N/A	N/A	BLACK SAGE SALVIA MELLIFERA CALIFORNIA BROOM LOTUS SCOPARIUS CHAPARRAL MALLOW MALACOTHAMNUS FASCICULATUS COAST MONKEYFLOWER MIMULUS AURANTIACUS GOLDEN–YARROW ERIOPHYLLUM CONFERTIFLORUM LAUREL SUMAC MALOSMA LAURINA	AREAS OUTSIDE OF FUEL MODIFICATION ZONES

NOTES:
1. ALL LANDSCAPING SHALL BE PLANTED AND MAINTAINED IN ACCORDANCE WITH THE FIRE PROTECTION PLAN.

QTY.	SYM.	SIZE	COMMON NAME BOTANICAL NAME	REMARKS
WILDFLOWER SEED MIX				
–	N/A	N/A	ARROYO LUPINE LUPINUS SUCCULENTUS BLUE–EYED GRASS SISYRINCHIUM BELLUM CALIFORNIA POPPY ESCHSCHOLZIA CALIFORNICA HOARY CALIFORNIA FUSCHIA EPILOBIUM (ZAUSCHNERIA) CANUM SSP. CANUM	AREAS WITHIN FUEL MODIFICATION ZONES

NOTES:
1. ALL LANDSCAPING SHALL BE PLANTED AND MAINTAINED IN ACCORDANCE WITH THE FIRE PROTECTION PLAN.

NOTES:

1. SLOPES GREATER THAN 3 FEET IN VERTICAL HEIGHT ARE REQUIRED TO BE PLANTED AND MAINTAINED WITH GROUND COVER OR OTHER PLANTING TO PROTECT THE SLOPES FROM EROSION AND INSTABILITY.
2. SLOPES GREATER THAN 15 FEET IN VERTICAL HEIGHT ARE REQUIRED TO BE PLANTED WITH SHRUBS OF AT LEAST 1–GALLON MINIMUM SIZE OR TREES OF A 5–GALLON MINIMUM SIZE.
3. LANDSCAPING LOCATED IN FUEL MODIFICATION ZONE A OR ON MANUFACTURED SLOPES WILL BE IRRIGATED. IRRIGATION SYSTEM SHALL BE FULLY AUTOMATIC WITH A RAIN–SENSING OVERRIDE DEVICE.
4. ALL PLANTING BEDS SHALL HAVE A MINIMUM 2 INCHES OF ORGANIC MULCH.
5. MINIMUM OF 50 PERCENT OF THE TOTAL SLOPE AREA OF MANUFACTURED SLOPES SHALL BE PLANTED WITH DEEP–ROOTING SPECIES.
6. ALL MANUFACTURED SLOPES SHALL BE COVERED WITHIN 30 DAYS OF COMPLETION OF GRADING WITH ANY OF THE BMP'S PER THE EROSION CONTROL PLAN.
7. FIRE–RESISTIVE SHRUBS, BEDDING PLANTS, AND FLOWERS MAY BE PLANTED TO A HEIGHT OF 18 INCHES. SPACING BETWEEN MATURE SHRUBS AND BETWEEN MATURE PLANTS SHOULD BE:
   - •2 TIMES HEIGHT ON SLOPES <20%
   - •4 TIMES HEIGHT ON SLOPES BETWEEN 20% AND 40%
   - •6 TIMES HEIGHT ON SLOPES >40%
8. ALL SHRUBS AND PLANTS SHALL BE LOCATED AWAY FROM ADJACENT TREE DRIPLINES.
9. IRRIGATION SYSTEM SHALL HAVE FLOW REDUCERS OR SHUTOFF VALUES TRIGGERED BY PRESSURE DROP TO CONTROL WATER LOSS IN THE EVENT THE OF BROKEN OR DAMAGED SPRINKLER HEADS OR LINES.

VEGETATION MANAGEMENT REQUIREMENTS:

1. OWNER SHALL MAINTAIN IRRIGATION AND REGULAR, ON–GOING REMOVAL OF WEEDS, DEAD MATERIALS, AND OTHER UNDESIRABLE FLAMMABLE VEGETATION REQUIRED TO KEEP AREA FIRE SAFE.
2. OWNER SHALL MAINTAIN VEGETATION RECOMMENDED SPACING AND HEIGHTS PER THE FIRE PROTECTION PLAN, LOCAL FIRE AGENCY HAVING JURISDICTION AND THE COUNTY OF SAN DIEGO.

REV.	DATE	DESCRIPTION	DWN	CHK
A	12–11–07	ISSUED FOR TRC COMMENTS	BGG	MJB
B	12–17–07	ISSUED FOR FPP	BGG	MJB
C	12–18–07	ISSUED PER TRC COMMENTS	BGG	MJB
D	12–19–07	ISSUED FOR AMENDED SPPE APPLICATION	BGG	WHR
E	12–28–07	RE–ISSUED FOR MILESTONE 4	BGG	WHR
F	1–17–08	ISSUED PER FPP COMMENTS	BGG	MJB
G	02–29–08	FINAL ISSUE FOR APPROVAL	BGG	WHR
H	5–9–08	ISSUED FOR REVIEW	BGG	MJB
J	6–2–08	ISSUED FOR AFC PERMIT	BGG	MJB

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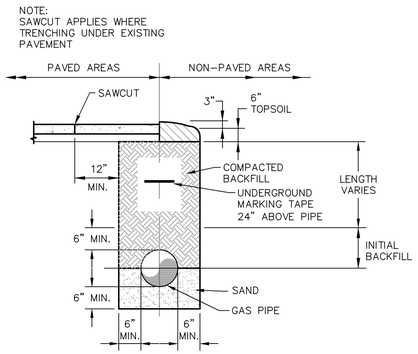
ORANGE GROVE ENERGY L.P.
Schaumburg, IL

ORANGE GROVE POWER PLANT

LANDSCAPING NOTES

DESIGN BY: M. BLAKE	CHECKED BY: B. ROMINES
DRAWN BY: B. GASPERS	DATE: 9–12–07
CLIENT I.D. ICC00101	SEGA PROJECT NO. 07–201
CADD FILE NAME: 07201–L101.dwg	
DRAWING NO. L101	REV. J

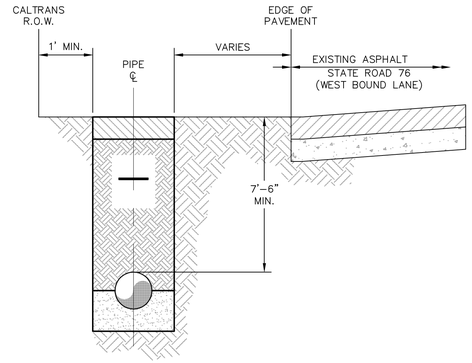


1 TYPICAL TRENCH DETAIL

NOT TO SCALE

NOTES:

1. DEPRESS BEDDING AT END BELLS SO THAT PIPE RESTS ON BEDDING ALONG FULL LENGTH.
2. ALL GAS PIPELINE CONSTRUCTION PERFORMED SHALL CONFORM TO THE CALIFORNIA D.O.T. 49 CFR 192 AND THE ASME B 31.8 STANDARDS AND SPECIFICATIONS. WHERE DISCREPANCIES EXIST THE CONTRACTOR SHALL ABIDE BY THE MORE RESTRICTIVE REQUIREMENTS.
3. PIPE SHALL BE CONSTRUCTED OF CARBON STEEL WITH CATHODIC PROTECTION.
4. GAS PIPELINE DETAILS & SECTIONS ARE LOCATED ON TRC SOLUTIONS AERIAL FIGURES

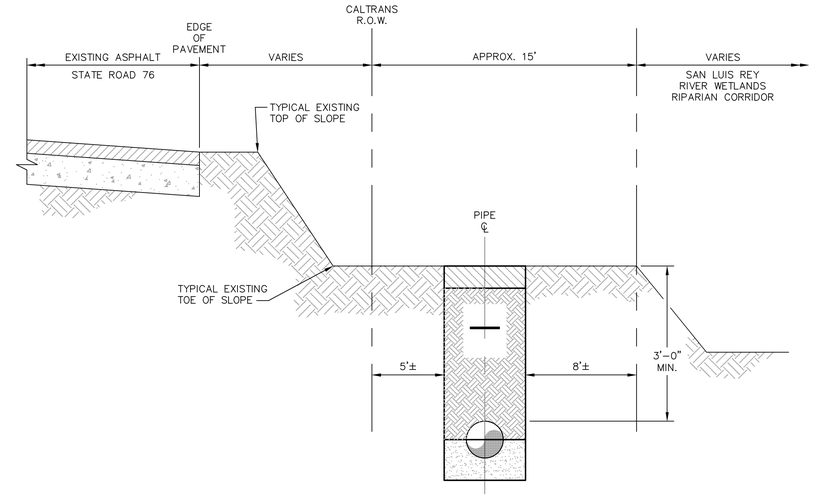


2 OPEN TRENCH SECTION NEAR SR-76 (CALTRANS R.O.W.) LOOKING NORTH - EAST

NOT TO SCALE

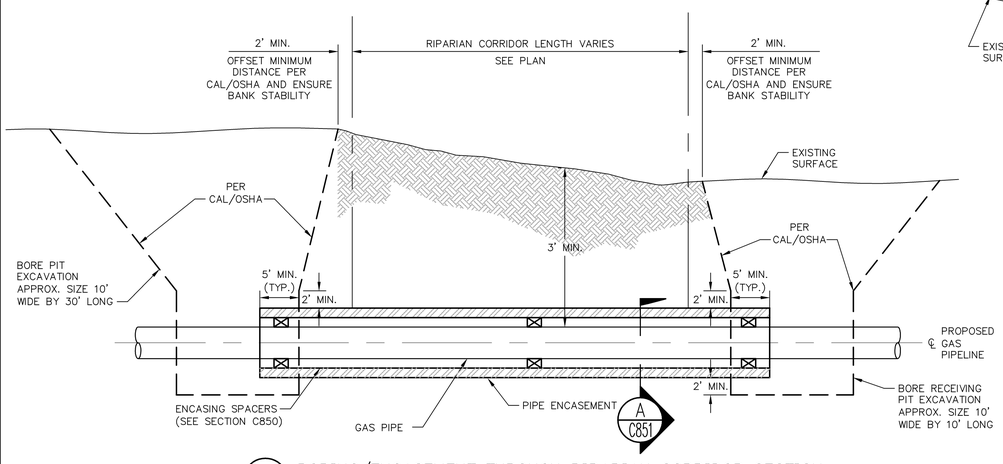
NOTES:

1. GAS PIPELINE COVER REQUIREMENTS IN CALTRANS RIGHT OF WAY SHALL BE A MINIMUM OF 7.5 FEET UNLESS ENCASED THEN A MINIMUM OF 3.5 FEET.
2. THE GAS PIPELINE SHALL MEET ALL CALTRANS & SAN DIEGO COUNTY REQUIREMENTS.



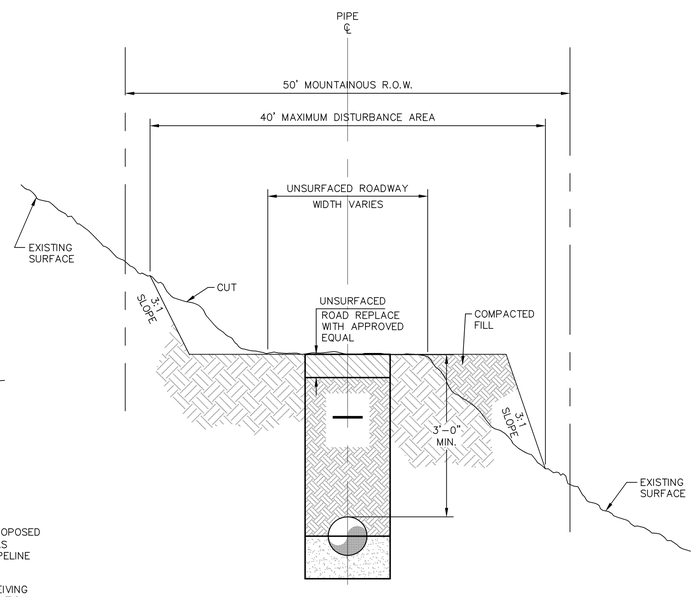
3 OPEN TRENCH THROUGH RIPARIAN CORRIDOR SECTION (CONSTRUCTED DURING NON-SENSITIVE SEASON-AFTER AUG. 1)

NOT TO SCALE



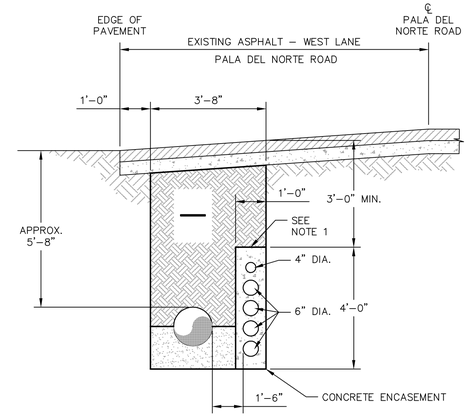
4 BORING/ENCASEMENT THROUGH RIPARIAN CORRIDOR SECTION (CONSTRUCTED DURING SENSITIVE SEASON-AFTER JAN. 31)

NOT TO SCALE



5 OPEN TRENCH THROUGH MOUNTAINOUS TERRAIN

NOT TO SCALE



6 OPEN TRENCH THROUGH PALA DEL NORTE ROAD - HORIZONTAL SEPARATION WEST LANE

NOT TO SCALE

NOTE:

1. FOR ELECTRICAL TRANSMISSION LINE DUCT BANK, ADD RED DYE TO TOP OF WET CONCRETE FOR THE ENTIRE LENGTH OF DUCT BANK.

REV.	DATE	DESCRIPTION	DWN	CHK
A	3-31-08	ISSUED FOR FEDERAL 404 PERMITTING	RAD	WHR
B	4-02-08	RE-ISSUED FOR FEDERAL 404 PERMITTING	RAD	WHR
C	4-07-08	ISSUED FOR REVIEW	RAD	WHR
D	4-10-08	RE-ISSUED FOR REVIEW	BGG	WHR
E	4-22-08	RE-ISSUED FOR REVIEW	BGG	WHR
F	4-28-08	RE-ISSUED FOR FEDERAL 404 PERMITTING	RAD	WHR
G	6-2-08	ISSUED FOR AFC PERMIT	RAD	WHR

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ORANGE GROVE ENERGY L.P.
Schaumburg, IL

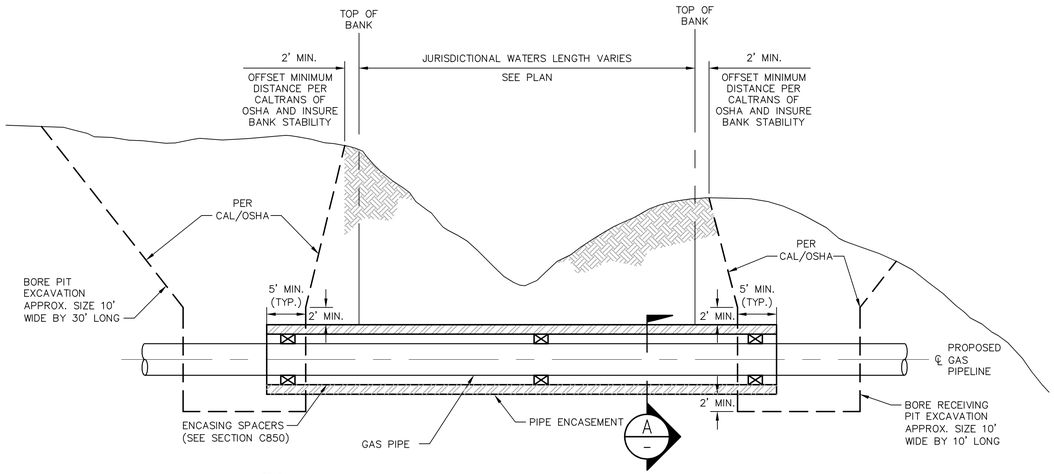
ORANGE GROVE GAS PIPELINE

GAS PIPELINE DETAILS

DESIGN BY: J. LANGEL	CHECKED BY: B. ROMINES
DRAWN BY: R. DAVILA	DATE: 03-28-08
CLIENT I.D. JP000101	SEGA PROJECT NO. 07-098

CADD FILE NAME: 07098-GP-C850.dwg

DRAWING NO. GP-C850 REV. G

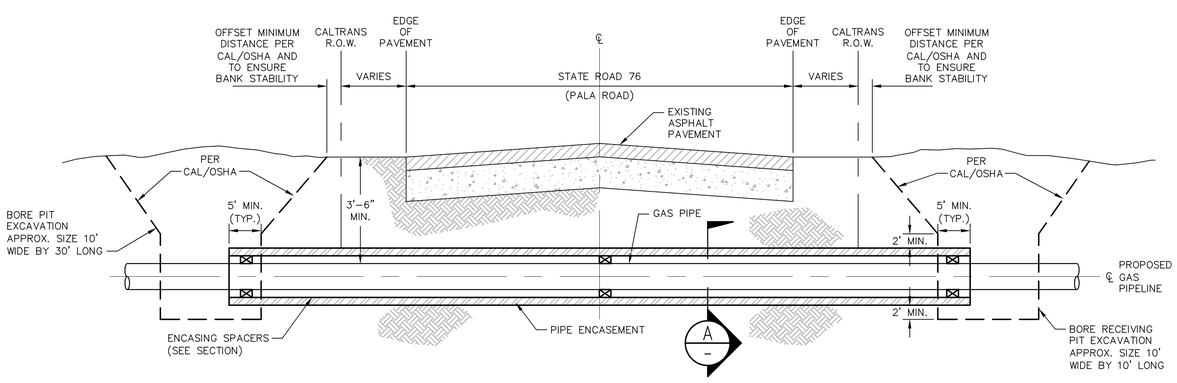


7 TYPICAL JURISDICTIONAL WATER CROSSING: BORING/ENCASEMENT

NOT TO SCALE

NOTES:

1. JURISDICTIONAL WATERWAYS WIDTH VARIES BASED ON TOP OF BANK LOCATIONS.
2. WIDTH OF DISTURBANCE TO JURISDICTIONAL WATERWAYS SHALL BE MINIMIZED TO THE EXTENT CONSISTENT WITH SAFE AND EFFICIENT CONSTRUCTION.

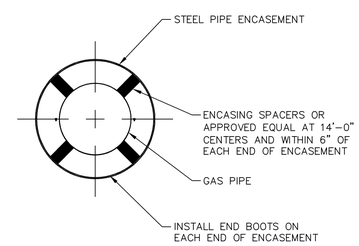


8 TYPICAL STATE ROAD 76 CROSS SECTION

NOT TO SCALE

NOTES:

1. GAS PIPELINE SHALL BE AT A MINIMUM DEPTH OF 7'-6" IN CALTRANS R.O.W. UNLESS ENCASED THEN 3'-6" MINIMUM.
2. SIGNAGE SHALL BE LOCATED AT RIGHT-OF-WAY LINE, VISIBLE FROM THE ROAD WAY IN EACH DIRECTION OF TRAVEL.



A/– SECTION THRU PIPE AND ENCASEMENT

NOT TO SCALE

NOTES:

1. FILL VOIDS BY PRESSURE GROUTING ENDS.

REV.	DATE	DESCRIPTION	DWN	CHK
A	3-31-08	ISSUED FOR FEDERAL 404 PERMITTING	RAD	WHR
B	4-02-08	RE-ISSUED FOR FEDERAL 404 PERMITTING	RAD	WHR
C	4-07-08	ISSUED FOR REVIEW	RAD	WHR
D	4-10-08	RE-ISSUED FOR REVIEW	BGG	WHR
E	4-22-08	RE-ISSUED FOR REVIEW	BGG	WHR
F	6-2-08	ISSUED FOR AFC PERMIT	RAD	WHR

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ORANGE GROVE ENERGY L.P.
Schaumburg, IL

ORANGE GROVE GAS PIPELINE

GAS PIPELINE DETAILS

DESIGN BY: J. LANGEL	CHECKED BY: B. ROMINES
DRAWN BY: R. DAVILA	DATE: 03-28-08
CLIENT I.D. JP000101	SEGA PROJECT NO. 07-098

CADD FILE NAME: 07098-GP-C851.dwg

DRAWING NO. GP-C851 REV. F

Attachment D
Draft Frac-out Contingency Plan

DRAFT FRAC-OUT CONTINGENCY PLAN

ORANGE GROVE PROJECT
SAN DIEGO COUNTY

Horizontal Directional Drilling (HDD) Standard Operations

During drilling and reaming operations, the contractor will use a closed loop mud system. A closed loop mud system is one in which the drilling mud that is used for drilling operations is cleaned and re-cycled. At the drill entrance site, an approximately 30-foot-long by 10-foot-wide pit will be excavated several feet deep to contain drilling returns. The receiving pit will be approximately 10-foot by 10-foot and excavated several feet deep. The contractor will use the entry and receiving pits, a transfer pump, and the mud mixing/cleaning system, to contain the surface drilling mud in the closed loop system. The HDD site shall have the containment materials stated in Exhibit A, "HDD Frac-out Containment Materials List".

As the pilot hole is drilled, the volume of drilling mud required also increases. The penetration rate of the drill determines the amount of drilling mud that will have to be added to the system. The volume of drilling mud pumped down hole is dependent upon the activity being performed. After the pilot hole, reaming will be performed to enlarge the hole. Regardless of the activity, the volume of drilling mud returns should be equal to the amount pumped down hole, less the amount required to displace the solids being removed, allowing for a small percentage (typically less than 5%) of mud loss into the surrounding formation. The mud loss is not uncommon in directionally drilled installations, but they rarely migrate to the surface. Mud that is not absorbed by the surrounding formation will fill the annulus between the cutting head and the surface and will circulate back to the surface. As long as the bore-hole remains open and a path of lesser hydraulic pressure is not encountered (i.e., formation fissure), circulation back to the working pits will continue for the duration of the drilling and installation operation. The contractor will make every reasonable attempt, implementing Best Management Practices (BMP), to maintain annular circulation of drilling muds during operations. A loss of circulation is more likely to occur during the drilling of the pilot hole than during any of the subsequent operations where constant mud communications are maintained.

Monitoring, Contingency & Response

Drilling mud technicians will monitor mud loss throughout the drilling and reaming operations by visually inspecting the rate of cutting returns entering the mud system. If the volume of drilling mud returns is less than the volume of mud dispensed, after accounting for the amount needed to displace the cuttings being removed, the difference is either due to measurement error or the mud is going into the formation. The driller will investigate immediately when this is occurs and take appropriate action. If it is determined there is a loss into the formation, it can occur as a seep or a fracture. As a seep, the mud goes into the surrounding formation until a wall cake is created by the

mud, sealing off future losses. As a fracture, the drilling mud flows into cracks in the formation, until the pressure equalizes or until it surfaces. Loss of circulation occurs when the annulus between the drill pipe and the borehole wall is not the path of least resistance for the mud to travel. This can occur when cuttings block the annulus, or the material which is being drilled through is not strong enough to contain the pressure exerted by the drilling muds. Drilling mud typically penetrates a formation without coming to the surface. The path of least resistance can be along a horizontal plane in an unconsolidated or fractured zone. If a loss of circulation occurs, the drilling mud technician will notify the drilling operator. If a significant reduction of drilling mud circulation is detected, the procedure is to reduce drilling mud volumes and subsequent pressures, and increase the viscosity of the drilling mud. The drilling operator will pull back the drill stem until drilling mud returns are evident. Normally the drilling mud will form a wall cake and naturally seal the leaks. When mud is being pumped down-hole, operations will be continuously monitored for mud loss and for signs of mud penetration at the surface in the boring vicinity.

The basic steps that will be followed in the event of a substantial loss of mud circulation are as follows: (1) cease pumping immediately; (2) notify on-site observers to monitor surface areas for drilling mud; (3) stroke the bore-hole to displace any objects and reopen the circulation pathway, (4) modify (thicken) the mud properties if necessary, and (5) proceed with drilling operations.

Any drilling mud which has surfaced on the ground will be contained and collected. The contractor shall have sandbags stationed at both entry and exit sides prior to beginning pilot hole operations, in order to rapidly respond to a frac-out should one occur. Frac tanks trucks will be stationed at both entry and exit sides for the containment of drilling muds. In addition, a vacuum truck will be stationed onsite when mud is being pumped for HDD operations.

In the event that an unexpected frac-out occurs, clean up of inadvertent drilling mud returns will be dependent upon where the drilling returns surfaced. If the drilling mud surfaces on land, the area can be bermed with sandbags. Depending upon the access to the area where the surface returns are found, the liquid can be pumped back to the drilling rig for reprocessing. If the drilling mud cannot be pumped back to entry or exit pits, it can be collected by a vacuum truck and trucked back to the recycling system. After the excess drilling mud is pumped away from the site, the spill area can be rinsed with water. If the return quantity is insufficient to allow practical recovery, water will be sprayed over the affected area and left to dry so that the drilling mud may naturally dissipate.

The contract drill crew will serve as first respondents in the event of a frac-out. The superintendent will stop the driller from pumping until the situation can be assessed. Additional clean up crew(s) will be called out if necessary, to complete the clean up of the frac-out. The site construction superintendent or designee will notify the appropriate parties to respond in accordance with the contact lists in Exhibit B, “Frac-out Contact Lists”. In addition, CDFG will be notified within 2 hours of any frac-out affecting jurisdictional Waters of the State.

EXHIBIT A

HDD Frac-out Containment Materials list

Each HDD site must have the following materials on location prior to start up:

- Sand bags, filled with clean sand, at least 100 per each side of the crossing.
- Splash board; three layers of heavy weight plastic sheeting.
- Five 5-gallon plastic pails.
- Two wide heavy duty push brooms.
- Three flat blade shovels
- Four 100 foot rolls of silt fencing
- Two bundles of absorbent pads to be used with plastic sheeting for placement beneath motorized equipment if needed for frac-out cleanup operations in a riparian/stream zone.
- Portable trash pumps
- A minimum of 100-ft of pump hose
- (1) 800-gallon vacuum trailer on site
- (2) Rubber tire hoes
- (1) 8000-lb extendable boom forklift
- (2) 500-bbl frac tanks

On standby: vacuum truck with adequate capacity for maximum mud volume.

EXHIBIT B

Frac-out Contact Lists*

The following notifications will be first priority in the event of a frac-out:

Agency or Company	**Contact Name**	**Phone Number**
Orange Grove Energy Project Manager	Mike Jones	847-226-9134
Boring Contractor Project Manager	TO BE DETERMINED	
Stand by Vacuum Truck operator	TO BE DETERMINED	
Orange Grove Environmental Manager (or Consultant)	TO BE DETERMINED	

*Contact information to be completed prior to construction.

Attachment E
Biological Resources Section of the Orange Grove Project AFC

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SECTION ACRONYMS/ABBREVIATIONS

ACRONYM/ ABBREVIATION	DEFINITION
AFC	Application for Certification
BMPs	Best Management Practices
BO	Biological Opinion
CAISO	California Independent System Operator
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CFR	Code of Federal Regulations
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CNPS	California Native Plant Society
CNDDB	California Natural Diversity Database
DPLU	San Diego County Department of Planning and Land Use
ESA	Endangered Species Act
FPUD	Fallbrook Public Utility District
HCP	Habitat Conservation Plan
HLP	Habitat Loss Permit
I	Interstate
Linear Facilities	Natural gas pipeline and underground transmission line collectively
LORS	Laws, Ordinances, Regulations and Standards
m	Meters
MSCP	Multiple Species Conservation Plan
MOU	Memorandum of Understanding
NCCP	Natural Communities Conservation Plan
NPDES	National Pollutant Discharge Elimination System
OSHA	Occupational Safety and Health Administration
Project	Subject of this AFC, Orange Grove Project
Project Site	Approximately 8.5 acre parcel to be leased for the power plant Site (a.k.a. “Site”)
Region	Lands within a 10-mile radius of Project Site and Linear Facilities
SDG&E	San Diego Gas & Electric

ACRONYM/ ABBREVIATION	DEFINITION
Site	Approximately 8.5 acre parcel to be leased for the power plant Site (a.k.a. “Site”)
Site Vicinity	The area within 1.0 mile of the Site and within 1,000 feet of Project linear facilities
SR	State Route
SWPPP	Stormwater Pollution Prevention Plan
USC	United States Code
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

6.6 BIOLOGICAL RESOURCES

This section describes the biological resources in the vicinity of the Project, evaluates the potential Project impacts, and identifies mitigation measures to address the potential Project impacts. A detailed Project description describing the facilities to be constructed and operated as part of the Orange Grove Project is included in Section 2.0, Generation Facility description, design and Operation.

The Site is located in north San Diego County, approximately 3.5 air miles northeast of Interstate (I) 15 on State Route (SR) 76, approximately 2.0 miles west of the community of Pala (Figures 2.2-1 and 2.2-2). The Site is situated within an approximately 202-acre property (the "Property") owned by San Diego Gas & Electric (SDG&E) (Figure 2.2-3). The Site is located off of Pala Del Norte Road, a private road accessed from SR 76, on disturbed lands formerly used as a citrus grove, but the grove has not been maintained in at least 5 years. Based on review of the available literature, biological resource agency databases, and field surveys, only three special-status species are known to occur within the Site or Project linear facilities. However, four other special-status species are known to occur immediately adjacent to the Project linear facilities.

The following section describes the existing and potential biological resources for the Project's regional area (i.e., lands within a 10-mile radius of the Project) and Project vicinity (i.e., area within 1.0 mile of the Site and within 1,000 feet of Project linear facilities).

6.6.1 Existing Conditions

A biological study of the Site and Project linear facilities was conducted by Karen D. Wilson, Paula Potenza, Ceri Williams-Dodd, Ph.D., and Valerie Walsh of TRC. Additional focused biological studies of the Site and Project linear facilities were conducted by Steve Montgomery of SJM Biological Consultants for Stephen's kangaroo rat, Ruben Ramirez of Cadre Environmental for arroyo toad, and Virginia Moran of Ecological Outreach Services for special-status plants. A detailed report of existing biological conditions is provided in the following sections.

6.6.1.1 Regional Overview

A regional overview of the lands within a 10-mile radius surrounding the Site and Project linear facilities was conducted to describe the range of environmental resources in the area. Lands within a 10-mile radius are referred to herein as the "region" (Figure 6.6-1). The Site is situated east of Monserate Mountain, north of the San Luis Rey River, west of the community of Pala and the Pala Indian Reservation, approximately 5 miles west of Cleveland National Forest, and approximately 5 miles south of Riverside County. The Site occurs on a very old alluvial fan surface that slopes southward at an approximately 10 percent grade. The alluvial fan surface is surrounded to the east, north, and west by steep slopes. The alluvial fan surface continues southward of the Site to SR 76. A former aggregate mine occurs in the San Luis Rey River bed on the south side of SR 76.

The region is primarily rural, including agriculture, large plot residential, small communities, open space, and large-scale commercial/industrial such as hotel/casino and mining operations. The Site is bounded to the north, west, and east by native coastal sage scrub and chaparral habitat. The Site is located between two normally dry upland drainages that are slightly to moderately incised into the alluvial fan surface. No concentrated surface drainages occur onsite. Further to the west, the Project is regionally bounded by Rice Canyon Road and I-15, which both run in a north to south direction. Just south of the Project Site are SR 76 (Pala Road) and the San Luis Rey River. Both SR 76 and the San Luis Rey River run in a generally east to west direction in this location. The sand and gravel in the riverbed are considered an important mineral resource and a large mine occurs just south of the Site. The Site is regionally bounded on the east by rural residential lands, Pala Indian Reservation, and the Indian-owned Pala Casino and Spa Resort.

Native vegetation communities in the region include Diegan coastal sage scrub, chaparral, southern riparian forest, and oak woodland communities. Native vegetation has been replaced over time in areas that have been disturbed. However, large areas of native vegetation remain intact within the region. Descriptions of the predominant existing vegetation communities and wildlife in the region are provided in the following section.

6.6.1.2 Regional Habitats

6.6.1.2.1 Natural Vegetation Communities

The closest natural vegetation communities are adjacent to the northern and western Site boundaries. Monserate Mountain, Mount Olympus, Gomez Creek, Rainbow Valley, Pala Indian Reservation, Cleveland National Forest, and areas to the north, west, and east support large expanses of creeks and valleys, surrounded by steep to very steep hillsides supporting coastal sage scrub and chaparral vegetation.

Diegan coastal sage scrub is a shrub and sub-shrub community usually occurring on gentle to moderate slopes and often dominated by coastal sagebrush (*Artemisia californica*) with co-dominants of California buckwheat (*Eriogonum fasciculatum var. fasciculatum*), California broom (*Lotus scoparius*), black sage (*Salvia mellifera*), white sage (*Salvia apiana*), and laurel sumac (*Malosma laurina*).

Chaparral may be described as a woody and dense shrub community that often grows on steep to very steep hillsides. Native species found in chaparral communities include chamise (*Adenostoma fasciculata*), lemonadeberry (*Rhus integrifolia*), laurel sumac, and mission manzanita (*Xylococcus bicolor*).

South of the Site and SR 76 is the San Luis Rey River. The San Luis Rey River is a major river of San Diego County that meanders in an east to west direction and is a tributary to the Pacific Ocean. The river channel is mostly described as southern riparian forest habitat. This habitat community is densely vegetated and dominated by willow species such as arroyo willow (*Salix lasiolepis*) and black willow (*Salix gooddingii*).

6.6.1.2.2 General Agriculture

The southeastern-most portion of the region is primarily agricultural land used for pastures, agricultural facilities, citrus orchards, and avocado groves. Most pastures support non-native grasses and herbaceous weeds that are subject to frequent grazing and surface disturbance.

Orchards and groves in the region are typically open, single-species, tree-dominated habitats. The understory of orchards and groves is typically composed of non-native low-growing grasses and other herbaceous plants, but are managed to totally or partially prevent understory growth.

6.6.1.3 Regional Wildlife

6.6.1.3.1 Common Wildlife Species

Many species of native and non-native wildlife are known to inhabit the region. Bird species in the region include many types of songbirds, raptors, and wading birds. Typical bird species found within the region include American crow (*Corvus brachyrhynchos*), lesser goldfinch (*Carduelis psaltria*), red-tailed hawk (*Buteo jamaicensis*), turkey vulture (*Cathartes aura*), western kingbird (*Tyrannus verticalis*), and western scrub-jay (*Aphelocoma californica*). Other common wildlife species in the region include small and large mammals, reptiles, and amphibians such as California ground squirrel (*Spermophilus beecheyi*), coyote (*Canis latrans*), gopher snake (*Pituophis melanoleucus*), western fence lizard (*Sceloporus occidentalis*), bullfrog (*Rana catesbeiana*), and Pacific tree frog (*Hyla regilla*).

6.6.1.3.2 Special-status Species Potentially Occurring in the Region

The regional natural vegetation communities surrounding the Site provide habitat for wildlife and vegetation, including special-status species such as Stephen's kangaroo rat (*Dipodomys stephensi*), coastal California gnatcatcher (*Polioptila californica californica*), southern California rufous-crowned sparrow (*Aimophila ruficaps canescens*), least Bell's vireo (*Vireo bellii pusillus*), southwestern willow flycatcher (*Empidonax traillii extimus*), yellow-breasted chat (*Icteria virens*), coastal cactus wren (*Campylorhynchus brunnecapillus sandiegensis*), golden eagle (*Aquila chrysaetos*), northern red diamond rattlesnake (*Crotalus ruber ruber*), San Diego horned lizard (*Phrynosoma coronatum blainvillii*), orange-throated whiptail (*Aspidoscelis hyperythra*), arroyo toad (*Bufo californicus*), rosy boa (*Charina trivirgata*), Parry's tetracoccus (*Tetracoccus dioicus*), Robinson's pepper-grass (*Lepidium virginicum* var. *robinsonii*), chaparral nolina (*Nolina interrata*), mesa horkelia (*Horkelia cuneata* ssp. *puberula*), felt-leaved monardella (*Monardella hypoleuca* ssp. *lanata*), and smooth tarplant (*Centromadia pungens* ssp. *laevis*) (see Figure 6.6-2). SR 76 to the south of the Site inhibits movement of terrestrial animals between the Site and the San Luis Rey River. Likewise, terrestrial animal movement from the Site to the west of I-15 is limited by the interstate. However, terrestrial movement between the Site and lands to the north and east are not limited by any major development or transportation corridor.

This section presents a list of special-status species that occur within the region based on records from the California Department of Fish and Game (CDFG) California Natural Diversity

Database (CNDDB). In addition, it includes an assessment of whether each of these species that occur regionally is likely to occur on the Site, within 1.0 mile of the Site, or within 1,000 feet of the Project's linear facilities. Any species that is known to occur in the region with habitat needs similar to habitats present on or within 1.0 mile of the Site, or within 1,000 feet of Project linear facilities, was evaluated for its potential to occur in the Project vicinity (refer to Figure 6.6-3). Appendix 6.6-A includes the special-status species that occur within 1.0 mile of the reclaimed and freshwater pickup stations located near Mission Road in Fallbrook. These species are mostly coastal species and are not expected to occur near the Site or linear facilities. Special-status species include all species listed under the state and federal Endangered Species Acts (ESA), species that are proposed to be listed under the state and federal ESAs, California Species of Special Concern, Fully Protected Species under the California Fish and Game Code, and plant species listed in the California Native Plant Society's (CNPS) *Inventory of Rare and Endangered Plants of California*.

Special-status species database queries were conducted within a 10–mile radius of the Project and included the Bachelor Mountain, Bonsall, Boucher Hills, Fallbrook, Las Pulgas Canyon, Margarita Peak, Morro Hill, Murrieta, Pala, Pechanga, Rodriguez Mountain, San Luis Rey, San Marcos, Temecula, Valley Center, and Wildomar United States Geological Survey (USGS) 7.5-minute topographic quadrangles. Table 6.6-1 and Table 6.6-2 list the respective special-status species plants and wildlife that could potentially occur on or within 1.0 mile of the Site or within 1,000 feet of Project linear facilities. These lists are based on previously recorded occurrences documented in the CNDDB. The following paragraphs describe regional special-status species that have a moderate or high potential to occur within 1.0 mile of the Site or within 1,000 feet of Project linear facilities.

Chaparral nolina (*Nolina cismontana*) is a native evergreen shrub in the lily family (Liliaceae) that blooms between May and June. This species is known to occur in chaparral and coastal sage scrub habitats at an elevation ranging from 140 to 1,275 meters (m) and is typically found on sandstone or gabbro soils. This species is threatened by development, agriculture, road construction, and recreational activities and is categorized as a CNPS List 1B.2 species, which means this species is rare, threatened, or endangered in California and elsewhere and is fairly threatened in California, with a moderate degree/immediacy of threat. This species is not federal or state listed. However, it is a List A plant (plants rare, threatened, or endangered in California and elsewhere) according to the County of San Diego Department of Planning and Land Use (DPLU) Sensitive Plant List. No individuals of chaparral nolina were observed on the Project site. However, CNDDB records of this species were documented within the areas to the west, southwest, and south. This species has a high potential to occur within 1.0 mile of the Site or within 1,000 feet of Project linear facilities.

Engelmann oak (*Quercus engelmannii*) is a native medium-sized evergreen tree in the oak family (Fagaceae) that typically lives 50 to 150 years, with some living up to 350 years. This species' range has been reduced due to historic climate change and contemporary urban encroachment, so that scattered trees are now found only in the San Gabriel Mountains and throughout the Peninsular Ranges. Engelmann oak persists where rainfall is adequate, frosts rare, and summers relatively mild at an elevation ranging from 120 to 1,300 m. This species is a

CNPS List 4.2 species, which means this plant is of limited distribution (on a watch list) and is fairly threatened in California, with a moderate degree/immediacy of threat. Engelmann oak is not federal or state listed. However, it is a List D plant (plants of limited distribution and uncommon, but more information needed to determine their true rarity status) according to the DPLU Sensitive Plant List. One individual Engelmann oak and several saplings were observed within the Project disturbance area. This species was also observed within the drainage located just east of the Site.

Felt-leaved monardella (*Monardella hypoleuca* ssp. *lanata*) is a native rhizomatous perennial herb in the mint family (Lamiaceae) that blooms between June and August. This subspecies is known to occur in chaparral and cismontane woodland habitats at an elevation ranging from 300 to 1,190 m. This subspecies is a CNPS List 1B.2 plant, which means this subspecies is rare, threatened, or endangered in California and elsewhere and is fairly threatened in California, with a moderate degree/immediacy of threat. This subspecies is not federal or state listed. However, it is a List A plant (plants rare, threatened, or endangered in California and elsewhere) according to the DPLU Sensitive Plant List. No individuals of felt-leaved monardella were observed on the Project site. However, CNDDB records of this subspecies were documented approximately 0.90 mile to the east. This subspecies has a moderate potential to occur within 1.0 mile of the Site or within 1,000 feet of Project linear facilities.

Mesa horkelia (*Horkelia cuneata* ssp. *puberula*) is a native perennial herb in the rose family (Rosaceae) that blooms between February and September. This subspecies is known to occur in chaparral, cismontane woodland, and coastal scrub habitats at an elevation ranging between 70 and 810 m and is typically found in sandy or gravelly soils. This subspecies is categorized as a CNPS List 1B.1 species, which means this subspecies is rare, threatened, or endangered in California and elsewhere and is seriously threatened in California, with a high degree/immediacy of threat. This subspecies is not federal or state listed. However, it is a List A plant (plants rare, threatened, or endangered in California and elsewhere) according to the DPLU Sensitive Plant List. No individuals of mesa horkelia were observed on the Project site. However, CNDDB records of this subspecies were documented approximately 0.90 mile to the east. This subspecies has a moderate potential to occur within 1.0 mile of the Site or within 1,000 feet of Project linear facilities.

Parry's tetracoccus (*Tetracoccus dioicus*) is a native deciduous shrub in the spurge family (*Euphorbiaceae*) that blooms between April and May. This species is known to occur in chaparral and coastal sage scrub habitats at an elevation ranging from 165 to 1,000 m and is typically found in chaparral on gabbro and metavolcanic soils. This species is threatened by agriculture and development and is categorized as a CNPS List 1B.2 species, which means this species is rare, threatened, or endangered in California and elsewhere and is fairly threatened in California, with a moderate degree/immediacy of threat. This species is not federal or state listed. However, it is a List A plant (plants rare, threatened, or endangered in California and elsewhere) according to the DPLU Sensitive Plant List. Several stands (with small numbers of individuals) of Parry's tetracoccus were observed just inside the northern and eastern boundaries of the Site (Figure 6.6-4). It should be noted that the habitat that is occupied by these stands is

disturbed and these stands represent the southern extension of a more wide distribution of the species upslope of the Site in higher quality habitat.

Robinson's peppergrass (*Lepidium virginicum* var. *robinsonii*) is a native annual herb in the mustard family (Brassicaceae) that blooms between January and July. This taxon is known to occur in chaparral and coastal sage scrub habitats at an elevation ranging from 1 to 500 m. This taxon is categorized as a CNPS List 1B.2 species, which means this taxon is rare, threatened, or endangered in California and elsewhere and is fairly threatened in California, with a moderate degree/immediacy of threat. This taxon is not federal or state listed. However, it is a List A plant (plants rare, threatened, or endangered in California and elsewhere) according to the DPLU Sensitive Plant List. No individuals of Robinson's peppergrass were observed on the Project site. However, CNDDB records of this species were documented approximately 0.45 mile to the northeast. This species has a moderate to high potential to occur within 1.0 mile of the Site or within 1,000 feet of Project linear facilities.

Dulzura pocket mouse (*Chaetodipus californicus femoralis*) is categorized as a California Species of Special Concern as defined by the CDFG and San Diego County Group 2 (overall population decreasing) species. This subspecies occurs in coastal sage scrub, chaparral, and grassland and is attracted to grass/chaparral edges. The Dulzura pocket mouse has a diet of seeds, insects, and sometimes green leaves. CNDDB records of this subspecies were documented within 3 miles of the Project site. The Site does not support suitable habitat for the subspecies. However, the coastal sage scrub habitat within 1.0 mile of the Site and within and adjacent to the Project linear facilities may provide the necessary habitat components for occurrence of this subspecies.

San Diego desert woodrat (*Neotoma lepida intermedia*) is categorized as a CDFG California Species of Special Concern and San Diego County Group 2 (overall population decreasing) species. This subspecies prefers moderate to dense canopies and is abundant in areas of rocky outcrops, cliffs, and slopes. CNNDB records document this subspecies within 3 miles of the Project site. A *Neotoma* sp. nest was observed at the base of an Engelmann oak located on the Project site during field surveys conducted on June 20, 2007, and additional woodrat nests have been observed in coastal sage scrub habitat surrounding the Site and within or near the Project linear facilities. It could not be determined if the nests were created by the dusky-footed woodrat (*Neotoma fuscipes*), which is a non-special-status species that could occur in the area, or were created by the San Diego desert woodrat. Surrounding areas within 1.0 mile of the Site or within 1,000 feet of Project linear facilities may provide suitable foraging and nesting conditions for this subspecies.

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Table 6.6-1 – Regional Special-Status Plant Species Potentially Occurring Within 1.0 Mile of the Project Site or Within 1,000 Feet of Linear Facilities

SPECIES	LISTING STATUS FEDERAL/ STATE(1)	CALIFORNIA NATIVE PLANT SOCIETY LIST CODE(2)	COUNTY OF SAN DIEGO SENSITIVITY(3)	FLOWERING/ PHENOLOGY	PRESENCE	HABITAT TYPE AND POTENTIAL FOR OCCURRENCE
Brewer's calandrinia (*Calandrinia breweri*)	None/None	4.2	List D	March to June	None Observed	Chaparral, coastal scrub. Prefers sandy/loamy soils. Occurs between 10 and 1,220 m. No CNDDB occurrences documented within 10 miles of the Project impact area. **Low potential for occurrence.**
California screw-moss (*Tortula californica*)	None/None	1B.2	---	Not Applicable	None Observed	Chenopod scrub, valley and foothill grassland. Prefers sandy soil. Occurs between 10 and 1,460 m. CNDDB records document occurrences within 10 miles of the Project impact area. **Low potential for occurrence.**
Chaparral nolina (*Nolina cismontana*)	None/None	1B.2	List A	May to July	None Observed	Chaparral, coastal scrub. Prefers sandstone or gabbro soils. Occurs between 140 and 1,275 m. CNDDB records document occurrences within 1.0 mile of the Project impact area. **High potential for occurrence.**
Chaparral sand-verbena (*Abronia villosa* var. *aurita*)	None/None	1B.1	List A	January to September	None Observed	Chaparral, coastal scrub, desert dunes/sandy soils. Occurs between 80 and 1,600 m. CNDDB records document occurrences within 10 miles of the Project impact area. **Low potential for occurrence.**
Cooper's rein orchid (*Piperia cooperi*)	None/None	4.2	List D	March to June	None Observed	Chaparral, cismontane woodland, valley and foothill grassland. Occurs between 15 and 1,585 m. No CNDDB occurrences documented within 10 miles of the Project impact area. **Low potential for occurrence.**

SPECIES	LISTING STATUS FEDERAL/ STATE[1]	CALIFORNIA NATIVE PLANT SOCIETY LIST CODE[2]	COUNTY OF SAN DIEGO SENSITIVITY[3]	FLOWERING/ PHENOLOGY	PRESENCE	HABITAT TYPE AND POTENTIAL FOR OCCURRENCE
Engelmann oak (*Quercus engelmannii*)	None/None	4.2	List D	March to May	Observed	Chaparral, cismontane woodland, riparian woodland, valley and foothill grassland. Occurs between 120 and 1,300 m. One tree and several saplings observed within the Project disturbance area. Also observed just outside the eastern boundary of the Project Site.
Felt-leaved monardella (*Monardella hypoleuca* ssp. *lanata*)	None/None	1B.2	List A	June to August	None Observed	Chaparral, cismontane woodland. Occurs between 300 and 1,190 m. CNDDB records document occurrences within 1.0 mile1.0 mile of the Project impact area. **Moderate potential for occurrence.**
Gander's ragwort (*Packera* [*Senecio]* *ganderi*)	None/SR	1B.2	List A	April to June	None Observed	Chaparral. Prefers burned areas and gabbroic outcrops. Occurs between 400 and 1,200 m. CNDDB records document occurrences within 10 miles of the Project impact area. **Low potential for occurrence.**
Graceful tarplant (*Holocarpha virgata elongata*)	None/None	4.2	List D	July to November	None Observed	Cismontane woodland, coastal scrub, valley and foothill grassland, and possibly chaparral. Occurs between 60 and 1,100 m. No CNDDB occurrences documented within 10 miles of the Project impact area. **Low potential for occurrence.**
Hall's monardella (*Monardella macrantha* ssp. *hallii)*	None/None	1B.3	List A	June to August	None Observed	Broadleaved upland forest, chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland. Occurs between 730 and 2,195 m. CNDDB records document occurrences within 10 miles of the Project impact area. **Low potential for occurrence.**
Jaeger's milk-vetch (*Astragalus pachypus* var. *jaegeri*)	None/None	1B.1	List A	December to June	None Observed	Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland. Prefers sandy or rocky soils. Occurs between 365 and 915 m. CNDDB records document occurrences within 10 miles of the Project impact area. **Low potential for occurrence.**

SPECIES	LISTING STATUS FEDERAL/ STATE[1]	CALIFORNIA NATIVE PLANT SOCIETY LIST CODE[2]	COUNTY OF SAN DIEGO SENSITIVITY[3]	FLOWERING/ PHENOLOGY	PRESENCE	HABITAT TYPE AND POTENTIAL FOR OCCURRENCE
Lakeside ceanothus (*Ceanothus cyaneus*)	None/None	1B.2	List A MSCP-NE	April to June	None Observed	Closed-cone coniferous forest, chaparral. Occurs between 580 and 1,065 m. CNDDB records document occurrences within 10 miles of the Project impact area. **Low potential for occurrence.**
Lewis sun cup (*Camissonia lewisii*)	None/None	3	List C	March to June	None Observed	Coastal bluff scrub, cismontane woodland, coastal dunes, coastal scrub, valley and foothill grassland. Occurs between 0 and 300 m. No CNDDB occurrences documented within 10 miles of the Project impact area. **Low potential for occurrence.**
Long-spined spineflower (*Chorizanthe polygonoides* var. *longispina*)	None/None	1B.2	List A	April to July	None Observed	Chaparral, coastal scrub, meadows and seeps, valley and foothill grassland. Often prefers clay soils. Occurs between 30 and 1,530 m. CNDDB records document occurrences within 10 miles of the Project impact area. **Low potential for occurrence.**
Mesa horkelia (*Horkelia cuneata* ssp. *puberula*)	None/None	1B.1	List A	February to July	None Observed	Chaparral, cismontane woodland, coastal scrub. Prefers sandy or gravelly soil. Occurs between 70 and 810 m. CNDDB records document occurrences within 1.0 mile of the Project impact area. **Moderate potential for occurrence.**
Nevin's barberry (*Berberis nevinii*)	FE/SE	1B.1	List A MSCP-NE	March to June	None Observed	Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland. Prefers sandy or rocky soils. Occurs between 295 and 825 m. CNDDB records document occurrences within 10 miles of the Project impact area. **Low potential for occurrence.**

SPECIES	LISTING STATUS FEDERAL/ STATE(1)	CALIFORNIA NATIVE PLANT SOCIETY LIST CODE(2)	COUNTY OF SAN DIEGO SENSITIVITY(3)	FLOWERING/ PHENOLOGY	PRESENCE	HABITAT TYPE AND POTENTIAL FOR OCCURRENCE
Orcutt's brodiaea (*Brodiaea orcuttii*)	None/None	1B.1	List A	May to July	None Observed	Closed-cone coniferous forest, chaparral, cismontane woodland, meadows and seeps, valley and foothill grassland, vernal pools. Prefers clay soils, sometimes serpentine. Occurs between 30 and 1,692 m. CNDDB records document occurrences within 10 miles of the Project impact area. **Low potential for occurrence.**
Parry's tetracoccus (*Tetracoccus dioicus*)	None/None	1B.2	List A	April to May	Observed	Chaparral, coastal scrub. Occurs between 165 and 1,000 m. CNDDB records document occurrences within 1.0 mile of the Project impact area. Observed within the Project disturbance area just east of the western drainage. Also observed just outside the northern and eastern boundaries of the Project site.
Rainbow manzanita (*Arctostaphylos rainbowensis*)	None/None	1B.1	List A	January to February	None Observed	Chaparral. Occurs between 225 and 640 m. CNDDB records document occurrences within 10 miles of the Project impact area. **Low potential for occurrence.**
Ramona horkelia (*Horkelia truncata*)	None/None	1B.3	List A	May to June	None Observed	Chaparral, cismontane woodland. Prefers clay soils. Occurs between 400 and 1,300 m. CNDDB records document occurrences within 10 miles of the Project impact area. **Low potential for occurrence.**
Robinson's peppergrass (*Lepidium virginicum* var. *robinsonii*)	None/None	1B.2	List A	January to July	None Observed	Chaparral and coastal scrub. Occurs between 1 and 885 m. CNDDB records document occurrences within 1.0 mile of the Project impact area. **Moderate to high potential for occurrence.**

SPECIES	LISTING STATUS FEDERAL/ STATE[1]	CALIFORNIA NATIVE PLANT SOCIETY LIST CODE[2]	COUNTY OF SAN DIEGO SENSITIVITY[3]	FLOWERING/ PHENOLOGY	PRESENCE	HABITAT TYPE AND POTENTIAL FOR OCCURRENCE
San Diego adolphia (*Adolphia californica*)	None/None	2.1	List B	December to May	None Observed	Chaparral, coastal scrub, valley and foothill grassland. Occurs between 45 and 300 m. No CNDDB occurrences documented within 10 miles of the Project impact area. **Low potential for occurrence.**
San Diego ambrosia (*Ambrosia pumila*)	FE/ None	1B.1	List A MSCP-NE	April - October	None Observed	Chaparral, coastal scrub, valley and foothill grassland, vernal pools. Often located in disturbed areas. Occurs between 20 and 415 m. CNDDB records document occurrences within 10 miles of the Project impact area. **Low potential for occurrence.**
San Diego sunflower (*Hulsea californica*)	None/None	1B.3	List A	April to June	None Observed	Chaparral, lower montane coniferous forest, upper montane coniferous forest. Prefers openings and burned areas. Occurs between 915 and 2,915 m. CNDDB records document occurrences within 10 miles of the Project impact area. **Low potential for occurrence.**
San Diego thornmint (*Acanthomintha ilicifolia*)	FT/SE	1B.1	List A MSCP-NE	April to June	None Observed	Chaparral, coastal scrub, vernal pools, valley and foothill grassland. Prefers clay soils. Occurs between 10 and 935 m. No CNDDB occurrences documented within 10 miles of the Project impact area. **Low potential for occurrence.**
San Miguel savory (*Satureja chandleri*)	None/None	1B.2	List A	March to July	None Observed	Chaparral, cismontane woodland, coastal scrub, riparian woodland, valley and foothill grassland. Prefers rocky, gabbroic or metavolcanic soils. Occurs between 120 and 1,075 m. CNDDB records document occurrences within 10 miles of the Project impact area. **Low potential for occurrence.**

SPECIES	LISTING STATUS FEDERAL/ STATE(1)	CALIFORNIA NATIVE PLANT SOCIETY LIST CODE(2)	COUNTY OF SAN DIEGO SENSITIVITY(3)	FLOWERING/ PHENOLOGY	PRESENCE	HABITAT TYPE AND POTENTIAL FOR OCCURRENCE
Slender-horned spineflower (*Dodecahema leptoceras*)	FE/SE	1B.1	---	April to June	None Observed	Chaparral, cismontane woodland, coastal scrub (alluvial fan). Prefers sandy soil. Occurs between 200 and 760 m. CNDDB records document occurrences within 10 miles of the Project impact area (in Riverside County). Has not been observed in San Diego County. **Low potential for occurrence.**
Small flowered microseris (*Microseris douglasii* var. *platycarpha*)	None/None	4.2	List D	March to May	None Observed	Cismontane woodland, coastal scrub, valley and foothill grassland, vernal pools. Prefers clay soils. Occurs between 15 and 1,070 m. No CNDDB occurrences documented within 10 miles of the Project impact area. **Low potential for occurrence.**
Small flowered morning glory (*Convolvulus simulans*)	None/None	4.2	List D	March to July	None Observed	Chaparral, coastal scrub, valley and foothill grassland. Prefers clay and serpentinite seeps. Occurs between 30 and 700 m. No CNDDB occurrences documented within 10 miles of the Project impact area. **Low potential for occurrence.**
Southwestern spiny rush (*Juncus acutus* ssp. *leopoldii*)	None/None	4.2	List D	May to June	None Observed	Coastal dunes (mesic), meadows and seeps (alkaline seeps), marshes and swamps (coastal salt). Occurs between 3 and 900 m. No CNDDB occurrences documented within 10 miles of the Project impact area. Project impact area lacks suitable habitat. **No potential for occurrence.**
Spreading navarretia (*Navarretia fossalis*)	FT/ None	1B.1	List A	April to June	None Observed	Chenopod scrub, marshes and swamps (assorted shallow freshwater), playas, vernal pools. Occurs between 30 and 1,300 m. No CNDDB occurrences documented within 10 miles of the Project impact area. Project impact area lacks suitable habitat. **No potential for occurrence.**

SPECIES	LISTING STATUS FEDERAL/ STATE[1]	CALIFORNIA NATIVE PLANT SOCIETY LIST CODE[2]	COUNTY OF SAN DIEGO SENSITIVITY[3]	FLOWERING/ PHENOLOGY	PRESENCE	HABITAT TYPE AND POTENTIAL FOR OCCURRENCE
Sticky dudleya (*Dudleya viscida*)	None/None	1B.2	List A	May to June	None Observed	Coastal bluff scrub, chaparral, coastal scrub. Occurs between 10 and 550 m. No CNDDB occurrences documented within 10 miles of the Project impact area. **Low potential for occurrence.**
Summer holly (*Comarostaphylis diversifolia* ssp. *diversifolia*)	None/None	1B.2	List A	April to June	None Observed	Chaparral, cismontane woodland. Occurs between 30 and 550 m. CNDDB records document occurrences within 10 miles of the Project impact area. **Low potential for occurrence.**
Palmer's goldenbush (*Ericameria palmeri* ssp. *palmeri*)	None/None	2.2	List B MSCP-NE	July to November	None Observed	Chaparral, coastal scrub. Prefers mesic soils. Occurs between 30 and 600 m. No CNDDB occurrences documented within 10 miles of the Project impact area. **Low potential for occurrence.**
Thread leaved brodiaea (*Brodiaea filifolia*)	FT/ SE	1B.1	List A	March to June	None observed	Chaparral (openings), cismontane woodland, coastal scrub, playas, valley and foothill grassland, vernal pools. Often prefers clay soils. Occurs between 40 and 1,220 m. No CNDDB occurrences documented within 10 miles of the Project impact area. **Low potential for occurrence.**
Vail Lake ceanothus (*Ceanothus ophiochilus*)	FT/SE	1B.1	---	February to March	None Observed	Chaparral (gabbroic or pyroxenite-rich outcrops). Occurs between 580 and 1,065 m. CNDDB records document occurrences within 10 miles of the Project impact area (in Riverside County). Has not been observed in San Diego County. **Low potential for occurrence.**
Western dichondra (*Dichondra occidentalis*)	None/None	4.2	List D	March to July	None Observed	Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland. Occurs between 50 and 500 m. No CNDDB occurrences documented within 10 miles of the Project impact area. **Low potential for occurrence.**

(1) United States Fish and Wildlife Service (USFWS)
FE - Federally listed, endangered: species in danger of extinction throughout a significant portion of its range
FT - Federally listed, threatened: species likely to become endangered within the foreseeable future
State of California
SE - State listed, endangered
SR - State listed, rare

(2) California Native Plant Society
List 1B - Rare, threatened, or endangered in California and elsewhere
List 2 - Rare, threatened, or endangered in California but more common elsewhere
List 3 - Plants which need more information
List 4 - Limited distribution – a watch list
0.1 - Seriously threatened in California (high degree/immediacy of threat)
0.2 - Fairly threatened in California (moderate degree/immediacy of threat)
0.3 - Not very threatened in California (low degree/immediacy of threats or no current threats known)

(3) San Diego County
List A - Plants rare, threatened or endangered in California and elsewhere
List B - Plants rare, threatened or endangered in California but more common elsewhere
List C - Plants which may be quite rare, but need more information to determine their true rarity status
List D - Plants of limited distribution and are uncommon, but need more information to determine their true rarity status
MSCP-NE - Multiple Species Conservation Program – narrow endemic. A narrow endemic is a species that is confined to a specific geographic region, soil type, and/or habitat

Table 6.6-2 – Regional Special-Status Wildlife Species Potentially Occurring Within 1.0 Mile of the Project Site or Within 1,000 Feet of Linear Facilities

COMMON NAME/ SCIENTIFIC NAME	LISTING STATUS[1]	POTENTIAL FOR SPECIES OCCURRENCE WITHIN THE PROJECT IMPACT AREA
Mammals		
American badger (*Taxidea taxus*)	CSC Group 2	**Low**. CNDDB records document one occurrence of this species in San Marcos, California, approximately 11-miles from the Project impact area. This species is most abundant in drier, open stages of mostly shrub, forest, and herbaceous habitats with friable soils.
Big free-tailed bat (*Nyctinomops macrotis*)	CSC Group 2	**None**. The Project impact area lacks suitable habitat. No CNDDB occurrences documented within 10 miles of the Project impact area. *N. macrotis* is a migratory species that travels seasonally from Mexico to the southwestern United States. This species inhabits rugged and rocky terrain and prefers rocky cliffs in weathered rock fissures and crevices. It has also been discovered roosting in buildings and in terrestrial plants including ponderosa pine, Douglas-fir, and desert shrubs. In San Diego County, the main range of *N. macrotis* is limited to the coastal region.
California leaf-nosed bat (*Macrotus californicus*)	CSC Group 2	**None**. The Project impact area lacks suitable habitat, but the range of *M. californicus* does overlap the Project area. No CNDDB occurrences documented within 10 miles of the Project impact area. However, the bats are most sensitive during the daylight hours when they roost. However; the Project impact area lacks suitable roosting habitats such as caves and mine shafts.
Dulzura pocket mouse (*Chaetodipus californicus femoralis*)	CSC Group 2	**Moderate**. CNDDB records document three occurrences of this subspecies within 10 miles from the Project impact area, including one occurrence within 3 miles of the Project impact area. This subspecies occurs in coastal sage scrub, chaparral, and grassland and is attracted to grass/chaparral edges.
Los Angeles pocket mouse (*Perognathus longimembris brevinasus*)	CSC Group 2	**Low**. CNDDB records document one occurrence of this subspecies approximately 7.7 miles from the Project impact area. This subspecies is typically found in lower elevation grasslands and coastal sage communities in the Los Angeles Basin. Prefers open ground with fine, sandy soils.
Mexican long-tongued bat (*Choeronycteris mexicana*)	CSC Group 2	**Low**. No CNDDB occurrences documented within 10 miles of the Project impact area. *C. mexicana* lives in a variety of habitats ranging from desert, montane, riparian, to pinyon-juniper habitats. The bats are most frequently found roosting in desert canyons, deep caves, mines, or rock crevices. In urban environments the bats use abandoned buildings for day roosts. Abandoned buildings and structures are located along the Project linear corridor.
Mountain lion (*Felis concolor*)	Group 2	**Low**. No CNDDB occurrences documented within 10 miles of the Project impact area. This species occurs in many different habitats owing to its large range. It typically inhabits remote mountainous areas near reliable water sources. In addition, it is mainly a nocturnal animal and typically avoids contact with humans.

COMMON NAME/ SCIENTIFIC NAME	LISTING STATUS[1]	POTENTIAL FOR SPECIES OCCURRENCE WITHIN THE PROJECT IMPACT AREA
Northwestern San Diego pocket mouse (*Chaetodipus fallax fallax*)	CSC Group 2	**Low**. CNDDB records document four occurrences of this subspecies within 10 miles from the Project impact area, including one occurrence within 7 miles of the Project impact area. This subspecies occurs in coastal sage scrub, chaparral, grassland, and sagebrush in western San Diego County. Prefers sandy, herbaceous areas, usually in association with rock or gravel.
Pallid bat (*Antrozous pallidus*)	CSC Group 2	**Low**. CNDDB records document one occurrence of this species approximately 7.5 miles from the Project impact area. This species is known to occur in deserts, grasslands, shrublands, woodlands, and forests. Most commonly found in open, dry habitats with rocky areas for roosting.
Pocketed free-tailed bat (*Nyctinomops femorosaccus*)	CSC Group 2	**None**. The Project impact area lacks suitable habitat. No CNDDB occurrences documented within 10 miles of the Project impact area. This species is an inhabitant of semiarid desert lands. It has been found using day-roosts in caves, crevices in cliffs, and under the roof tiles of buildings. Records indicate that *N. femorosaccus* distribution within California is patchy and it is mainly observed in the arid lowlands.
Ringtail (*Bassariscus astutus*)	SFP Group 2	**Low**. No CNDDB occurrences documented within 10 miles of the Project impact area. *B. astutus* inhabits mainly rocky areas of chaparral and coastal scrub. There is some suitable habitat within the Project area, but lack of documented sightings in the Project area suggests that potential occurrence is low.
San Diego black-tailed jackrabbit (*Lepus californicus bennettii*)	CSC Group 2	**Low**. CNDDB records document one occurrence of this subspecies approximately 7.5 miles from the Project impact area. This subspecies is typically known to occur in intermediate canopy stages of shrub habitats and in open shrub/herbaceous and tree/herbaceous edges.
San Diego desert woodrat (*Neotoma lepida intermedia*)	CSC Group 2	**Moderate**. Two *Neotoma* sp. nests were observed in the Project impact area. However, the dusky-footed woodrat (*Neotoma fuscipes*) could also occur in the Project area. In addition, CNDDB records document two occurrences of this species within 10 miles of the Project impact area, including one occurrence within 3 miles of the Project impact area. This species prefers moderate to dense canopies and is particularly abundant in areas of rocky outcrops, cliffs, and slopes.
Small-footed myotis (*Myotis ciliolabrum*)	Group 2	**None**. The Project impact area lacks suitable habitat. No CNDDB occurrences documented within 10 miles of the Project impact area. *M. ciliolabrum* roosts in small caves and mine shafts in the arid lowlands of southern California.
Spotted bat (*Euderma maculatum*)	CSC Group 2	**None**. The Project impact area lacks suitable habitat. No CNDDB occurrences documented within 10 miles of the Project impact area. This species inhabits the semi-arid regions of the western United States and northern Mexico, is nocturnal, and roosts in caves and mine shafts.
Southern grasshopper mouse (*Onychomys torridus ramona*)	CSC Group 2	**Low**. No CNDDB occurrences documented within 10 miles of the Project impact area. *O. torridus ramona* inhabits coastal sage scrub and other grassland habitats and is primarily nocturnal. Although suitable habitat is present, lack of documented sightings suggests that potential occurrence is low.

COMMON NAME/ SCIENTIFIC NAME	LISTING STATUS[1]	POTENTIAL FOR SPECIES OCCURRENCE WITHIN THE PROJECT IMPACT AREA
Southern mule deer (*Odocoileus hemionus*)	Group 2	**Moderate**. No CNDDB occurrences documented within 10 miles of the Project impact area. *O. hemionus* inhabits several types of habitat, including coniferous forest, desert shrub, chaparral, and grassland with shrubs. There is sufficient suitable habitat surrounding the Project impact area, suggesting that potential occurrence is moderate.
Stephen's kangaroo rat (*Dipodomys stephensi*)	FE ST Group 1	**Low**. CNDDB records document 12 occurrences of this species within 10 miles of the Project impact area, including one occurrence within 6 miles of the Project impact area. This species is found primarily in annual and perennial grasslands, but also occurs in coastal scrub and sagebrush with sparse canopy cover. Prefers buckwheat, chamise, brome grasses, and filaree. This species will burrow into firm soil.
Townsend's big-eared bat (*Corynorhinus townsendii*)	CSC Group 2	**Low**. No CNDDB occurrences documented within 10 miles of the Project impact area. Townsend's big-eared bats occur in a variety of habitats, including coastal conifer and broad-leaf forests, oak and conifer woodlands, arid grasslands and deserts, and high-elevation forests and meadows. This species is nocturnal and roosts in caves and dark and abandoned man-made structures.
Western mastiff bat (*Eumops perotis californicus*)	CSC Group 2	**Low**. CNDDB records document two occurrences of this subspecies within 10 miles from the Project impact area, including one occurrence within 7 miles of the Project impact area. Observed in 1996 on the north rim of Moosa Canyon, approximately 7 miles from the Project impact area. This subspecies prefers open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, grasslands, and chaparral. Roosts in crevices, cliff faces, high buildings, trees, and tunnels.
Western red bat (*Lasiurus blossevillii*)	CSC Group 2	**None**. The Project impact area lacks suitable habitat. No CNDDB occurrences documented within 10 miles of the Project impact area. This species prefers to roost in broad leaved trees, especially cottonwoods and willows in the foothills and lower mountains of the southwest and in fruit and nut orchards of the west, where they resemble dried leaves when they are curled up and asleep. It is often found near streams.
Western yellow bat (*Lasiurus xanthinus*)		**None**. The Project impact area lacks suitable habitat for this species. CNDDB records document one occurrence of this species approximately 11.5 miles from the Project impact area. This species is known to occur in valley foothill riparian, desert riparian, desert wash, and palm oasis habitats. Often roosts in trees, particularly palms. Forages over water and among trees.
Yuma myotis (*Myotis yumanensis*)	Group 2	**None**. The Project impact area lacks suitable habitat. No CNDDB occurrences documented within 10 miles of the Project impact area. This species is known to occur in various woodland and grassland habitats. In addition, they require caves or other undisturbed refugia in order to roost.
Birds		
Bell's sage sparrow (*Amphispiza belli belli*)	CSC BCC Group 1	**None**. The Project impact area lacks suitable habitat. CNDDB records document two occurrences of this subspecies within 10 miles of the Project impact area, including one occurrence in Moosa Canyon, located approximately 7.5 miles south of the Project impact area. This subspecies nests in chaparral consisting of relatively dense stands of chamise.

COMMON NAME/ SCIENTIFIC NAME	LISTING STATUS[1]	POTENTIAL FOR SPECIES OCCURRENCE WITHIN THE PROJECT IMPACT AREA
White-tailed kite (*Elanus leucurus)*, formerly known as black shouldered kite (*Elanus caeruleus*	SFP Group 1	**Moderate**. No CNDDB occurrences documented within 10 miles of the Project impact area. However, this species is widespread across California occurring in most non-desert lowland terrestrial habitats (particularly riparian woodlands, and oak or sycamore groves near grasslands).
California gull (non-breeding) (*Larus californicus*)	Group 2	**None**. The Project impact area lacks suitable habitat. This species overwinters on farmland and along the Pacific coast from southern Washington to Guatemala. During the summer, *L. californicus* inhabits marshes, freshwater lakes, and rivers. The species breeds and nests at Mono Lake and is threatened there by habitat loss.
California horned lark (*Eremophila alpestris actia*)	CSC Group 2	**Low**. CNDDB records document one occurrence of this subspecies approximately 10 miles north of the Project impact area. This subspecies is known to occur in coastal regions, short-grass prairie, "bald" hills, mountain meadows, open coastal plains, fallow grain fields, and alkali flats.
Coastal (San Diego) cactus wren (*Campylorhynchus brunneicapillus sandiegensis*)	CSC BCC Group 1	**Moderate**. CNNDB records from 1990 to 2000 document multiple sightings of this species within 10 miles of the Project impact area, including one occurrence that slightly overlaps the northeastern corner of the Project impact area. This species is typically found in coastal sage scrub where large patches of cactus are present for nesting and roosting. A medium-sized patch of prickly pear cactus (*Opuntia* sp.) was observed west of the Project site where the Project linear corridor is proposed. No individuals were observed during field surveys or during a December 5, 2007 Project site habitat assessment for this subspecies, which reports that the closest stand of cactus to the Project site is located approximately 700 feet east of the Project impact area, immediately adjacent to SR 76.
Coastal California gnatcatcher (*Polioptila californica californica*)	FT CSC Group 1	**High**. Focused non-breeding and breeding seasons protocol-level surveys for this subspecies have been conducted on the Project impact area and up to 500 feet from the Project impact area boundaries to determine presence (final surveys and report pending). Two individuals of this species were observed during the December 21, 2007 survey along the Project linear corridor, which extends along SR 76 from the Pala substation west of the Project impact area west to Rice Canyon Road. CNNDB records document multiple sightings of this species within 10 miles of the Project impact area, including occurrences within 3 miles of the Project impact area. This species is an obligate, permanent resident of coastal sage scrub below 2,500 feet in southern California. This species is known to occur in low, coastal sage scrub in arid washes, and on mesas and slopes.
Common barn-owl (*Tyto alba*)	Group 2	**Moderate**. No CNDDB occurrences documented within 10 miles of the Project impact area. This species is nocturnal and occurs in almost all lowland habitats and roosts in tree hollows. Palms, other dense trees, and quiet man-made structures. There are abandoned buildings and structures within and adjacent to the Project linear corridor west of the Project site.

COMMON NAME/ SCIENTIFIC NAME	LISTING STATUS[1]	POTENTIAL FOR SPECIES OCCURRENCE WITHIN THE PROJECT IMPACT AREA
Cooper's hawk (*Accipiter cooperii*)	CSC Group 1	**High**. The Project impact area provides suitable nesting habitat within and near the Project linear corridor where it parallels SR 76. Cooper's hawk was observed foraging within the Project area during the coastal California gnatcatcher surveys for the Project. CNDDB records document three occurrences of this species within 10 miles of the Project impact area, including one occurrence within 2.5 miles of the Project impact area. Nest and fledglings were observed in 1991 and 2000 near Trujillo Creek, approximately 4 miles from Project impact area. This species traditionally nests in open woodlands or in deciduous trees in riparian areas, but is well documented in San Diego County nesting in eucalyptus trees and other non-native planted trees.
Golden eagle (*Aquila chrysaetos*)	CSC SFP BCC Group 1	**Low**. The Project impact area lacks suitable nesting habitat and no individuals of this species were observed during field surveys. However, a CNDDB record from 2000 documents a golden eagle nest approximately 1.0 mile west of Pala in deciduous woodland. The Project impact area provides suitable foraging habitat. This species' nesting and wintering habitats include rolling foothills, mountain areas, sage-juniper flats, and desert. Cliff-walled canyons, rocky outcrops, and large trees provide nesting habitat.
Grasshopper sparrow (*Ammodramus savannarum*)	Group 1	**Low**. No CNDDB occurrences documented within 10 miles of the Project impact area. However, this species occurs in grassland habitats like that present in the Project area. They are a ground nesting species that migrates into California in February or March and departs the area in late summer.
Green heron (*Butorides striatus*)	Group 2	**Low**. No CNDDB occurrences documented within 10 miles of the Project impact area. However, there is suitable riparian woodland habitat for this species along portions of the Project linear corridor where it borders the riparian corridor along the San Luis Rey River. This species occurs in freshwater ponds or channels or brackish marshes with wooded cover.
Great blue heron (*Ardea herodias*)	Group 2	**None**. The Project impact area lacks suitable habitat. No CNDDB occurrences documented within 10 miles of the Project impact area. This species occurs near sources of water, including rivers, lake edges, marshes, saltwater seacoasts, and swamps. They usually nest in trees or bushes that stand near water, breeding at elevations of up to 1,500 m.
Least Bell's vireo (*Vireo bellii pusillus*)	FE SE BCC Group 1	**Moderate**. There is suitable riparian woodland habitat for this subspecies near portions of the Project linear corridor where it borders the riparian corridor along the San Luis Rey River. Least Bell's vireo presence surveys have been conducted in suitable habitat along the Project linear corridor (final surveys and report pending). CNDDB records document multiple occurrences of this subspecies within 10 miles of the Project impact area, including one occurrence within 0.2 mile of the Project impact area along the San Luis Rey River. This subspecies is typically found foraging and nesting in low riparian areas in the vicinity of water or in dry river bottoms, below 2,000 feet in elevation. Nests are often found in willow, baccharis, or mesquite.
Loggerhead shrike (*Lanius ludovicianus*)	CSC BCC Group 1	**Low**. No CNDDB occurrences documented within 10 miles of the Project impact area. This species occurs in grasslands and open fields, often in an agricultural setting. It prefers fields with hedgerows or other shrub cover to use as perches.

COMMON NAME/ SCIENTIFIC NAME	LISTING STATUS[1]	POTENTIAL FOR SPECIES OCCURRENCE WITHIN THE PROJECT IMPACT AREA
Long-eared owl (*Asio otus*)	CSC Group 1	**Low**. No CNDDB occurrences documented within 10 miles of the Project impact area. This is a rare species that occurs mainly in riparian lowland areas with dense vegetative cover for roosting and nesting.
Merlin (winter) (*Falco columbarius*)	CSC Group 2	**Low**. No CNDDB occurrences documented within 10 miles of the Project impact area. This species occurs in California as a wintering species in chaparral, grassland, coastal, and marshland habitats.
Northern harrier (*Circus cyaneus hudsonius*)	CSC Group 1	**Low**. CNNDB records document one occurrence of this species 9 miles north of the Project impact area. Northern harrier was observed foraging in the vicinity of the Project, but the Project lacks suitable nesting habitat. This species' nesting habitat is typically associated with coastal salt and freshwater marsh, but it will also nest in grasslands and grain fields. Nests on ground in shrubby vegetation, usually at marsh edge. Foraging habitat generally consists of various low marsh and grassland habitats.
Prairie falcon (*Falco mexicanus*)	CSC BCC Group 1	**Low**. No CNDDB occurrences documented within 10 miles of the Project impact area. This species occurs in grassland, chaparral, coastal dune, and agricultural habitats. It nests on ledges and forages in surrounding open habitats.
Red-shouldered hawk (*Buteo lineatus*)	Group 1	**Moderate**. No CNDDB occurrences documented within 10 miles of the Project impact area. However, there is suitable riparian woodland habitat for this species along portions of the Project linear corridor where it borders the riparian corridor along the San Luis Rey River. Red-shouldered hawk has been observed within 1.0 mile of the Project site during coastal California gnatcatcher surveys for this Project. This species occurs mainly in woodland and forest habitats. They use the same nesting site from year to year.
Sharp-shinned hawk (*Accipiter striatus*)	CSC Group 1	**Low.** No CNDDB occurrences documented within 10 miles of the Project impact area. This species nests in conifer and aspen forests. In addition, it is known to frequent suburbs and agricultural areas where it feeds on birds that use nearby bird feeders. This species is an uncommon winter visitor to San Diego County and there is no evidence of breeding by this species in San Diego County.
Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*)	CSC Group 1	**High**. CNDDB records document 10 occurrences of this subspecies within 10 miles of the Project impact area, including three occurrences within 3 miles of the Project impact area. Coastal sage scrub habitat suitable for this subspecies is located on the Project linear corridor east of the Project site and it has been observed during the coastal California gnatcatcher surveys for this Project. This species typically inhabits coastal sage scrub and sparse mixed chaparral, often on rocky hillsides with patches of grass and herbaceous vegetation.

COMMON NAME/ SCIENTIFIC NAME	LISTING STATUS[1]	POTENTIAL FOR SPECIES OCCURRENCE WITHIN THE PROJECT IMPACT AREA
Southwestern willow flycatcher (*Empidonax traillii extimus*)	FE SE Group 1	**Moderate.** CNDDB records document six occurrences of this subspecies within 10 miles of the Project impact area, including one occurrence within 2 miles of the Project impact area. All occurrences are located southeast and southwest of the Project impact area along the San Luis Rey River. There is suitable riparian woodland habitat for this subspecies along portions of the Project linear corridor where it borders the riparian corridor along the San Luis Rey River. Southwestern willow flycatcher presence surveys have been conducted in suitable habitat along the Project linear corridor (final surveys and report pending). This subspecies uses cottonwood-willow riparian forest for foraging and nesting.
Tricolored blackbird (*Agelaius tricolor*)	CSC BCC Group 1	**Low**. No CNDDB occurrences documented within 10 miles of the Project impact area. This species occurs in grassland, riparian, and marsh habitats. It requires thick vegetation for nesting purposes and often nests near sources of water. It forages mainly in surrounding agricultural fields and grasslands up to 3 miles from the nesting colony.
Turkey vulture (*Cathartes aura*)	Group 1	**Low**. Though this species was observed flying over the Project impact area, there is no appropriate nesting habitat for this species on the Project site. No CNDDB occurrences have been documented within 10 miles of the Project impact area. *C. aura* is commonly observed in open country, woodlands, and farms.
Western bluebird (*Sialia mexicana*)	Group 2	**None**. The Project impact area lacks suitable habitat. No CNDDB occurrences documented within 10 miles of the Project impact area. This species occurs on the edge of conifer forests and is most abundant in areas that have been recently cleared or burned.
Western burrowing owl (*Athene cunicularia hypuagea*)	CSC BCC Group 1	**Low**. CNDDB records document three occurrences of this subspecies within 10 miles of the Project impact area, including an occurrence within 8 miles of the Project impact area. No individuals of this subspecies, or its burrows, castings, or other signs were observed during the field surveys. This subspecies typically utilizes burrows constructed by burrowing mammals that are found in open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation.
Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)	FC SE BCC Group 1	**Low**. CNDDB records document this subspecies within 8 miles of the Project impact area on the Santa Margarita River. There is marginally suitable riparian woodland habitat for this subspecies along portions of the Project linear corridor where it borders the riparian corridor along the San Luis Rey River. This species typically inhabits old growth willow-cottonwood riparian forests along the broad lower flood bottoms of larger river systems.
Yellow warbler (*Dendroica petechia brewsteri*)	CSC Group 2	**Moderate**. CNDDB records document three occurrences of this subspecies within 10 miles of the Project impact area, including an occurrence within 3.5 miles of the Project impact area along the San Luis Rey River. There is suitable riparian woodland habitat for this subspecies along portions of the Project linear corridor where it borders the riparian corridor along the San Luis Rey River. This subspecies nests in various riparian vegetation communities. Prefers willow, cottonwood, aspen, sycamore, and alders for nesting and foraging, but will also nest in montane shrubbery in open conifer forests.

COMMON NAME/ SCIENTIFIC NAME	LISTING STATUS[1]	POTENTIAL FOR SPECIES OCCURRENCE WITHIN THE PROJECT IMPACT AREA
Yellow-breasted chat (*Icteria virens*)	CSC Group 1	**Moderate**. There is suitable riparian woodland habitat for this species along portions of the Project linear corridor where it borders the riparian corridor along the San Luis Rey River. CNDDB records document five occurrences of this species within 10 miles of the Project impact area, including an occurrence within 0.4 mile of the Project impact area along the San Luis Rey River. This species typically inhabits dense, riparian thickets of willow and other brushy vegetation near watercourses. Nesting occurs in low, dense riparian areas.
Reptile/Amphibians		
Arroyo toad (*Bufo californicus*)	FE CSC Group 1	**Moderate**. CNDDB records document nine occurrences of this species within 10 miles of the Project impact area, including an occurrence within 0.4 mile of the Project impact area along the San Luis Rey River. This species is typically found near washes or intermittent streams, including valley-foothill and desert washes. Prefers rivers with sandy banks, willows, cottonwoods, and sycamores and loose, gravelly areas of streams in the drier parts of its range. *B. californicus* breeds in shallow, open sandy and gravelly streams and lives in a variety of upland habitats associated with loose sandy soils for burrowing. The Project impact area does not support suitable breeding habitat for the species. However, suitable aestivation habitat occurs near portions of the Project linear corridor where it borders the riparian corridor along the San Luis Rey River. Other areas south of SR 76 near portions of the Project linear corridor are not suitable aestivation habitat, but may be used during foraging and movement to suitable aestivation habitat.
California red-legged frog (*Rana aurora draytoni*)	FT CSC Group 1	**None**. Project impact area does not support suitable riparian habitat or surface water. No CNDDB occurrences documented within 10 miles of the Project impact area. This subspecies is typically found close to the water's edge along freshwater water bodies in California. It typically spends the dry season in burrows, emerging in the winter or early spring to breed at nearby waterbodies. The presence of the non-native bullfrog often precludes the presence of California red-legged frog.
San Diego horned lizard (*Phrynosoma coronatum blainvillii*)	CSC Group 2	**High**. CNDDB records document 12 occurrences of this subspecies within 10 miles of the Project impact area, including an occurrence within 3.5 miles of the Project impact area. Furthermore, the subspecies was recorded in the Project linear corridor west of the Site during special-status plant surveys. This species inhabits coastal sage scrub and chaparral in arid and semi-arid areas. Prefers friable, rocky, or shallow sandy soils.
Coast patch-nosed snake (*Salvadora hexalepis virgultea*)	CSC Group 2	**Low**. No CNDDB occurrences documented within 10 miles of the Project impact area. This subspecies occurs in scrubland habitat such as chaparral and coastal sage scrub habitats. Suitable habitat for this subspecies is linked to the habitat of its prey, the whiptail lizard. Both species require significant shrub density.
Coastal western whiptail (*Aspidoscelis tigris stejnegeri*) (formerly *Cnemidophorus tigris multiscutatus*)	Group 2	**Low**. CNDDB records document five occurrences of this subspecies within 10 miles of the Project impact area, including an occurrence within 8 miles of the Project impact area. This subspecies is found in deserts and semiarid areas with sparse vegetation and open areas. Also found in woodland and riparian areas.

COMMON NAME/ SCIENTIFIC NAME	LISTING STATUS[1]	POTENTIAL FOR SPECIES OCCURRENCE WITHIN THE PROJECT IMPACT AREA
Coronado skink (*Eumeces skiltonianus interparietalis*)	CSC Group 2	**Low**. CNDDB records document four occurrences of this subspecies within 10 miles of the Project impact area, including an occurrence within 3 miles of the Project impact area. This subspecies is typically found in grassland, chaparral, pinyon-juniper and sage woodland, and pine-oak and pine forests in the Coastal Ranges of southern California. Prefers early successional stages or open areas. Found in rocky areas close to streams and on dry hillsides.
Northern red diamond rattlesnake (*Crotalus ruber ruber*)	CSC Group 2	**High**. This subspecies was not observed within the Project impact area during field surveys. However it was observed immediately outside the western boundary of the Project site. CNDDB records document five occurrences of this subspecies within 10 miles of the Project impact area, including an occurrence within 3 miles of the Project impact area. This subspecies is typically found in chaparral, woodland, grassland, and desert areas from coastal San Diego County to the eastern slopes of the mountains. This subspecies prefers rocky areas and dense vegetation and requires rodent burrows, cracks in rocks or other surface cover for refuge.
Orange-throated whiptail (*Aspidoscelis hyperythra*) (formerly *Cnemidophorus hyperythrus*)	CSC Group 2	**High**. CNDDB records document multiple occurrences of this species within 10 miles of the Project impact area, including an occurrence within 0.7 miles of the Project impact area. Records from 2000 document sightings of this species within 2 miles of the Project impact area in open disturbed coastal sage scrub near fallow agricultural fields. This species is typically found in coastal sage scrub, chaparral, and valley-foothill hardwood habitats. Prefers sandy areas with patches of brush and rocks.
Coastal rosy boa (*Charina trivirgata roseofusca*)	Group 2	**Low**. CNDDB records document three occurrences of this subspecies within 10 miles of the Project impact area, including an occurrence within 4.5 miles of the Project impact area. The Project impact area lacks suitable habitat for this subspecies. However, suitable habitat may be found within and adjacent to the Project linear facilities. This subspecies is typically found in desert and chaparral from the coast to the Mojave and Colorado deserts. Prefers moderate to dense vegetation and rocky cover. Suitable habitats include a mix of brushy cover and large rocks typically on hillsides, in desert canyons or washes and in the mountains.
San Diego banded gecko (*Coleonyx variegatus abbottii*)	Group 1	**None**. The Project impact area lacks suitable habitat. No CNDDB occurrences documented within 10 miles of the Project impact area. This subspecies occurs in arid areas including creosote flats, sagebrush desert, pinyon-juniper woods, and chaparral. Prefers rocky areas, but may occur in rock-free areas such as sand dunes.
San Diego ringneck snake (*Diadophis punctatus similis*)	Group 2	**Low**. CNDDB records document one occurrence of this subspecies approximately 12 miles northwest of the Project impact area. This subspecies prefers open, fairly rocky areas with surface litter or herbaceous vegetation. Often found in moist areas near intermittent streams.
South Coast garter snake (*Thamnophis sirtalis novum*)	CSC Group 2	**None**. The Project impact area lacks suitable habitat. No CNDDB occurrences documented within 10 miles of the Project impact area. *T. novum* occurs in marsh and upland habitats near permanent water that supports substantial stands of riparian vegetation.

COMMON NAME/ SCIENTIFIC NAME	LISTING STATUS[1]	POTENTIAL FOR SPECIES OCCURRENCE WITHIN THE PROJECT IMPACT AREA
Southwestern pond turtle (*Clemmys marmorata pallida*)	Group 1	**None**. The Project impact area lacks suitable habitat for this subspecies. No CNDDB occurrences documented within 10 miles of the Project impact area. The subspecies occurs in ponds, lakes, rivers, streams, creeks, marshes, and irrigation ditches with abundant vegetation and either rocky or muddy bottoms (in woodland, forest, and grassland). It prefers pools to shallower areas when found in streams. Logs, rocks, cattail mats, and exposed banks are required for basking.
Silvery legless lizard (*Anniella pulchra pulchra*)	CSC Group 2	**None**. The Project impact area lacks suitable habitat. No CNDDB occurrences documented within 10 miles of the Project impact area. This species occurs in moist warm loose soil with plant cover. Moisture is essential. Occurs in sparsely vegetated areas of beach dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and stream terraces with sycamores, cottonwoods, or oaks.
Two-striped garter snake (*Thamnophis hammondii*)	CSC Group 1	**None**. The Project impact area lacks suitable habitat. CNDDB records document one occurrence of this species approximately 7.5 miles northwest of the Project impact area. This species is found in coastal California up to 7,000 feet in elevation in or near permanent fresh water. Prefers streams with rocky beds and substantial stands of riparian vegetation.
Western spadefoot (*Spea hammondii*) (formerly *Scaphiopus hammondii*)	CSC Group 2	**Low**. CNDDB records document five occurrences of this species within 10 miles of the Project impact area, including one occurrence within 7.5 miles of the Project impact area. This species occurs primarily in grassland habitats, but can be found in valley-foothill hardwood woodlands. Vernal pools or other seasonal wetlands are essential for breeding and egg-laying.
Invertebrates/Fish		
Arroyo chub (*Gila orcuttii*)	CSC Group 1	**None**. The Project impact area lacks suitable habitat. CNDDB records document four occurrences of this species along the Santa Margarita River, approximately 6 miles to the north of the Project impact area. This species is found in slow water stream sections with mud or sand bottoms.
Terrestrial Insects		
Hermes copper (*Lycaena hermes*)	Group 1	**Low**. No CNDDB occurrences documented within 10 miles of the Project impact area. This species occurs in association with spiny redberry, the larval food plant. Adults nectar on tall flowering plants, especially California buckwheat. The host plant species are located in chaparral and coastal sage scrub habitats.
Monarch butterfly (*Danaus plexippus*)	Group 2	**Low**. No CNDDB occurrences documented within 10 miles of the Project impact area. This species is wide ranging and its habitat needs are dictated largely by the presence of milkweed, the larval food plant. Winter roosts are an important resource to this species that is subject to disturbance from human activities. However, no roosts occur away from the coast. Consequently, no roosts would occur within the Project impact area.

COMMON NAME/ SCIENTIFIC NAME	LISTING STATUS(1)	POTENTIAL FOR SPECIES OCCURRENCE WITHIN THE PROJECT IMPACT AREA
Quino checkerspot butterfly (*Euphydryas editha quino*)	FE Group 1	**None**. The Project impact area lacks suitable habitat for this subspecies. However, plantain (*Plantago erecta*), a larval food plant for this butterfly, was observed during the February 2008 biological survey for the Project linear facilities and during focused surveys for coastal California gnatcatcher. CNDDB records document one occurrence of this subspecies approximately 9.5 miles north of the Project impact area. This subspecies is found in sunny openings within chaparral and coastal sage shrub, grasslands, and vernal pools, often along ridgelines and hilltops in parts of Riverside and San Diego counties. The primary larval food plants for this subspecies are *Plantago erecta*, *P. patagonica*, and *Castilleja exserta*. Focused surveys were completed for the subspecies and it was not detected on the Project site.

(1) California Department of Fish and Game
SE - State listed, endangered
ST - State listed, threatened
CSC - California species of special concern
SFP - State designated, fully protected U.S. Fish and Wildlife Service
FE - Federally listed, endangered
FT - Federally listed, threatened
FC - Federal candidate species (former Category 1 candidates)
BCC - U.S. Fish and Wildlife Service Bird of Conservation Concern
San Diego County
Group 1 - Species has a very high level of sensitivity, either because it is listed as threatened or endangered or it has very specific natural history requirements.
Group 2 - Species becoming less common, but not so rare that extirpation or extinction is imminent. Species tends to be prolific within suitable habitat types.

Southern mule deer (*Odocoileus hemionus fuliginatus*) is designated as a San Diego County Group 2 (overall population decreasing) species. This subspecies can be found in a variety of habitats including coniferous forest, desert shrubs, coastal shrubs, chaparral, and grasslands with shrubs. Although no individuals or sign of this subspecies were observed during the field surveys conducted on March 14 and June 20, 2007 and February 12, 2008, there is sufficient suitable habitat surrounding the Site and within the Project linear corridor to support individuals of the subspecies. Therefore, the subspecies has the potential to occur in the Project area.

White-tailed kite (*Elanus leucurus*) is a CDFG designated Fully Protected Species and San Diego County Group 1 (very high level of sensitivity) species. No CNDDB occurrences were documented for this species within 10 miles of the Project site. However, this species is widespread across California in non-desert lowland terrestrial habitats, in particular, riparian woodlands and oak or sycamore groves near grasslands. There is potential nesting and foraging habitat within and along the Project linear facilities for this species.

Coastal cactus wren (*Campylorhynchus brunneicapillus sandiegensis*) is categorized as a CDFG California Species of Special Concern and San Diego County Group 1 (very high level of sensitivity) species. Cactus wrens are found year-round in southern California, in extensive cactus thickets in coastal lowland habitat. This rare and local subspecies typically nests in cholla

(*Cylindropuntia* spp.) or prickly-pear cactus and feeds mainly on insects. CNNDB records indicate this subspecies has been documented northeast of the Site. However no observations of this species were observed on the Site during field surveys conducted on March 14 and June 20, 2007. Furthermore, the Site does not support the extensive cactus thickets that are typically occupied by the subspecies. However, the coastal sage scrub habitat within 1.0 mile of the Site or within 1,000 feet of the Project may provide the necessary habitat components for this subspecies. Additionally, coastal sage scrub vegetation with a moderate-sized patch of cactus suitable for coastal cactus wren is located west of the Site adjacent to the Project linear facilities.

Coastal California gnatcatcher (*Polioptila californica californica*) is listed as a Federally Threatened species and categorized as a CDFG California Species of Special Concern. This subspecies is an obligate, permanent resident of coastal sage scrub below an elevation of 2,500 feet in southern California and Baja California. The coastal California gnatcatcher feeds on insects, spiders, and some seeds. CNNDB records include occurrences of this species within 3 miles the Project site. No coastal California gnatcatchers were observed during field surveys conducted on March 14 and June 20, 2007. However, a pair of coastal California gnatcatchers were documented successfully nesting within 200 feet of the Project linear corridor located immediately west of the Site during protocol surveys for the subspecies conducted during spring 2008 (Figure 6.6-4). A 45-day survey report documenting the results of these surveys has been prepared and submitted to the USFWS (Appendix 6.6-B). Thus, the coastal California gnatcatcher has a high potential to occur within 1.0 mile of the Site and adjacent portions of the Project linear facilities.

Common barn owl (*Tyto alba*) is a San Diego County Group 2 (overall population decreasing) species. This species is nocturnal and occurs in almost all lowland habitats where it roosts in tree hollows, palm trees, other dense trees, and quiet man-made structures. No CNDDB occurrences have been documented for this species within 10 miles of the Project impact area. However, there are numerous buildings and structures within and adjacent to the Project linear corridor that could provide suitable nesting and roosting sites for this species. Therefore, it has some potential to occur within and adjacent to the Project linear facilities.

Cooper's hawk (*Accipiter cooperii*) is categorized as a CDFG California Species of Special Concern and San Diego County Group 1 (very high level of sensitivity) species. Cooper's hawks are found year-round throughout most of the state, nesting in trees or high places that are typically found in open woodlands or in riparian areas. This species feeds mainly on small to medium-sized birds. CNDDB records of this species occur within 2.5 miles of the Project site. No Cooper's hawks were observed during field surveys conducted on March 14 and June 20, 2007. However, Cooper's hawks have been observed during subsequent coastal California gnatcatcher surveys on the Site. The Site does not support suitable nesting habitat. However, habitats within 1.0 mile of the Site and within the Project linear facilities do support trees and riparian areas where Cooper's hawks could nest.

Golden eagle (*Aquila chrysaetos*) is a CDFG designated Fully Protected Species and San Diego County Group 1 (very high level of sensitivity) species. Golden eagles are found year-round throughout most of the state, nesting on cliff edges and less often in tall trees. This species feeds

mainly on mammals such as ground squirrels and rabbits and can be found perched or soaring in the air over hillsides. CNDDB records of this species have been documented within 1.0 mile of the Site. The surrounding western, northern, and eastern hillsides are suitable foraging habitat while nearby cliffs may provide suitable nest sites for this species. No golden eagles were observed during field surveys conducted on March 14 and June 20, 2007. The Site does not support suitable nesting habitat for the species. However, areas within 1.0 mile of the Site and within 1,000 feet of the Project linear facilities provide suitable foraging habitat and may provide nesting sites for this species.

Least Bell's vireo (*Vireo bellii pusillus*) is listed as a Federally and State Endangered and San Diego County Group 2 (overall population decreasing) species. Least Bell's vireo is restricted to riparian habitats found mostly in southern California lowlands. The subspecies is vulnerable to nest parasitism from the brown-headed cowbird (*Molothrus ater*). CNDDB records of this subspecies have been documented throughout the San Luis Rey River. Though no least Bell's vireos were recorded during field surveys conducted on June 20, 2007, the subspecies has been heard in the riparian areas adjacent to the Project linear corridor during protocol surveys for the subspecies conducted during spring 2008 (remaining surveys and 45-day survey report still pending). The Site does not support suitable least Bell's vireo habitat. However, the San Luis Rey River is located within 1.0 mile of the Project and approximately 1,500 linear feet of the Project linear corridor along SR 76 is within 300 feet of riparian woodland along the San Luis Rey River that could be occupied by this subspecies. Two singing males have been heard in the adjacent riparian habitat during surveys conducted as of June 2008 (Figure 6.6-4).

Red-shouldered hawk (*Buteo lineatus*) is a San Diego County Group 1 (very high level of sensitivity) species. This hawk is historically a resident of lowland riparian woodland, but with the loss of riparian habitat, it has spread into oak woodlands, introduced eucalyptus groves, and large, dense stands of urban trees. The Project site lacks suitable habitat for this species. However, there is riparian woodland, oak trees, and non-native eucalyptus trees suitable for this species along portions of the Project linear corridor where it borders the riparian corridor along the San Luis Rey River and SR 76. No CNDDB occurrences have been documented within 10 miles of the Project Site. However, a red-shouldered hawk was observed in riparian woodland within 1.0 mile west of the Project site along the San Luis Rey River during coastal California gnatcatcher surveys for this Project.

Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*) is categorized as a CDFG California Species of Special Concern and San Diego County Group 1 (very high level of sensitivity) species. This subspecies is fairly common in sage scrub, burned chaparral, and along firebreaks in mature chaparral. Rufous-crowned sparrows primarily eat small grass and forb seeds, fresh grass stems, plant shoots, ants, grasshoppers, ground beetles, and scale insects. CNNDB records document this subspecies within 3 miles of the Project site. No southern California rufous-crowned sparrows were observed during field surveys conducted on March 14 and June 20, 2007. However, during subsequent coastal California gnatcatcher surveys this subspecies was observed in the coastal sage scrub adjacent to the Site. The Site does not support suitable habitat for the subspecies. However, the surrounding areas within 1.0 mile of the Site

and within and adjacent to the Project linear facilities located in coastal sage scrub may provide suitable foraging and nesting habitat for this subspecies.

Southwestern willow flycatcher (*Empidonax traillii extimus*) is listed as a Federally Endangered and San Diego County Group 1 (very high level of sensitivity) species. This subspecies uses cottonwood-willow riparian forest for foraging and nesting and feeds on insects by either aerially gleaning from trees, shrubs, and herbaceous vegetation or hawking larger insects by waiting on exposed foraging perches and capturing insects in flight. CNDDB records document this subspecies approximately 2 miles from the Project site within the San Luis Rey River. No southwestern willow flycatchers were observed on the Site during field surveys conducted on June 20, 2007. Nor does the Site support suitable habitat for the subspecies. However, the San Luis Rey River is located within 1.0 mile of the Project and approximately 1,500 linear feet of the Project linear corridor along SR 76 is within 300 feet of riparian woodland along the San Luis Rey River. Protocol surveys for the subspecies have been conducted during spring 2008 and no evidence of the subspecies has been documented as of June 2008 (remaining surveys and 45-day survey report still pending).

Yellow-breasted chat (*Icteria virens*) is categorized as a CDFG California Species of Special Concern and San Diego County Group 1 (very high level of sensitivity) species. Yellow-breasted chats are found seasonally throughout most of California during the summer months and are seen in dense brushy patches and hedgerows in open sunny areas and in dense riparian woodlands. This species feeds on small insects gleaned from leaves and twigs, as well as berries and nectar. CNDDB records of this species were documented approximately 0.50 mile east of the Project site along the San Luis Rey River. No yellow-breasted chats were observed during field surveys conducted on June 20, 2007. Nor does the Site support suitable habitat for the species. However, the San Luis Rey River is located within 1.0 mile of the Project and approximately 1,500 linear feet of the Project linear corridor along SR 76 is within 300 feet of riparian woodland along the San Luis Rey River that provides suitable foraging and nesting habitat for this species.

Yellow warbler (*Dendroica petechia brewsteri*) is categorized as a CDFG California Species of Special Concern and San Diego County Group 2 (overall population decreasing) species. This subspecies is considered fairly common in mature riparian woodland on coastal slopes. CNDDB records document five occurrences of this subspecies within a 10-mile radius of the Project site, including an occurrence within 0.4 mile of the Project site along the San Luis Rey River. No yellow warblers were observed during field surveys conducted on June 20, 2007. Nor does the Site support suitable habitat for the species. However, the San Luis Rey River is located within 1.0 mile of the Project and approximately 1,500 linear feet of the Project linear corridor along SR 76 is within 300 feet of riparian woodland along the San Luis Rey River that provides suitable foraging and nesting habitat for this species.

Arroyo toad (*Bufo californicus*) is listed as a Federally Endangered and San Diego County Group 1 (very high level of sensitivity) species. This toad prefers riparian habitats with sandy streambeds and an overstory of Fremont's cottonwood (*Populus fremontii*), western sycamore (*Platanus racemosa*), and willow trees (*Salix* spp.). However, some populations occur along streams that are within coniferous forest. The arroyo toad breeds both within streams and in

small backwater pools that form along the stream margins, usually in relatively shallow water (4.0 inches). CNDDB records document nine occurrences of this species within a 1-mile radius of the Project site, including an occurrence within 0.4 mile of the Project site along the San Luis Rey River. No arroyo toads were observed during field surveys conducted on March 14 and June 20, 2007. Furthermore, the Site does not support suitable riparian habitat or surface water that could be used by this species. However, the San Luis Rey River bed and adjacent riparian habitat south of the Site provide suitable habitat for the species. Furthermore, SR 76 is considered to be an effective barrier to the movement of arroyo toads to areas north of SR 76 due to the level of traffic flow on the roadway. Other habitats south of SR 76 are not considered suitable as aestivation habitat for the species, but individuals could move across these areas when foraging or searching for suitable aestivation habitat. Consequently, individuals could be found in these areas during the active season of the species (i.e., February 1 to July 31). A focused habitat assessment for this species was conducted by Cadre Environmental within the Site, Project linear facilities, and adjacent lands. It was determined that no breeding habitat is present within the Project site and that the species is not expected within or near any portions of the Project other than the Project linear corridor south of SR 76.

San Diego horned lizard (*Phrynosoma coronatum blainvillii*) is categorized as a CDFG California Species of Special Concern and San Diego County Group 2 (overall population decreasing) species. This subspecies occurs from the Transverse Ranges south to Baja California. CNDDB records of this subspecies have been documented approximately 3.5 miles from the Site. The San Diego horned lizard inhabits coastal sage scrub and chaparral, occurring on friable, rocky or shallow sandy soils. Small insects such as ants, particularly the harvester ant (*Pogonomyrmex* spp.), are the preferred food of this ground-dwelling lizard. No San Diego horned lizards or harvester ants were observed during field surveys conducted on March 14 and June 20, 2007. However, several individuals were found in coastal sage scrub within the Project linear corridor immediately west of the Site during surveys conducted by Ecological Outreach Services between May 19 and 22, 2008. Consequently, chaparral and coastal sage scrub habitats within 1.0 mile of the Site and within and adjacent to the Project linear facilities are considered to support this subspecies.

Northern red diamond rattlesnake (*Crotalus ruber ruber*) is categorized as a CDFG California Species of Special Concern and San Diego County Group 2 (overall population decreasing) species. The northern red diamond rattlesnake is a heavy-bodied, venomous pit viper, which occurs in southern California and Baja California from the coast to eastern mountain slopes in rocky areas and dense vegetation such as chaparral, woodland, grassland, and desert. The rattlesnake's diet consists of lizards, birds, and small mammals, including ground squirrels, wood rats, and rabbits. CNDDB records of this subspecies have been documented approximately 3 miles from the Project site. Furthermore, an individual of this subspecies was observed immediately west of the Site during a field survey for cultural resources conducted on April 14, 2007. Therefore, habitats within 1.0 mile of the Site and within and adjacent to the Project linear facilities are considered to support this subspecies.

Orange-throated whiptail (*Aspidoscelis hyperythra*) is categorized as a CDFG California Species of Special Concern Species and San Diego County Group 2 (overall population

decreasing) species. The orange-throated whiptail is found throughout southwestern California and Baja California, in washes, along streams, on terraces, and in other sandy areas where there are rocks, patches of brush, and rocky hillsides. CNDDB records of this species have been documented approximately 0.70 mile from the Project site. No orange-throated whiptails were observed during field surveys conducted on March 14 and June 20, 2007. However, habitats within 1.0 mile of the Site and within and adjacent to the Project linear facilities may support this species.

Coastal rosy boa (*Charina trivirgata roseofusca*) is categorized a San Diego County Group 2 (overall population decreasing) species. The rosy boa occurs throughout southern California and western Arizona and is typically found in dense and rocky chaparral and coastal sage scrub habitats from the coast to the desert. CNDDB records of this species have been documented approximately 4.5 miles from the Project site. No rosy boas were observed during field surveys conducted on March 14 and June 20, 2007. However, habitats within 1.0 mile of the Site and adjacent to the Project linear facilities may support this species.

Quino checkerspot butterfly (*Euphydryas editha quino*) is listed as a Federally Endangered and San Diego County Group 1 (very high level of sensitivity) species. This butterfly is a subspecies of Edith's checkerspot (*Euphydryas editha*). The historical range of the Quino checkerspot butterfly included Los Angeles, Orange, Riverside, and San Diego counties, as well as locations in northern Baja California, Mexico. It is now limited to certain regions in Riverside and San Diego counties, and northern Baja California. The host plants for Quino checkerspot butterfly larvae are plantain (*Plantago erecta*), woolly plantain (*P. patagonica*), Coulter's snapdragon (*Antirrhinum coulterianum*), dark-tip bird's beak (*Cordylanthus rigidus* ssp. *setigerus*), and purple owl's clover (*Castilleja exserta*). Adult butterflies will usually emerge in March and last through April to sometimes early May, depending on winter rains and temperatures. Adults nectar from the flowers of low growing annuals, but shrubs such as California buckwheat are also utilized as nectar sources. This butterfly can be found in coastal sage scrub and chaparral, in open meadows adjacent to coastal sage scrub, and oak woodland as well as juniper woodland and semi-desert scrub. Regardless of the type of habitat, it must have open areas with low-growing and sparse vegetation. Old dirt roads and foot trails, especially those located along hilltops, are suitable for the butterfly and provide a good environment for the territorial males to rest. In addition, the presence of clay soils and cryptogamic crusts favor host plant growth. CNDDB records document one occurrence of this subspecies approximately 9.5 miles north of the Project site in Riverside County. No Quino checkerspot butterflies or their host plants were observed on the Site during field surveys conducted on March 14 and June 20, 2007. Though plantain (*Plantago erecta*), a larval host plant for this subspecies, was observed during other biological surveys within the Project linear corridor and protocol surveys for coastal California gnatcatcher within the Project site, the Site does not support suitable habitat for the subspecies and focused protocol surveys within the Project linear facilities found no evidence of the subspecies. Areas within 1.0 mile of the Site and within 1,000 feet of the Project linear facilities may provide suitable habitat for this subspecies, but it does not occur within the Site or Project linear facilities. A 45-day survey report documenting the results of the protocol surveys for the subspecies has been prepared and submitted to the USFWS (Appendix 6.6-C).

6.6.1.4 Site Vicinity

The biological resources evaluated for the Project include vegetation communities, plants, wildlife, and wildlife corridors. Regional biological resources described in Section 6.6.1.3 are based on records from the CDFG CNDDB. A more intensive evaluation, including field surveys, was conducted for the area within 1.0 mile of the Site and within 1,000 feet of Project linear facilities. The Project linear facilities include the proposed natural gas pipeline lateral and an underground electric transmission interconnection. The area within 1.0 mile of the Site and within 1,000 feet of Project linear facilities is referred to herein as the Site "vicinity".

6.6.1.4.1 Field Surveys

Preliminary investigations included examination of aerial photographs, database searches, and review of available data on regional special-status species including:

- CNDDB records documented within 10 miles of the Project site;
- County of San Diego Guidelines for Determining Significance Sensitive Plant and Animal List; and
- Draft North County Multiple Species Conservation Program (MSCP).

A comprehensive list of special-status species was compiled, including all special-status species that are known to or have the potential to occur in the Project region.

General field surveys to identify biological resources in the Site vicinity focused on documenting special-status plant and animal species, as well as the existing natural vegetation communities. Surveys of the Site and Project linear facilities were conducted on March 14 and June 20, 2007 and February 7 and 12, 2008. These studies included:

- Meandering transects throughout the Site and linear facilities south and north of SR 76 and on either side of Pala del Norte Road within SDG&E's property boundary, and two staging areas south of SR 76 to document and record biological resources;
- Slowly driving Pala del Norte Road outside of SDG&E's property boundary. Pala del Norte Road is a paved road that parallels the western boundary of the Site before turning north and upslope of the Site. Conducting surveys on foot on either side of Pala del Norte Road outside of SDG&E's property boundary was denied by private property owners.
- Driving multiple slow passes on SR 76 from Rice Canyon Road to a point approximately 2,000 feet to the east. Conducting surveys on foot on either side of SR 76 in this area was denied by private property owners.
- Photographing biological resources and natural vegetation communities within the Site and Project linear facilities.

In addition, a general biological assessment of the Fallbrook Public Utility District (FPUD) reclaimed water pickup site was conducted on December 14, 2007. A copy of the biological

assessment is included as Appendix 6.6-D. The FPUD freshwater pick up site was reviewed on May 26, 2008 and the information was included on the biological maps which includes the linear facilities and the site.

Wildlife species were identified directly by sight and/or vocalizations, and indirectly by scat, tracks, or burrows. Field notes were maintained throughout the surveys and observed occurrences of special-status species were mapped. The presence of suitable habitat for special-status species was also identified.

Focused field surveys or habitat assessments to document the presence of federally-listed species (or suitable habitats) that occur in the Site vicinity were conducted by individuals with current federal recovery permits (i.e., Section 10[a][1][A] permits) for the target species. Species addressed by focused surveys or habitat assessments included rare plant surveys, Stephen's kangaroo rat (Appendix 6.6-E), southwestern willow flycatcher (Appendix 6.6-F pending), least Bell's vireo (Appendix 6.6-G pending), coastal California gnatcatcher (Appendix 6.6-B), arroyo toad (Appendix 6.6-H), and Quino checkerspot butterfly (Appendix 6.6-C). The latter focused surveys were conducted consistent with current USFWS survey protocols. Each of the protocol surveys have been completed with the exception of the southwestern willow flycatcher and least Bell's vireo surveys which are scheduled for completion prior to July 17, 2008.

A jurisdictional waters and wetlands delineation was completed for the Site and linear facilities. A copy of the report is included as Appendix 6.5-B.

A rare plant and vegetation survey was completed by Virginia Moran of Ecological Outreach Services. The surveys were conducted from May 19 to 22, 2008.

6.6.1.4.2 Site, Linear Facilities, and Water Pickup Stations

The Site is situated on a portion of a former orchard. Most of the trees remain with their condition ranging from extremely stressed to dead so there is little foliage. The northwesternmost corner of the Site was used for orchard debris disposal and supports disturbed Diegan coastal sage scrub. A fenced storage yard is located approximately 100 feet south of the Site and within one of the Project's proposed construction laydown areas. A SDG&E substation is located approximately 700 feet southwest of the Site. Pala del Norte Road, a paved private road, generally parallels the western boundary of the Site. This road leads to residences located in the hills to the north and east of the Site and provides an entry way to both the SDG&E substation and the storage yard. Pala del Norte Road is located between the SDG&E substation and the Project site. Habitat adjacent to the northern and western boundaries of the Site consists of coastal sage scrub. Upland drainages that run in a generally north to south direction are located to the west and east of the Site. Both of these drainages have been extensively disturbed by orchard land-clearing and debris disposal. The western drainage is lined with scattered remnants of Diegan coastal sage scrub vegetation while the eastern drainage is lined with open coast live oak woodland. An abandoned avocado grove is located east of the eastern drainage. One of three proposed construction laydown areas is located immediately south of the Site between the southern boundary and SR 76 to the south. It is part of the same orchard on which the Site is located and supports non-native grasses and ruderal species. SR 76 is located south of the Site

and this proposed construction laydown area. The San Luis Rey River is located parallel to and south of SR 76. The river is lined with southern riparian forest, but has been extensively disturbed in this area due to aggregate mining activities. The other two proposed construction laydown areas are located south of SR 76 on developed land previously occupied by dairy operations.

The proposed underground electric transmission line will be located primarily within the roadbed or shoulder of Pala Del Norte Road and within a paved driveway that provides access to the existing substation from Pala Del Norte Road. Orchard, non-native grassland, and Diegan coastal sage scrub are the only vegetation types that occur on or adjacent to the underground transmission line route. Transmission line construction will temporarily disturb a small amount of Diegan coastal sage scrub. No wetland or riparian vegetation occurs on or adjacent to the underground transmission line route.

Segment A of the natural gas pipeline begins at the Site boundary and ends at the southeast corner of the Pala substation. For this segment, the pipeline will be adjacent to the underground electric transmission line between the Site and the south end of Pala Del Norte Road. At the south end of Pala Del Norte Road, the transmission line and gas pipeline routes will split. The underground electric transmission line will be installed within the asphalt driveway to the substation as previously described, while the gas pipeline will be routed along an existing unpaved access road that extends beneath the electric transmission lines along the south side of the substation. The unpaved access road extends to an existing unpaved graded pad at the southeast corner of the substation, where this segment terminates. Segment A will be located entirely within developed areas (i.e., roads and road shoulder) except for a short segment of Diegan coastal sage scrub that will be temporarily disturbed for construction. No wetland or riparian vegetation occurs on or adjacent to pipeline route Segment A.

Segment B begins at the existing unpaved graded pad at the southeast corner of the Pala substation and traverses generally steep upland terrain comprised of Diegan coastal sage scrub and ends just south of SR 76 approximately 0.4 air mile southwest of the Pala substation in a former dairy farm. This segment follows existing unpaved roads throughout the upland terrain, except for the easternmost approximately 400 feet where the route is cross-country. Within the former dairy farm, the route is within terrain characterized as urban/developed. No wetland or riparian vegetation occurs on or adjacent to pipeline route Segment B.

Segment C begins on the south side of SR 76 approximately 0.4 air mile southwest of the Pala substation and generally parallels SR 76, following existing roads through the two former dairy farms and riparian forest that occurs between the dairy farms. The west end of Segment C occurs at a second crossing of SR 76, where the pipeline will cross back over to the north side of the road. This segment of the gas pipeline will not disturb any natural habitat, jurisdictional waters, or wetlands. Through the riparian forest, the pipeline construction limits of disturbance will be entirely within an existing 12- to 15-foot-wide unpaved road. The vertical and horizontal clearances required for construction equipment have been verified by field reconnaissance, and only a few branches will require trimming through this area to facilitate safe and efficient construction (if the segment is trenched). Outside of the riparian forest area, Segment C traverses

terrain that is exclusively urban/developed and agriculture with no natural habitat on or adjacent to the pipeline route. It should be noted that the portion of Segment C that is within 300 feet of riparian forest may be directionally drilled to avoid potential impacts to southwestern willow flycatcher or least Bell's vireo.

Segment D is an approximately 0.4-mile-long segment that will be constructed within urban developed land within or adjacent to the SR 76 right-of-way. Agricultural land and the highway are adjacent to this segment, with no natural habitat in areas to be disturbed. Oak woodland and riparian habitat occur near the west end of this segment, but on the opposite side of Rice Canyon Road and SR 76 from where pipeline construction will occur. Diegan coastal sage scrub occurs near the east end of this segment, but well beyond the planned limits of pipeline construction disturbances.

Water for the Project will be supplied by FPUD from two offsite pickup locations that will be constructed, owned, and operated by FPUD. The reclaimed pickup station will be on disturbed land with native habitat (Appendix 6.6-D). The fresh water pickup station will be on disturbed land with no native habitat (Figure 6.6-5). The FPUD fresh water pickup station is in Fallbrook, approximately 5.1 air miles west of the Site. FPUD has an existing easement and water main at this location. The Applicant will obtain an adjacent easement area for this facility and will convey the easement to FPUD. The reclaimed water pickup station will be located within an existing FPUD water reclamation plant facility on disturbed land with no disturbance to native habitat. The reclaim water pickup station location is in Fallbrook, approximately 8.5 air miles from the Site.

6.6.1.4.3 Vicinity Vegetation Communities

The following descriptions are based on habitat classifications from the Preliminary Description of the Terrestrial Natural Communities of California (Holland 1986) as revised by Thomas Oberbauer in Terrestrial Vegetation Communities in San Diego County Based on Holland's Descriptions (March 2005). These vegetation classifications are categorized within the Project vicinity, including the Site, proposed construction laydown area, and Project linear facilities. The Site consists of an abandoned citrus orchard. The entire Site and adjacent areas to the west, south, and east have been extensively disturbed by orchard activities including land clearing and debris disposal beyond the limits of the trees. The following vegetation communities were observed on and around the Site: non-native grassland, Diegan coastal sage scrub, open coast live oak woodland, disturbed areas, and developed land. Within the Site, there is one established Engelmann oak that the grove appears to have been planted around. In addition, there are a few Engelmann oak saplings and several coast live oak saplings (*Quercus agrifolia*) spread through the Site and surrounding areas within the grove. The oaks are isolated and not part of a larger woodland or forest community. The Project linear facilities consist of undisturbed habitat, existing roads, and areas disturbed by former dairy production. The following vegetation communities were observed on and around the linear facilities: Diegan coastal sage scrub, non-native grassland, southern riparian forest, open coast live oak woodland, agriculture, southern cottonwood willow riparian forest, disturbed areas, and developed land. Figure 6.6-5 shows the distribution of these communities on and immediately surrounding the Site and Project linear

facilities. In addition, southern mixed chaparral was observed within the Project vicinity. A jurisdictional delineation of waters and wetlands was also completed for the Site and Project linear facilities. A copy of the report is included as Appendix 6.5-B. No waters or wetlands will be impacted by the Project.

Non-native grassland (42200)
The non-native grassland occurs primarily to the south of the Site where construction staging and Site secondary access will occur. This habitat is comprised of non-native grasses and herbaceous broadleaf species including foxtail chess (*Bromus madritensis* ssp. *rubens*), short-pod mustard (*Hirschfeldia incana*). filaree (*Erodium cicutarium*), tocalote (*Centaurea melitensis*), and wild oats (*Avena barbata*). This vegetation community is disturbed. However, this habitat type supports a variety of bird, small mammal, and reptile species (e.g., foraging habitat for raptors).

Orchard (18100)
The orchard has not been irrigated for at least 5 years and is no longer viable. Most of the orchard's trees have not yet been cut or removed from the Site. Vegetation found in the orchard understory and between trees consists of non-native grasses and herbaceous broadleaf species, similar to those found in the non-native grassland. Since the Site has not been maintained, a few coastal sage shrub species have established within the Site.

Diegan coastal sage scrub (32500)
Disturbed Diegan coastal sage scrub located in the extreme northwestern corner of the Site is comprised of native scrub species including coastal sagebush, sawtooth goldenbush (*Hazardia squarrosa* var. *grindelioides*), and laurel sumac. This habitat is of low quality due to disturbance by agricultural operations and is intermixed with non-native species of tocalote and short-pod mustard.

The majority of the area surrounding the Site to the north and west is Diegan coastal sage scrub. This sub-shrub community supports coastal sagebrush, white sage, sawtooth goldenbush, California buckwheat, California broom, and golden yarrow *(Eriophylum confertiflorum* var. *confertiflorum*). The proposed natural gas pipeline and electric transmission line will be installed, in part, within Diegan coastal sage scrub.

Disturbed habitat (11300)
The disturbed area located south of the Site is composed primarily of bare ground and debris from past agricultural activities and the fenced storage yard. The disturbed area includes a driveway to the storage yard that was the entrance to the orchard.

Disturbed areas located primarily south of SR 76 are associated with former aggregate mining operations and dairy cattle operations. The proposed natural gas pipeline will be installed, in part, within disturbed habitat.

Urban/Developed (12000)
One developed area is a storage yard located in the proposed construction laydown area immediately south of the Site. The storage yard contains equipment and several small outbuildings and is completely surrounded by chain-link fence.

Additional developed areas are located mostly south of SR 76 and are associated with former aggregate mining operations and dairy operations. The proposed natural gas pipeline will be installed, in part, within urban/developed land.

Open coast live oak woodland (71161)

Open coast live oak woodland located east of the Site is described as a disturbed upland drainage that supports coast live oaks and Engelmann oaks. Other species recorded in this vegetation community include laurel sumac, sugar bush (*Rhus ovata*), blue elderberry (*Sambucus mexicanus*), southern honeysuckle (*Lonicera subspicata* var. *denudata*), poison oak (*Toxicodendron diversilobum*), and Russian thistle (*Salsola tragus*). A stand of open coast live oak woodland is also present immediately north of SR 76 and on a hillside at the intersection of SR 76 and Rice Canyon Road. The proposed natural gas pipeline will be installed outside of this vegetation community.

Southern mixed chaparral (37120)

Southern mixed chaparral is located in the southeastern portion of the Project vicinity and in patches within the northern and northwestern portions of the Project vicinity. Southern mixed chaparral is often a dense shrub community growing on steep to very steep hillsides and slopes. Typically this habitat supports a variety of species such as laurel sumac, chamise, mission manzanita (*Xylcoccus bicolor*), toyon (*Heteromeles arbutifolia*), and Our Lord's candle (*Hesperoyucca* [*Yucca*] *whipplei*). No Project activities are planned in or adjacent to this vegetation community.

Southern riparian forest (61300)

Southern riparian forest within the Project vicinity is located south of the Project along the San Luis Rey River. This vegetation community is categorized as a bottomland, riparian community that often supports arroyo willow, black willow, coast live oak, sycamore, poison oak, and mugwort (*Artemisia douglasiana*). The proposed natural gas pipeline will be installed, in part, within an existing road bed that traverses through a small portion of the southern riparian forest.

Southern cottonwood willow riparian forest (61330)

A small amount of southern cottonwood willow riparian forest is located south of SR 76 at the western end of the proposed natural gas pipeline, immediately south of SR 76 at the intersection of SR 76 and Rice Canyon Road. The southern cottonwood willow riparian forest in this location is open and dominated by arroyo willow and mule fat (*Baccharis salicifolia*), with scattered blue elderberry (*Sambucus mexicana*). The proposed natural gas pipeline will be installed outside of this vegetation community.

Table 6.6-3 presents a list of plant and wildlife species that were observed and the habitat in which they were observed on the Site vicinity and linear corridor vicinity. These species were observed during the March 14 and June 20, 2007 and February 7 and 12, 2008 reconnaissance surveys and during the focused 2007-2008 surveys for coastal California gnatcatcher that began December 5, 2007.

Table 6.6-3 – Plant and Wildlife Species Observed During March 2007, June 2007, and February 2008 Biological Surveys, and 2007-2008 Focused Surveys of the Site and Project Linear Facilities Vicinity

COMMON NAME	SCIENTIFIC NAME	HABITAT
PLANTS		
Bedstraw	*Galium* sp.	DDCSS
Bermuda buttercup	*Oxalis pes-caprae*	Disturbed, NNG, Orchard
Black sage	*Salvia mellifera*	DDCSS, DCSS, OCLOW
Blue dicks	*Dichelostemma capitatum*	DCSS, DDCSS
Blue elderberry	*Sambucus mexicanus*	NNG, OCLOW
Bristly ox-tongue	*Picris echioides*	Disturbed, NNG, Orchard
Bush mallow	*Malocothamnus fasciculatus*	DCSS, DDCSS
Calabazilla	*Cucurbita foetidissima*	NNG, Orchard
California brickellbush	*Brickellia californica*	DCSS
California broom	*Lotus scoparius*	DCSS, DDCSS,
California buckwheat	*Eriogonum fasciculatum* var. *fasciculatum*	DCSS, DDCSS
California burclover	*Medicago polymorpha*	DDCSS, DIS, NNG
California peony	*Paeonia californica*	DCSS, DDCSS
California poppy	*Eschscholzia californica*	DCSS, DDCSS
Coastal sagebrush	*Artemisia californica*	DCSS, DDCSS, Orchard
California wood-sorrel	*Oxalis albicans* ssp. *californica*	DCSS
Chia	*Salvia columbariae*	DCSS, DDCSS
Climbing milkweed	*Sarcostemma cynanchoides* ssp. *hartwegii*	DCSS
Coast cholla	*Cylindropuntia* [*Opuntia*] *prolifera*	DCSS, DDCSS
Coast live oak	*Quercus agrifolia* var. *agrifolia*	OCLOW, Orchard
Coast monkeyflower	*Mimulus aurantiacus*	DCSS
Coast prickly-pear	*Opuntia littoralis*	DCSS, DDCSS
Coast Range melic	*Melica imperfecta*	DCSS
Coffee fern	*Pellaea andromedifolia*	DCSS
Collar lupine	*Lupinus truncatus*	DCSS, DDCSS
Common mallow	*Malva neglecta*	Orchard
Coyote brush	*Baccharis pilularis*	DCSS, DDCSS, Disturbed, Orchard
Crete weed	*Hedypnois cretica*	Disturbed. NNG
Curly dock	*Rumex crispus*	Disturbed, Orchard
Desert wild grape	*Vitis girdiana*	OCLOW
Dodder	*Cuscuta* sp.	DCSS, OCLOW,

COMMON NAME	SCIENTIFIC NAME	HABITAT
Dove-foot geranium	*Geranium molle*	DDCSS, DIS, NNG, Orchard
Dove weed	*Eremocarpus setigerus*	NNG, Orchard
Dwarf nettle	*Urtica dioica*	DIS, OCLOW,
Engelmann oak	*Quercus engelmannii*	OCLOW, Orchard
Eucalyptus	*Eucalyptus* sp.	DIS
False-mustard	*Camissonia californica*	DCSS, DDCSS
Fascicled tarweed	*Deinandra fasciculata*	DDCSS, NNG
Fennel	*Foeniculum vulgare*	Disturbed, NNG, Orchard,
Foxtail chess	*Bromus madritensis* ssp. *rubens*	DDCSS, DCSS, , DIS, NNG, Orchard
Golden-yarrow	*Eriophylum confertiflorum* var. *confertiflorum*	DCSS, DDCSS
Granny's hairnet	*Pterostegia drymarioides*	DDCSS
Hare barley	*Hordeum murinum*	DCSS,DDCSS, NNG, Orchard
Holly-leaf redberry	*Rhamnus ilicifolia*	DCSS
Horehound	*Marrubium vulgare*	Orchard
Horseweed	*Conyza canadensis*	DEV, DIS, NNG
Indian-fig	*Opuntia ficus-indica*	DIS, URB
Jimson weed	*Datura wrightii*	DIS, Orchard
Laurel sumac	*Malosma laurina*	DCSS, DDCSS, NNG
Lemon	*Citrus limon*	Orchard
Long-beak filaree	*Erodium botrys*	DDCSS, DIS, NNG, Orchard
Man-root	*Marah macrocarpus*	DCSS DDCSS, OCLOW,
Mediterranean grass	*Schismus barbatus*	DDCSS, DIS
Milk thistle	*Silybum marianum*	DDCSS, DIS
Miner's-lettuce	*Claytonia perfoliata*	DCSS
Morning-glory	*Calystegia macrostegia*	DDCSS, NNG, OCLOW
Mouse-ear chickweed	*Cerastium glomeratum*	DDCSS, DIS,
Mule fat	*Baccharis salicifolia*	Orchard
Olive	*Olea europaea*	DIS
Pampas grass	*Cortaderia selloana*	Orchard
Parry's phacelia	*Phacelia parryi*	DCSS
Parry's tetracoccus	*Tetracoccus dioicus*	DCSS, DDCSS
Pectocarya	*Pectocarya* sp.	DCSS
Peruvian peppertree	*Schinus molle*	DIS, NNG,
Phacelia	*Phacelia* sp.	DCSS, DDCSS, OCLOW
Pincushion	*Chaenactis* sp.	DCSS, DDCSS
Pine	*Pinus* sp.	DIS

COMMON NAME	SCIENTIFIC NAME	HABITAT
Plantain	*Plantago erecta*	DCSS, DDCSS
Poison oak	*Toxicodendron diversilobum*	DCSS, OCLOW
Popcornflower	*Plagiobothrys* sp.	DCSS, DDCSS
Prickly lettuce	*Lactuca serriola*	NNG, Orchard
Prickly-pear	*Opuntia* sp.	DCSS, OCLOW
Prickly sow thistle	*Sonchus asper*	DDCSS, Disturbed, NNG, URB/DEV
Pygmy-weed	*Crassula connata*	DCSS,DDCSS
Rancher's fireweed	*Amsinckia menziesii*	DDCSS, NNG,
Rattlesnake weed	*Chamaesyce albomarginata*	DDCSS, DIS
Red maids	*Calandrinia ciliata*	DCSS, DDCSS
Red-stem filaree	*Erodium cicutarium*	DDCSS, DIS, NNG, Orchard
Ripgut grass	*Bromus diandrus*	DDCSS, DIS, NNG, Orchard
Russian thistle	*Salsola tragus*	DIS, NNG OCLOW, Orchard,
Sawtooth goldenbush	*Hazardia squarrosa* var. *grindelioides*	DCSS,DDCSS
Shining peppergrass	*Lepidium nitidum* var. *nitidum*	DDCSS, DIS, NNG
Short-pod mustard	*Hirschfeldia incana*	DDCSS, DIS, NNG, Orchard
Silverback fern	*Pentagramma triangularis* ssp. *viscosa*	DCSS
Slender wild oats	*Avena barbata*	DIS, NNG, Orchard
Smilo grass	*Piptatherum miliaceum*	DIS, NNG
Smooth cat's-ear	*Hypochaeris glabra*	DDCSS, DIS, NNG
Soap plant	*Chlorogalum pomeridianum* var. *pomeridianum*	DCSS, DDCSS
Soft chess	*Bromus hordeaceous*	DCSS, DDCSS, DIS, NNG, Orchard
Southern honeysuckle	*Lonicera subspicata* var. *denudata*	OCLOW
Spotted hideseed	*Eucrypta chrysanthemifolia* var. *chrysanthemifolia*	DDCSS, DIS, OCLOW
Stinging lupine	*Lupinus hirsutissimus*	DCSS, DDCSS
Sugar bush	*Rhus ovata*	DCSS, DDCSS, NNG
Sun cup	*Camissonia* sp.	DCSS, DDCSS,
Telegraph weed	*Heterotheca grandiflora*	DIS, NNG, Orchard
Tocalote	*Centaurea melitensis*	DDCSS, DIS, NNG, Orchard
Toyon	*Heteromeles arbutifolia*	OCLOW
Tree tobacco	*Nicotiana glauca*	DIS,NNG
Virgin's bower	*Clematis ligusticifolia*	DCSS, OCLOW
Western ragweed	*Ambrosia psilostachya*	DIS, Orchard,
White-stem filaree	*Erodium moschatum*	DDCSS, Disturbed, Orchard,

COMMON NAME	SCIENTIFIC NAME	HABITAT
White sage	*Salvia apiana*	DCSS, DDCSS,
Wild oat	*Avena fatua*	DIS, NNG,
Wild radish	*Raphanus raphanistrum*	DIS, NNG
Wishbone bush	*Mirabilis californica*	DCSS, DDCSS
Yellow bush penstemon	*Keckiella antirrhinoides* var. *antirrhinoides*)	DCSS, DDCSS
INVERTEBRATES		
Acmon blue	*Icarcia acmon*	Orchard
Behr's metalmark	*Apodemia mormo virgulti*	DDCSS
Brown garden snail	*Cantareus aspersus*	Orchard
Pacific Sara orangetip	*Anthocharis sara*	DDCSS
Painted lady	*Vanessa cardui*	DDCSS, DIS
REPTILES		
Northern red diamond rattlesnake(1)	*Crotalus ruber ruber*	DCSS
Side-blotched lizard	*Uta stansburiana*	DCSS
Western fence lizard	*Sceloporus occidentalis*	Orchard
BIRDS		
Acorn woodpecker	*Melanerpes formicivorus*	OCLOW, Overhead
American crow	*Corvus brachyrhynchos hesperis*	Overhead
American kestrel	*Falco sparverius*	Overhead
Anna's hummingbird	*Calypte anna*	DCSS, Orchard,
Bewick's wren	*Thryomanes bewickii*	DCSS, DDCSS
Black phoebe	*Sayornis nigricans*	Orchard
Blue-gray gnatcatcher	*Polioptila caerulea*	DCSS, DDCSS, DIS
Brown-headed cowbird	*Molothrus ater*	DDCSS, Orchard
Bushtit	*Psaltriparus minimus*	DCSS, DDCSS
California towhee	*Pipilo crissalis*	DCSS, DDCSS, Orchard
Cliff swallow	*Petrochelidon pyrrhonata*	Overhead
Coastal California gnatcatche(2)	*Polioptila californica californica*	DCSS
Common raven	*Corvus corax*	DCSS, Orchard, Overhead
European starling	*Sturnus vulgaris*	Orchard
House finch	*Carpodacus mexicanus*	Orchard
Lesser goldfinch	*Carduelis psaltria*	DCSS, DDCSS, Orchard
Mourning dove	*Zenaida macroura*	DDCSS, Orchard
Northern flicker	*Colaptes auratus*	DCSS, Orchard
Northern harrier	*Circus cyaneus*	DCSS, NNG, Orchard
Northern mockingbird	*Mimus polyglottos*	Orchard

COMMON NAME	SCIENTIFIC NAME	HABITAT
Red-tailed hawk	*Buteo jamaicensis*	DCSS, Orchard, Overhead
Say's phoebe	*Sayornis saya*	DCSS, DDCSS
Southern California rufous-crowned sparrow	*Aimophila ruficeps canescens*	DCSS, DDCSS
Spotted towhee	*Pipilo maculatus*	DCSS, DDCSS
Turkey vulture	*Cathartes aura*	Overhead
Western kingbird	*Tyrannus verticalis*	Disturbed, Orchard
Western meadowlark	*Sturnella neglecta*	DDCSS, DIS, Orchard
Western scrub jay	*Aphelocoma californica obscura*	DCSS, DDCSS, Orchard
White-crowned sparrow	*Zonotrichia leucophrys*	DCSS, DDCSS
Wrentit	*Chamaea fasciata henshawi*	DCSS, DDCSS, Orchard
Yellow-rumped warbler	*Dendroica cornat*	DCSS, DDCSS, DIS, Orchard
MAMMALS		
Audubon's cottontail	*Sylvilagus audubonii*	DCSS, DDCSS, Orchard
California ground squirrel	*Spermophilus beecheyi nudipes*	DIS, Orchard
Coyote (scat)	*Canis latrans*	DCSS, DDCSS
Dusky-footed woodrat (middens)	*Neotoma fuscipes*	DCSS, Orchard

(1) Observed west of the Project Site during an April 14, 2007 cultural survey
(2) Observed during USFWS protocol-level surveys for coastal California gnatcatcher
OCLOW = Open coast live oak woodland
DDCSS = Disturbed Diegan coastal sage scrub
DCSS = Diegan coastal sage scrub
NNG = Non-native grassland
DEV = Developed
DIS=Disturbed habitat

6.6.1.4.4 Vicinity Wildlife

Table 6.6-3 presents a list of wildlife species that were observed in the Project vicinity during the March 14, 2007, June 20, 2007, and February 7 and 12, 2008 biological surveys, and the 2007-2008 focused surveys for coastal California gnatcatcher, and the habitats in which they were observed. The Site is an abandoned citrus orchard. Therefore, the vegetation communities within the Site contain limited and marginally suitable wildlife habitat. However, the Project vicinity, which includes the Project linear facilities, has a large percentage of native vegetation and potentially supports suitable wildlife habitat and wildlife movement.

Wildlife inhabiting southern riparian forest within the Project vicinity typically include riparian-associated bird species such as least Bell's vireo, western wood pewee, yellow warbler, yellow-breasted chat, southwestern willow flycatcher, oak titmouse, song sparrow, ash-throated flycatcher, violet-green swallow, house wren, and Cooper's hawk. Amphibians and reptiles inhabiting these habitat types include the arroyo toad, western spadefoot, western toad, two-

striped garter snake, and San Diego ringneck snake. Mammals inhabiting these areas include such species as the brush rabbit, Virginia opossum, raccoon, coyote, and bobcat.

Wildlife inhabiting the Diegan coastal sage scrub habitat within the Project vicinity typically includes small mammals such as deer mouse, Pacific pocket mouse, San Diego desert woodrat, and desert cottontail, which are prey for coyotes, raptors, and other predators. Coastal sage scrub provides foraging habitat for a large array of bird species, including but not limited to the coastal California gnatcatcher, California thrasher, California towhee, coastal cactus wren, common raven, spotted towhee, red-tailed hawk, white-tailed kite, and American kestrel. Reptiles, including the coast horned lizard, orange-throated whiptail, western fence lizard, side-blotched lizard, San Diego gopher snake, and northern red diamond rattlesnake, can also be found within this habitat type.

Wildlife inhabiting the non-native grassland habitat within the Project vicinity typically includes mammals such as Botta's pocket gopher, desert cottontail, California ground squirrel, American badger, and coyote. Non-native grasslands provide foraging habitat for a variety of raptor species, including the American kestrel, red-tailed hawk, white-tailed kite, northern harrier, ferruginous hawk, turkey vulture, golden eagle, and barn owl. These areas provide foraging habitat for other bird species including mourning dove, western meadowlark, Say's phoebe, song sparrow, white-crowned sparrow, California horned lark, western kingbird, and loggerhead shrike. Reptiles such as the side-blotched lizard and gopher snake also inhabit non-native grasslands.

Wildlife inhabiting the southern mixed chaparral habitat within the Project vicinity includes mammals such as the Dulzura pocket mouse, San Diego northwestern pocket mouse, San Diego black-tailed jackrabbit, San Diego desert woodrat, desert cottontail, coyote, bobcat, and mountain lion. Chaparral supports a large array of bird species including, but not limited to Anna's hummingbird, Bewick's wren, California quail, California towhee, spotted towhee, California thrasher, mourning dove, northern mockingbird, lesser goldfinch, Bell's sage sparrow, southern California rufous-crowned sparrow, red-tailed hawk, American kestrel, white-tailed kite, and golden eagle. Reptiles found in this habitat type include the western fence lizard, side-blotched lizard, orange-throated whiptail, southern alligator lizard, and northern red diamond rattlesnake.

6.6.1.4.5 Special-Status Species with the Potential to Occur in the Project Vicinity

Plants

Five special-status plant species have been historically recorded within the Project vicinity, according to the CNDDB database. These species are chaparral nolina, felt-leafed monardella, mesa horkelia, Parry's tetracoccus, and Robinson's peppergrass. According to the CNDDB, Parry's tetracoccus and chaparral nolina have been documented in an area encompassing the Site, while felt-leafed monardella and mesa horkelia have been documented approximately 1.0 mile east of the Site, and Robinson's peppergrass has been documented approximately 0.70 mile northeast of the Site. Parry's tetracoccus has been documented just inside the western boundary of the Site and along the northern and eastern Site boundaries during the March 14, 2007,

June 20, 2007, February 7 and 12, 2008 reconnaissance surveys, and subsequent focused surveys for special-status plants.

Wildlife

Seven special-status wildlife species have been historically recorded within the Project vicinity, according to the CNDDB. These species are coastal cactus wren, golden eagle, least Bell's vireo, southwestern willow flycatcher, yellow-breasted chat, arroyo toad, and orange-throated whiptail. Coastal cactus wren has been observed about 0.4 mile northeast of the Site and the orange-throated whiptail has been observed 0.8 mile south of the Site, while golden eagle has been recorded within less than 1.0 mile from the Site. No special-status wildlife species were observed in the Project vicinity during the March 14 and June 20, 2007 surveys. However, coastal California gnatcatcher was observed in the Project vicinity during the non-breeding and breeding seasons focused surveys for this subspecies. The coastal California gnatcatcher is listed as a Federally Threatened species and California Species of Special Concern. In addition, a northern red diamond rattlesnake was observed in the Project vicinity during an April 18, 2007 cultural survey. The northern red diamond rattlesnake is a CDFG California Species of Special Concern. The only other special-status species that have been recorded in the Project vicinity is San Diego horned lizard. This latter subspecies was found during focused special-status plant surveys conducted during May 2008.

6.6.2 Impacts

6.6.2.1 Significance Criteria

The following significance criteria are based on the California Environmental Quality Act (CEQA) Guidelines, Appendix G, Environmental Checklist Form and standards adopted by responsible agencies. Using these criteria, an impact may be considered significant if the Project results in:

- 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 CDFG or USFWS.
- A substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFG or USFWS.
- 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.
- Substantial interference with the movement of any native, resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
- 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 Community Conservation Plan, or other approved local, regional or state Habitat Conservation Plan.
- The potential to degrade the quality of the environment, substantially reduce the habitat of fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, or reduce the number or restrict the range of a rare or endangered plant or animal species.

6.6.2.2 Construction Impacts and Mitigation

This section describes the temporary and permanent impacts to biological resources associated with Project construction and proposed mitigation measures. Direct impacts to biological resources will occur from construction as a result of brushing, grading, and trenching the Project area. Indirect impacts will occur on the fringes of Project site construction due to increased noise and human presence for the 6-month construction period. Indirect noise impacts of construction along the pipeline routes will occur only for short periods of time (e.g., hours) at any given area, since the pipelines will be constructed in short segments at a time.

Upgrades to existing transmission systems that will be required for the Project are described in Sections 2.0 and 3.0. SDG&E work that will occur within the Pala substation is not expected to result in any biological impacts beyond those described herein. Transmission system upgrades downstream of the substation will be required as described in Section 3.0, including reconductoring, changing relay settings, and other work. Transmission system upgrades will be performed by SDG&E and will be finalized in conjunction with the Large Generator Interconnecting Agreement. Once the Large Generator Interconnection Agreement is executed, transmission system upgrade design work will be completed by SDG&E. The potential for additional impacts to biological resources may be determined once the design for transmission system upgrades is developed by SDG&E. If needed, additional surveys will be completed to address these transmission system upgrades to the extent they may be located outside of the survey boundaries described herein.

Project construction disturbance areas are identified in Table 6.6-4.

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Table 6.6-4 – Vegetation Communities and Construction Impacts

HABITAT/ VEGETATION COMMUNITIES	ONSITE IMPACT (ACRES)	LINEAR FACILITIES IMPACT (ACRES)	SITE ACCESS (ACRES)	CONSTRUC-TION LAYDOWN IMPACT (ACRES)	FUEL MODIFI-CATION ZONE (1) (ACRES)	RECLAIMED WATER PICKUP STATION (ACRES)	FRESH WATER PICKUP STATION (ACRES)	TOTAL (ACRES)
Diegan Coastal Sage Scrub	0..3	7.5	0.1	0.0	1.4	0.0	0.0	9.3
Urban developed	0.0	8.3	0.0	0.0	0.3	0.3	0.1	9.0
Disturbed	0.0	2.0	0.0	0.0	0.0	0.1	0.0	2.1
Non-native Grassland	0..1	0.1	0.2	2.5	0.4	0.0	0.1	3.4
Southern Riparian Forest	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Agriculture	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0
Southern Cottonwood Willow Riparian Forest	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Orchard	7.9	0.0	0.7	2.5	0.1	0.0	0.0	11.2
TOTAL	8.3	18.9	1.0	5.0	2.2	0.4	0.2	36.0

(1) Includes areas where brush will be cleared for fire protection in conformance with County requirements and the project Fire Protection Plan.

6.6.2.2.1 Special-Status Species

The Site including access, Project linear facilities, fuel modification zone, water pickup construction areas and temporary construction laydown area will occupy approximately 9.3, 18.9, 2.2, 0.6 and 5.0 acres, respectively (please refer to Table 6.6-4). Linear facility construction will include trenching and backfilling for installation of the natural gas pipeline and electric transmission line (though directional drilling may be utilized along some small segments of the natural gas pipeline to avoid potential noise and visual impacts to southwestern willow flycatcher, least Bell's vireo, and arroyo toad located south of SR 76. Project construction will include dust control. In addition, Occupation Safety and Health Administration (OSHA) and other standards for noise will be followed during construction to minimize noise impacts to wildlife including special-status species. A noise analysis is provided in Section 6.12, Noise Control.

The contractor will be responsible to obtain water during construction. The reclaimed water site is an existing facility and therefore no impact to existing habitat will occur. No native vegetation communities or habitat occur at the freshwater pickup site. There will be no impacts to biological resources from construction or use of the site.

Storm water discharges from the Site during construction will be in accordance with the State General National Pollutant Discharge Elimination System (NPDES) Permit. A Stormwater Pollution Prevention Plan (SWPPP) and Best Management Practices (BMPs) will be implemented to prevent impacts to storm water quality. Wildlife will not be impacted by construction storm water runoff because of these water quality protection measures and changes in runoff conditions will be minor (see Section 6.5, Water Resources).

Coastal California Gnatcatcher

Construction noise and activities will be short-term, as construction will occur only during working hours, and the construction period is only 6 months. Along the linear facilities, construction noise will generally occur only for several hours in a given location as construction progresses in short segments along the pipeline route. Wildlife will be able to temporarily relocate to adjacent lands if disturbed by noise and activities from Project construction. Project impacts on most wildlife from construction noise and activities are will be less than significant. However, Project impacts on the coastal California gnatcatcher from construction noise and activities during the breeding season (March 15 through June 30) may be significant. One nesting pair of this subspecies was documented within approximately 200 feet of the Project linear facilities west of the Site (Figure 6.6-4). Potential indirect Project impacts to this pair of coastal California gnatcatchers will be reduced to less than significant through the acquisition of a Habitat Loss Permit (HLP) for coastal sage scrub from the DPLU (as allowed under Section 4[d] of the Federal ESA) and compliance with all associated permit conditions. The Project will impact approximately 9.3 acres of coastal sage scrub. The actual impacts to coastal sage scrub and nonnative grassland will be verified at the time of construction and is expected to be mitigated based on actual impact acreage. Based on discussions with DPLU and USFWS, the County will require a minimum 2:1 compensation ratio for the disturbance to Diegan coastal sage scrub. Orange Grove Energy is researching approved mitigation banks in San Diego County and will coordinate with DPLU and USFWS through the HLP process on approval. A limited construction period (i.e., June 30 to March 15) will also be implemented within 500 feet of the documented nests of the coastal California gnatcatcher pair. If construction were to occur within coastal sage scrub between March 15 to June 29 (the breeding period) a survey will be conducted to identify nesting gnatcatchers. Construction will be directed to stay a minimum of 500 feet away from the nesting gnatcatchers until the young have fledged. Implementation of these Project measures will reduce potential impacts to coastal California gnatcatcher to less than significant.

Southwestern Willow Flycatcher and Least Bell's Vireo

Construction noise and activities may also indirectly impact nesting southwestern willow flycatcher and least Bell's vireo along those portions of the pipeline route within 300 feet of the riparian forest south of SR 76. Avoidance of these latter impacts will be achieved from the use of a limited construction period in these areas (i.e., no construction in these areas between March 15 and September 15) or directional drilling of this portion of the pipeline route to avoid indirect impacts within 300 feet of the suitable habitat for these species. A limited construction period will also be utilized to address potential direct impacts to arroyo toad south of SR 76. Implementation of these Project measures will reduce potential impacts to these species to less than significant.

Other Special-Status Species Associated with Coastal Sage Scrub

Other special-status species that are associated with coastal sage scrub and occur in the Project vicinity (e.g., San Diego horned lizard and northern red diamond rattlesnake) could also be directly affected during construction of the overland portion of the Project linear facilities immediately west of the Site. No long-term impacts due to habitat loss would occur as a result of construction in this portion of the Project linear corridor since most of the disturbance would

occur within an existing dirt road. However, individuals of terrestrial species could fall into the construction trench and not be able exit the trench. Such individuals could then be subject to temperature stress, dessication, and other adverse impacts that result in mortality or morbidity. To reduce such potential impacts to less than significant, passive escape ramps will be constructed to allow wildlife species to exit the trench when the trench will be left open during the night. In addition, a biological monitor will be onsite during active construction to remove individuals that have entered the trench. Implementation of these Project measures will reduce potential impacts to these species to less than significant.

Parry's Tetracoccus

Parry's tetracoccus was observed just inside the northern and eastern boundaries of the Site (Figure 6.6-4). Therefore, direct impacts to approximately 10 individual Parry's tetracoccus will occur during Site grading and establishment of the fuel modification zone. Parry's tetracoccus was also observed immediately outside the northern and eastern boundaries of the Site where no disturbance will occur and no impacts to these plants are expected. Immediately prior to construction, all Parry's tetracoccus shrubs will be flagged by a botanist familiar with this species in the Project area and vicinity. A preconstruction conference will be held with all on-the-ground construction staff and the Project foreman to ensure they are aware of these populations and to avoid impacts to these populations if possible. Orange Grove Energy will retain a botanist familiar with the species to develop a plan for relocation of the shrubs that will be impacted by construction. The shrubs will be relocated out of the impact area using equipment that may be onsite for construction. Care will be taken to remove as much of the intact root system as possible to ensure survival. Parry's tetracoccus plants would be transplanted quickly, or, if limited storage was necessary, roots will be balled and kept moist throughout the waiting period. A transplant plan will be written in cooperation with the Project foreman and project manager. Alternatively, Parry's tetracoccus could be maintained by collecting seed from affected shrubs or from shrubs in the area to maintain genetic integrity, grown, and the plants transplanted on the Project site or in an adjacent mitigation area. Implementation of these mitigation measures will reduce the impact to this species to less than significant.

Engelmann Oak

Project construction will impact one established Engelmann oak, a few Engelmann oak saplings, and several small coast live oaks during Site grading. However, construction will include landscaping of portions of the Site with Engelmann oaks. Therefore, the impact is considered less than significant.

Native Trees

Fifty-three native trees with a diameter at breast height of 6 inches or greater were identified as being located within the linear corridor. Most of the native trees were located within the riparian zone and include arroyo willow, black willow, and cottonwood. All native trees will be protected if possible. Immediately prior to construction, all native trees in the vicinity of the Project area will be flagged and a preconstruction conference will be held with all on-the-ground construction staff and the Project foreman to ensure they are aware of these trees and to avoid impacts to these trees. Trees can be harmed directly, or by construction impacts within and

outside the tree's drip line. Critical zones of a tree include the canopy and drip line, however, roots can extend outward at twice the length of the canopy. Therefore, these zone will be designated and flagged, and fenced off if necessary using orange construction fencing. Flagging and construction fencing will be maintained throughout the construction period. Implementation of these mitigation measures will reduce the impacts to native trees to less than significant.

6.6.2.2.2 Special-Status Species not Expected to be Impacted

The following special-status plant species were not observed during the March 14, 2007, June 20, 2007, and February 7 and 12, 2008 field surveys or focused special-status plants surveys conducted during May 2008. Therefore, they are not expected to be impacted by the Project for the following reasons:

- Chaparral nolina is a distinctive evergreen perennial that occurs in Diegan coastal sage scrub and open chaparral. This species was not observed during 2007 or 2008 Site and Project linear corridor surveys. Therefore, no significant impacts to this species are expected to occur.
- Felt-leaved monardella grows in chaparral and cismontane woodland. It typically occurs beneath mature stands of chamise under xeric conditions and has a tendency to occupy undeveloped peaks and mountainous ridgelines. Areas that will be disturbed for Project construction lack suitable habitat for this special-status species and this suffrutescent perennial was not observed during the 2007, or 2008 Site and Project linear facilities surveys. Therefore, no significant impacts to this species are expected to occur.
- Mesa horkelia often occupies low-growing, moderately dense chaparral habitat with associated chamise, manzanita (*Arctostaphylos* spp.), and Cleveland's sage (*Salvia clevelandii*). Areas that will be disturbed for Project construction lack suitable habitat for this special-status species and this herbaceous perennial was not observed during the 2007 or 2008 Site and Project linear corridor surveys. Therefore, no significant impacts to this species are expected to occur.
- Robinson's peppergrass is an annual species that grows in chaparral and coastal sage scrub openings generally well away from the coast in the foothill elevations. This subspecies is typically observed in dry, exposed locations, rather than beneath a shrub canopy or along creeks. This subspecies was not observed during 2007 or 2008 Site and Project linear corridor surveys. Therefore, no significant impacts to this subspecies are expected to occur.

Special-status wildlife species that occur within the Project vicinity according to the CNDDB include coastal cactus wren, golden eagle, least Bell's vireo, southwestern willow flycatcher, yellow-breasted chat, arroyo toad, and orange-throated whiptail. None of the above mentioned species were observed during the March 14, 2007, June 20, 2007, or February 2008 field surveys, during a December 2007 habitat assessment within 500 feet of the Site for coastal cactus wren and least Bell's vireo, or during a December 2007 habitat assessment of the Site for arroyo toad. Focused species-specific surveys for least Bell's vireo, southwestern willow flycatcher, and

coastal California gnatcatcher have been conducted and have documented least Bell's vireo and coastal California gnatcatcher to date (final surveys and 45-day reports pending for the least Bell's vireo and southwestern willow flycatcher). Furthermore, San Diego horned lizard and northern red diamond rattlesnake have been documented within the Project vicinity during surveys conducted for the Project. Coastal cactus wren, golden eagle, yellow-breasted chat, and orange-throated whiptail are not expected to be impacted by the Project for the following reasons:

- The coastal cactus wren has been historically documented in the northeastern portion of the Project vicinity and is known to occur and nest in coastal sage scrub and chaparral communities occupied by extensive patches of cactus, particularly native prickly pear. There is suitable habitat west of the Project site. Furthermore, no coastal cactus wrens have been observed during the March 2007, June 2007, or February 2008 Site and Project linear corridor surveys, or during the December 2007 habitat assessment for coastal cactus wren and least Bell's vireo. No significant impacts to this special-status species are therefore expected to occur.
- Golden eagles have been historically documented within the vicinity of the Site and the ranges around the northern, northeastern, eastern, southeastern, and southern territories of the Project vicinity. This species rarely occurs in grassland and open areas, preferring to hunt and nest along vast hillsides unfrequented by human activity. Areas that will be disturbed for Project construction lack suitable nesting habitat for this special-status species, but do provide foraging habitat. CNDDB records from 2000 document a golden eagle nest approximately 1-mile west of Pala in deciduous woods. The Project impact area is therefore considered to be located within a golden eagle nest territory and foraging by this species could occur within the Project area. Since all Project construction activities will be limited to a small percentage of available foraging habitat in the Project vicinity and no golden eagles have been observed during the March 2007, June 2007, or February 2008 Site and Project linear corridor surveys, or during the December 2007 habitat assessment for coastal cactus wren and least Bell's vireo, no significant impacts to this species are expected to occur.
- Yellow-breasted chat was documented approximately 0.50 mile east of the Site, along the San Luis Rey River. This species is known to occupy dense thickets, brush, and streamside tangles. There is suitable riparian woodland habitat for this species along portions of the natural gas pipeline route where it borders the riparian corridor along the San Luis Rey River. No yellow-breasted chat have been observed during the June 2007 Site and Project linear corridor surveys. Furthermore, the limited construction period or directional drilling used to address potential impacts to southwestern willow flycatcher and least Bell's vireo will also address potential impacts to this species.
- Orange-throated whiptail was documented approximately 1.0 mile south of the Site. This species inhabits a variety of vegetation communities that thrive in loose, well-drained soils including chaparral, coastal sage scrub, and coastal strand vegetation. This species appears to be tied to the presence of certain perennial plants, probably because its staple prey (termites) requires these perennial plants as a food base. The

northwestern corner of the Site supports disturbed Diegan coastal sage scrub and therefore may provide suitable habitat for this special-status species. There is suitable habitat west of the Project site where the natural gas overland segment is proposed. Orange-throated whiptail has not been observed during the March 2007, June 2007, or February 2008 Site and linear corridor surveys, or during the December 2007 habitat assessment for coastal cactus wren and least Bell's vireo, Since all Project construction activities will be limited to a small percentage of available habitat in the Project vicinity (mostly in existing dirt road), and this species is capable of moving away from imminent threat; the Project will not have a substantial adverse effect on the regional long-term survival of the orange-throated whiptail and no significant impacts to this species are expected to occur.

- Least Bell's vireo has been historically documented in and around the San Luis Rey River with the closest occurrence approximately 0.30 mile south of the Site. This subspecies primarily inhabits riparian woodlands, scrub, and thickets for breeding. There is suitable riparian woodland for this species along portions of the proposed natural gas pipeline route where it borders the riparian corridor along the San Luis Rey River. Furthermore, individuals have been heard singing during protocol surveys for the subspecies conducted during spring 2008 in the riparian corridor adjacent to the natural gas pipeline route (final surveys and 45-day report pending). However, the use of a limited construction period (i.e., September 15 to March 15) or directional drilling will temporarily or spatially, respectively, avoid potential indirect impacts to this subspecies from construction noise and activities.
- Southwestern willow flycatcher was documented approximately 700 feet south of SR 76, north of the San Luis Rey River. This subspecies is known to occupy low brushy vegetation, especially riparian willow thickets. There is suitable riparian woodland habitat for this species along portions of the natural gas pipeline route where it borders the riparian corridor along the San Luis Rey River. Although no southwestern willow flycatchers have been recorded during protocol surveys conducted as of June 2008, the use of a limited construction period or directional drilling will temporarily or spatially, respectively, avoid potential indirect impacts to this subspecies from construction noise and activities. .
- Arroyo toad has been documented approximately 0.5 mile east of the Site and almost 1.0 mile south of the Site. This species breeds in shallow, sandy, low-gradient streams adjacent to stands of cottonwood, sycamore, and willow. Some populations of arroyo toad occur in streams within coniferous forest. Areas that will be disturbed for Project construction lack suitable breeding habitat for this species. However, a habitat assessment conducted by Cadre Environmental identified the presence of suitable upland habitat for this species in the riparian forest on either side of the dirt road that traverses this area. No other suitable aestivation habitat occurs south of SR 76, but individuals could cross unsuitable habitats while foraging or searching for suitable aestivation habitat. Consequently, a limited construction period (i.e., August 1 to January 31) will be utilized to avoid potential impacts to this species during its active season.

There are no CNDDB occurrence records within the Project vicinity for the following special-status wildlife species: Dulzura pocket mouse, pallid bat, San Diego desert woodrat, Stephen's kangaroo rat, western mastiff bat, western yellow bat, Bell's sage sparrow, coastal California gnatcatcher, Cooper's hawk, Southern California rufous-crown sparrow, yellow warbler, San Diego horned lizard, northern red diamond rattlesnake, coastal rosy boa, two-striped garter snake, and Quino checkerspot butterfly. Although the southern riparian forest, open coast live oak woodland, Diegan coastal sage scrub, non-native grassland, southern cottonwood willow riparian forest, and rock outcrops within the Project vicinity may provide suitable habitat for these species, these habitat types, with the exception of Diegan coastal sage scrub, will not be impacted by Project construction. Therefore, with the exception of the species that have already been addressed and documented to occur in or immediately adjacent to the Project linear corridor (e.g., coastal California gnatcatcher, San Diego horned lizard, and northern red diamond rattlesnake), there is no available data on other special-status species to suggest that they will be significantly impacted by the Project.

As referenced in the preceding paragraphs, Project impacts on special-status species will be minimized to ensure that the Project will not have substantial adverse impacts on any special-status species. Minimization efforts include protocol-level surveys to locate special-status species that could be impacted by construction activities, use of limited construction periods to avoid the active seasons of special-status species that could be adversely impacted by construction activities, directional drilling of specific reaches of the natural gas pipeline corridor to avoid indirect adverse impacts on adjacent special-status species (e.g., from noise impacts), use of passive escape ramps in trenches left open over night, and use of a biological monitor to remove wildlife species that enter the trench during active construction.

6.6.2.2.3 Riparian and Wetland Habitat

Project construction will not occur within any riparian or wetland habitats. The proposed natural gas pipeline will be installed within an abandoned road surrounded by riparian habitat immediately south of SR 76. Project construction will impact the road, but may also involve some limited removal of branches that overhang the road during construction (and only if this reach of the pipeline is trenched). Project construction will not affect any riparian habitat or other sensitive natural community identified in local or regional plans, policies or regulations, or by the CDFG or USFWS in any other way. Habitats occurring in the Site vicinity are shown in Figure 6.6-5.

6.6.2.2.4 Wildlife Nursery Sites and Corridors

Project construction will not impact any surface water bodies. Therefore, it will not affect any fish species. In addition, there are no identified resident or migratory wildlife corridors that will be blocked by Project construction. Trenching within the coastal sage scrub located in the Project linear corridor immediately west of the Site may result in a short-term barrier to the movement of terrestrial species, but will last only until the trench is backfilled and is expected to involve only short reaches of trench at any given time. Therefore, the potential impact is considered temporary and less than significant.

Project construction will not prevent wildlife access to foraging habitat, breeding habitat, water sources, or other areas necessary for their reproduction or survival. Therefore, no impacts from Project construction will occur to wildlife nursery sites, migration or dispersal corridors, or other important wildlife linkages.

6.6.2.2.5 Established Plans, Policies and Ordinances

Project construction will be consistent with established laws, ordinances, regulations and standards LORS (See Section 6.6.5, Laws, Ordinances, Regulations and Standards).

6.6.2.2.6 Significance Summary

Given that Project construction will only occur for approximately 6 months and involve the implementation of identified impact avoidance and minimization measures for potential impacts to special-status species, the Project will not have a substantial adverse impact on any special-status species. The Project will result in impacts to 7.87 acres of Diegan Coastal Sage Scrub, but this impact is considered less than significant with the acquisition of a Habitat Loss Permit from the DPLU and compliance with all associated permit conditions. The Project will not impact any other sensitive natural community or wetlands. It will not interfere with wildlife movement or impede the use of native wildlife nursery sites. The Project will conform to applicable LORS. Thus, Project construction impacts to biological resources will be less than significant.

6.6.2.3 Operations and Maintenance Impacts and Mitigation

6.6.2.3.1 Special-status Species

Project operations and maintenance are not expected to result in any direct impacts to special-status species since there will be no new surface disturbance associated with these activities. Furthermore, the underground design of the electric transmission line interconnection will avoid the potential for transmission line collisions by avian species. Portions of the Site will be planted vegetation to stabilize soils and to help screen the power plant from public view. Native tree, shrub, and grass species will be used for project landscaping.

Project operations and maintenance will include emission control measures to comply with relevant air quality standards, which will also protect biological resources from indirect impacts from operations emissions. The Project will utilize acoustical enclosures around noisy equipment to limit noise emissions. Noise levels will be below applicable standards, which will protect biologic resources from significant indirect impacts from noise Wildlife, if any, that is disturbed by noise from Project operations and maintenance should be able to relocate to adjacent lands. Project operations and maintenance impacts on wildlife from emissions and noise are therefore expected to be less than significant.

The Project linear facilities will be located underground and their operation will not affect biological resources.

The FPUD will provide water for Project operations. Since the water will be from an existing municipal supply, it will have no impact on biological resources.

Storm water discharges from the Site will be in accordance with BMPs to prevent impacts to storm water quality and to prevent erosion impacts. Wildlife will not be impacted by storm water runoff because of these water quality protection measures and because changes in runoff conditions will be minor.

An educational program will be implemented to enhance workers' awareness in order to protect biological resources. This program will be implemented through mandatory initial training with periodic reinforcement using measures such as biological resources sensitivity reminders, periodic training sessions, posters, or signs. Considering these factors, Project operations and maintenance will not directly or indirectly impact special-status plant or wildlife species or natural vegetation communities.

Based on the above, Project operations and maintenance will not have a significant adverse impact on any special-status species. Based on the preceding analysis, the impacts of Project operations and maintenance on special-status species will be less than significant.

6.6.2.3.2 Riparian and Wetland Habitat

Project operations and maintenance will not impact any riparian or wetland habitat since no facilities are located in these habitats. Thus, the Project will not affect any riparian habitat or other sensitive natural community identified in local or regional plans, policies or regulations, or by the CDFG or USFWS. Habitats occurring in the Site vicinity are shown in Figure 6.6-5.

6.6.2.3.3 Wildlife Nursery Sites and Corridors

As described in Section 6.6.1, there are no identified wildlife nursery sites or movement corridors in the Project vicinity that could be impacted by the Project. Thus, Project operations and maintenance will not impact these types of biological resources. Considering these factors, Project operations and maintenance activities will have no impact on species movement and nursery sites.

6.6.2.3.4 Plans, Policies and Ordinances

Project operations and maintenance will be consistent with established LORS (See Section 6.6.5, Laws, Ordinances, Regulations and Standards).

6.6.2.3.5 Significance Summary

Based on the preceding evaluations, Project operation and maintenance impacts to biological resources will be less than significant.

6.6.2.4 Cumulative Impacts

Cumulative impacts refer to incremental, individual environmental effects of two or more projects when considered together. These impacts taken individually may be minor, but may be collectively significant. A cumulative impact to biological resources may occur if the contribution of the Project and other projects has 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, thereby threatening to eliminate a plant or animal community, or reduce the number or restrict the range of a rare or endangered plant or animal species.

The Site occurs on orchard land zoned for General Agriculture that includes a de minimis amount of disturbed Diegan coastal sage scrub. This land has low to moderate habitat value and provides only low-quality foraging opportunities for local wildlife species. The removal of the orchard and non-native grassland at the Site will incrementally reduce the amount of disturbed low productivity habitat available throughout the region. The linear facilities will impact Diegan coastal sage scrub and disturbed habitat. The impact from the linear facilities is considered temporary. The areas will be stabilized as part of the post construction measures and are expected to revegetate. In addition, mitigation for coastal sage scrub impacts will be provided though the HLP process. No habitat fragmentation impacts will occur and wildlife movement will not be precluded or otherwise significantly impacted.

Other projects that could potentially contribute to cumulative impacts are identified in Section 6.1.3. The Project will not contribute to impacts to wetlands or riparian vegetation. It also will not contribute to the blocking of animal movement or restriction of the range of any species, in part because the Site is surrounded by large expanses of higher quality natural habitat and agricultural land. The Project will not conflict with LORS. The Project will not contribute to impacts to fish species or water bodies. Therefore, there is no potential for cumulative impacts related to these biological resources. The Project, when considered in conjunction with other projects identified in Section 6.1.3, will not reduce the habitat of a wildlife species, cause a wildlife population to drop below self-sustaining levels, or threaten to eliminate any natural communities. Considering these factors, cumulative impacts related to biological resources will be less than significant**.**

6.6.2.5 Project Design Features

The following Site characteristics and Project design features limit the impacts to biological resources to a level that is less than significant:

- The Site was selected so that Project site construction and operations will occur within an abandoned orchard, disturbed habitat, and developed land, to limit the removal of natural vegetation or wildlife habitat.
- Limited construction periods will be used to avoid the active season of federally-listed species that occur along some portions of the Project linear corridor or the

reaches of the corridor adjacent to these resources will be directionally drilled to avoid potential indirect impacts from noise and construction activities.

- Passive escape ramps will be used in trenches that will be left open over night to allow trapped wildlife to escape.
- Biological monitors will be utilized to remove and relocate wildlife that become trapped in open trenches during active construction.
- The Project has been designed to avoid impacts to drainages since directional drilling will be used to go under such drainages.
- Project landscaping will use only native vegetation to avoid introducing exotic plants to the Site or surrounding areas.
- The electrical interconnection to the existing SDG&E substation will be installed underground, which will eliminate the potential for avian collisions with the transmission line.
- Project lighting will be directed downward to minimize effects to wildlife.
- Project construction and operation will include emission control measures to comply with relevant air quality standards, which also will protect biologic resources.
- Relevant standards for noise control will be followed during construction and operations. Also implementation of these standards will protect biologic resources from the indirect impacts from noise.
- Project design includes a preconstruction clearance survey and an employee education program to assure that special-status species are not adversely impacted.
- The Project will comply with California Pesticide Regulations (California Code of Regulations (CCR) Title 3, Division 6) to minimize the use of rodenticides and herbicides.

6.6.3 Significant Unavoidable Adverse Impacts

Due to Project design features and Site characteristics, the Project will not have significant unavoidable adverse impacts on biological resources**.**

6.6.4 Laws, Ordinances, Regulations and Standards

LORS related to biological resources that are relevant to the Project are listed in Table 6.6-6, along with an identification of the administering agencies and Project approach to compliance. The Project will comply with applicable LORS during construction and operation.

The CDFG may consider the transmission line interconnection horizontal drilling beneath the drainage west of the site to be within their jurisdiction, and may require a Streambed Alteration Agreement pursuant to Fish and Game Code section 1602. The Applicant will address this potential requirement with CDFG staff. Table 6.6-7 provides contact information for CDFG.

Table 6.6-5 – Summary of Biological Resources LORS and Compliance

JURIS-DICTION	AUTHORITY[1]	AGENCY	REQUIREMENTS	COMPLIANCE	AFC SECTIONS AND PAGES
Federal	ESA of 1973; 16 United States Code (USC) §1531 et seq., 50 Code of Federal Regulations (CFR) Parts 17 and 222.	USFWS	Protection and management of federally-listed threatened or endangered plants and animals and their designated critical habitats (terrestrial and avian species).	The Project will not impact federally protected species. Avoidance and minimization measures are incorporated into the Project.	6.6.1, 6.6.1.3.2, 6.6.1.4.5, 6.6.2.2, 6.6.2.3, and 6.6.2.5 Pages 6.6-1 to 6.6-43, 6.6-3 to 6.6-31, 6.6-42 to 6.6-43, 6.6-44 to 6.6-54, 6.6-54 to 6.6-55
	Migratory Bird Treaty Act; 16 USC §703-711; 50 CFR Subchapter B.	USFWS	Protection of migratory birds.	The Project will not impact migratory birds. An underground transmission line will eliminate any potential for bird collisions with transmission wires.	6.6.1.3.1, 6.6.1.3.2, 6.6.1.4.4, 6.6.1.4.5, 6.6.2.2.1, 6.6.2.3.1, and 6.6.2.5 Pages 6.6-3 to 6.6-31, 6.6-41 to 6.6-43, 6.6-45 to 6.6-48, 6.6-52 to 6.6-53, 6.6-54 to 6.6-55
	Fish and Wildlife Conservation Act, 16 USC Section 2901 et seq.; 50 CFR part 83.	USFWS	Calls on states to develop conservation plans for fish and wildlife.	There are no conservation plans applicable to the Site vicinity.	6.6.2.2.3 and 6.6.2.3.4 Pages 6.6-53
	Bald and Golden Eagle Protection Act 16 U.S.C. §§ 668-668d, 54 Stat. 250.	USFWS	Prohibits the take, transport or sale of bald eagles, their eggs or any part of an eagle except where expressly allowed by the Secretary of Interior. The Act was amended in 1962 to extend the prohibitions to the golden eagle.	The Project will not result in take of bald or golden eagle.	6.6.1.3.2, 6.6.1.4.5, 6.6.2.2, 6.6.2.3, and 6.6.2.5 Pages 6.6-3 to 6.6-31, 6.6-42 to 6.6-53, 6.6-44 to 6.6-55

[1] Pursuant to 20 CCR Chapter 5 Appendix B Section (i)(1)(B): Each agency with jurisdiction to issue applicable permits and approvals or to enforce identified LORS and adopted local , regional and federal land use plans, and agencies which would have permit approval or enforcement authority, but for the exclusive authority of the CEC to certify sites and related facilities.

JURIS-DICTION	AUTHORITY[1]	AGENCY	REQUIREMENTS	COMPLIANCE	AFC SECTIONS AND PAGES
State	California ESA of 1984; California Fish & Game Code §2050-2098.	CDFG	Consultation requirement for threatened or endangered species. Endangered plants and animals are listed in 14 CCR §670.2 and 670.5.	Provide information to CDFG through the Application for Certification (AFC) process. Implement appropriate measures, if any, developed in consultation with CDFG.	6.6.2.2.1, 6.6.2.3.1 and 6.6.2.5 Pages 6.6-45 to 6.6-48, 6.6-52 to 6.6-53, 6.6-54 to 6.6-55
	Native Plant Protection Act of 1977; California Fish and Game Code §1900 et seq.	CDFG	Protection for plants listed as rare or endangered.	Provide information to CDFG through the AFC process regarding lack of impact of native plant species and show compliance with the California Native Plant Protection Act.	6.6.1.3.2, 6.6.1.4.5 Pages 6.6-3 to 6.6-31, 6.6-42 to 6.6-43
	California Fish and Game Code §1930-1933.	CDFG, Natural Heritage Division	Provides for significant Natural Areas program and natural resources database.	Provide information to CDFG through the AFC process regarding lack of impact to "Natural Areas" and show compliance with the Natural Heritage Division requirements.	6.6.1.2.2, 6.6.1.4.2, 6.6.1.4.3 and 6.6.2.5 Pages 6.6-3, 6.6-32 to 6.6-34, 6.6-54 to 6.6-55
	California Fish and Game Code §3503.	CDFG	No taking or possessing of nests or eggs of birds.	Provide information to CDFG through the AFC process regarding lack of impact to nesting birds protected under Section 3503 of the California Fish and Game Code.	6.6.1.4.2, 6.6.1.4.3, 6.6.1.4.5, 6.6.2.2, 6.6.2.3 and 6.6.2.5 Pages 6.6-32 to 6.6-41, 6.6-42 to 6.6-43, 6.6-44 to 6.6-54, 6.6-54 to 6.6-55
	California Fish and Game Code §3511.	CDFG	Prohibits the taking of any bird listed as fully protected.	Provide information to CDFG through the AFC process regarding lack of "taking" of protected bird species in accordance with Section 3511 of the California Fish and Game Code.	6.6.1.4.2, 6.6.1.4.3, 6.6.1.4.5, 6.6.2.2, 6.6.2.3 and 6.6.2.5 Pages 6.6-32 to 6.6-41, 6.6-42 to 6.6-43, 6.6-44 to 6.6-54, 6.6-54 to 6.6-55
	California Fish and Game Code § 3515.	CDFG	Unlawful to take any non-game migratory bird designated in the Migratory Bird Treaty Act.	Provide information to CDFG through the AFC process regarding lack of "taking" of non-game, migratory birds designated in Migratory Bird Treaty Act.	6.6.1.4.2, 6.6.1.4.3, 6.6.1.4.5, 6.6.2.2, 6.6.2.3 and 6.6.2.5 Pages 6.6-32 to 6.6-41, 6.6-42 to 6.6-43, 6.6-44 to 6.6-54, 6.6-54 to 6.6-55

JURIS-DICTION	AUTHORITY[1]	AGENCY	REQUIREMENTS	COMPLIANCE	AFC SECTIONS AND PAGES
State (Cont'd.)	California Fish and Game Code §§ 4700 and 5515.	CDFG	Prohibits the taking of mammals and fish listed as fully protected.	Provide information to CDFG through the AFC process regarding lack of "taking" of fully protected mammals and fish in accordance with Sections 4700 and 5515 of the California Fish and Game Code.	6.6.1.4.2, 6.6.1.4.3, 6.6.1.4.5, 6.6.2.2, 6.6.2.3 and 6.6.2.5 Pages 6.6-32 to 6.6-41, 6.6-42 to 6.6-43, 6.6-44 to 6.6-54, 6.6-54 to 6.6-55
	California Fish and Game Code §5050.	CDFG	Prohibits the taking of any reptile listed as fully protected.	Provide information to CDFG through the AFC process regarding lack of "taking" of fully protected reptile species in accordance with Section 5050 of the California Fish and Game Code.	6.6.1.4.2, 6.6.1.4.3, 6.6.1.4.5, 6.6.2.2, 6.6.2.3 and 6.6.2.5 Pages 6.6-32 to 6.6-41, 6.6-42 to 6.6-43, 6.6-44 to 6.6-54, 6.6-54 to 6.6-55
	CEQA; California PRC §21000 et seq.	California Energy Commission (CEC)	Protection of California environment.	Provide information to the CEC through the AFC process showing protection of the environment and impact from the Project.	6.6.2.2, 6.6.2.3 and 6.6.2.5 Pages 6.6-44 to 6.6-54, 6.6-54 to 6.6-55
	California PRC §25523(a); 20 CCR §1752,1752.5, 2300-2309 and Chapter 2, Subchapter 5, Article I, Appendix B, Part (i).	CEC, with comment by CDFG.	Inclusion of requirements for CEC decision on AFC to assure protection of listed species.	Provide information to the CEC through the AFC process regarding lack of impact to listed species and how the Project protects listed species.	6.6.1.4.2, 6.6.1.4.3, 6.6.1.4.4, 6.6.1.4.5, 6.6.2.2, 6.6.2.3 and 6.6.2.5 Pages 6.6-32 to 6.6-41, 6.6-41 to 6.6-43, 6.6-44 to 6.6-55
	California Pesticide Regulations, 3 CCR, Division 6.	California Department of Pesticide Regulation	Requires minimizing the use of rodenticides and herbicides.	The Project will include measures requiring compliance with California Pesticide Regulation (3 CCR, Division 6) to minimize the use of rodenticides and herbicides.	6.6.2.5 Pages 6.6-54 to 6.6-55
	California Native Species Conservation and Enhancement Act, CDFG Code Section 1750 et seq.	CDFG	Mandates maintenance of sufficient populations of native species to ensure continued existence.	Provide information to CDFG through the AFC process regarding lack of impact to native species in accordance with Section 1750 et seq. of the California Fish and Game Code.	6.6.1.4.2, 6.6.1.4.3, 6.6.1.4.5, 6.6.2.2, 6.6.2.3 and 6.6.2.5 Pages 6.6-32 to 6.6-41, 6.6-42 to 6.6-43, 6.6-44 to 6.6-54, 6.6-54 to 6.6-55

JURIS-DICTION	AUTHORITY[1]	AGENCY	REQUIREMENTS	COMPLIANCE	AFC SECTIONS AND PAGES
State (Cont'd.)	Natural Community Conservation Planning Act of 1991	CDFG	Provides for comprehensive management and conservation of key natural resources to protect and perpetuate natural wildlife diversity while allowing compatible and appropriate development and growth.	Provide information to CDFG through the AFC process regarding lack of impact to, and protecting and perpetuating, natural wildlife diversity.	6.6.1.4.2, 6.6.1.4.3, 6.6.1.4.5, 6.6.2.2, 6.6.2.3 and 6.6.2.5 Pages 6.6-32 to 6.6-41, 6.6-42 to 6.6-43, 6.6-44 to 6.6-54, 6.6-54 to 6.6-55
Local	San Diego County General Plan – Open Space Element (Part 1), Conservation Element (Part X), and Community and Subregional Plans	County of San Diego	Provides guiding principles for the conservation of biological resources, such as water, vegetation, and wildlife habitat.	Provide information to the CEC through the AFC process regarding lack of impact to protected and environmentally sensitive habitat areas in accordance with the policies of the County's Guidelines for Determining Significance.	6.6.1.4.2, 6.6.1.4.3, 6.6.1.4.5, 6.6.2.2, 6.6.2.3 and 6.6.2.5 Pages 6.6-32 to 6.6-41, 6.6-42 to 6.6-43, 6.6-44 to 6.6-54, 6.6-54 to 6.6-55
	County of San Diego Zoning Ordinance	County of San Diego	Designates zoning or Special Area Regulation with certain restrictions pursuant to the Zoning Ordinance.	Provide information to the CEC through the AFC process regarding the zoning designation of the Project.	6.6.1.4, 6.6.2. 6.6.2 Pages 6.6-31 to 6.6-43, 6.6-43 to 6.6-55
	Multiple Species Conservation Program and Biological Mitigation Ordinance	County of San Diego	Establishes a connected preserve system that protects the County's sensitive species and habitats.	The Project is not located within the County MSCP boundaries.	6.6.1, 6.6.2 Pages 6.6-1 to 6.6-55
	Resource Protection Ordinance	County of San Diego	Provides restrictions for impacting wetlands, wetland buffers, floodplains, steep slopes, sensitive habitat lands, and historical sites.	Provide information to the CEC through the AFC process regarding lack of impact to wetlands, wetland buffers, steep slopes, and sensitive habitat lands.	6.6.1, 6.6.2 Pages 6.6-1 to 6.6-55
	Habitat Loss Permit Ordinance	County of San Diego	Provides means for the County to issue "take permits" in lieu of USFWS Section 7 or 10(a) Permits.	Project will obtain a Habitat Loss Permit for direct and indirect impact to coastal sage scrub habitat and associated special-status species (e.g., coastal California gnatcatcher)	6.6.2.2, 6.2.2.3 Pages 6.6-58 to 6.6-54
Industry	None Applicable	None Applicable	None Applicable	None Applicable	None Applicable

Table 6.6-6 – Agency Contacts for Biological Resources

AGENCY	AUTHORITY
California Department of Fish and Game South Coast Region 4949 Viewridge Avenue San Diego, California 92123 T. Spear (858) 467-4223	Potential need for Streambed Alteration Agreement, per Fish and Game Code section 1602

6.6.5 References

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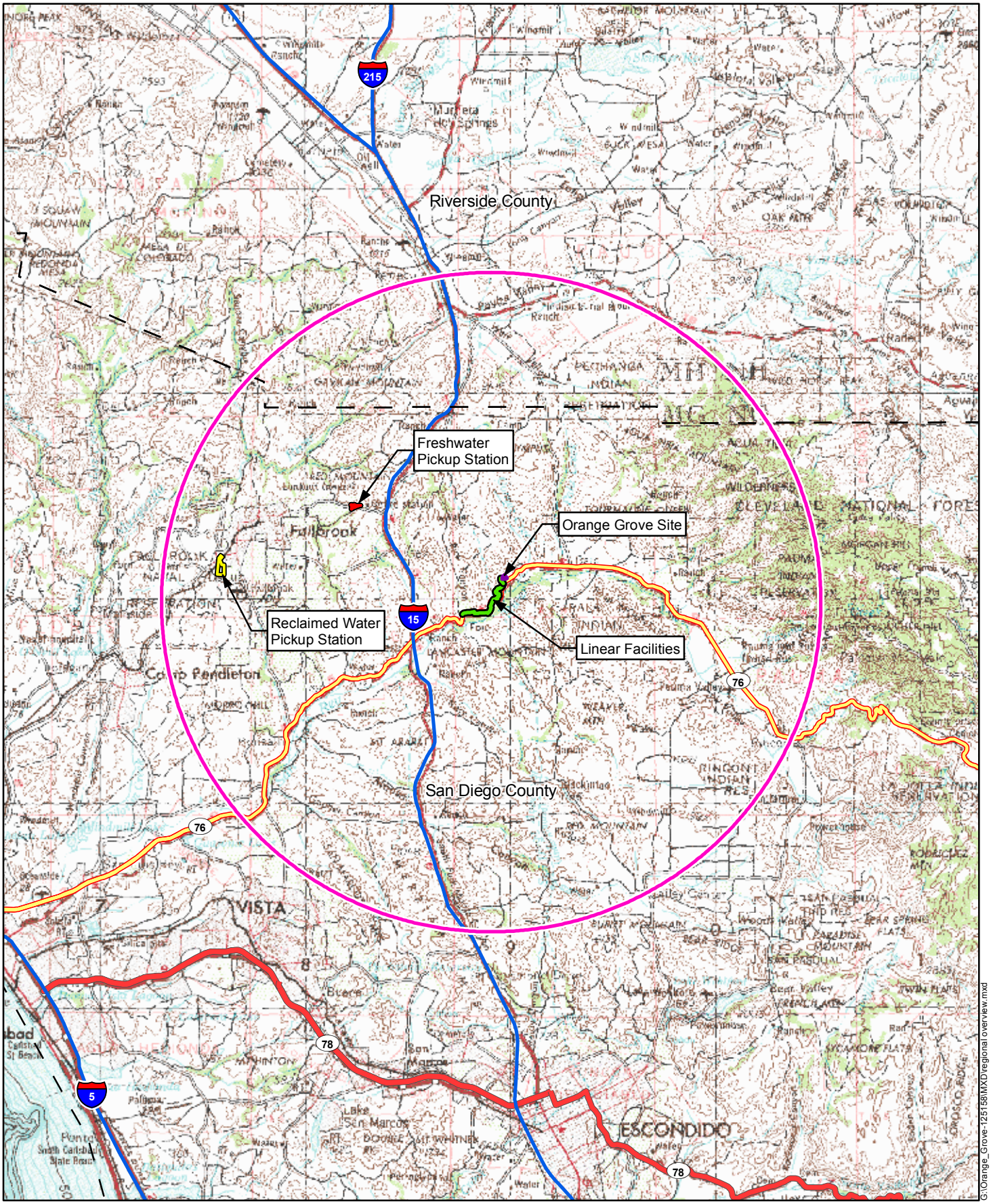

10 Mile Radius

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1" = 3 Miles

3 1.5 0 3 6 9 Miles

Figure 6.6-1
Regional Overview
Orange Grove
Project

TRC

Source:
USGS topographical Quadrangles 250K: Santa Ana

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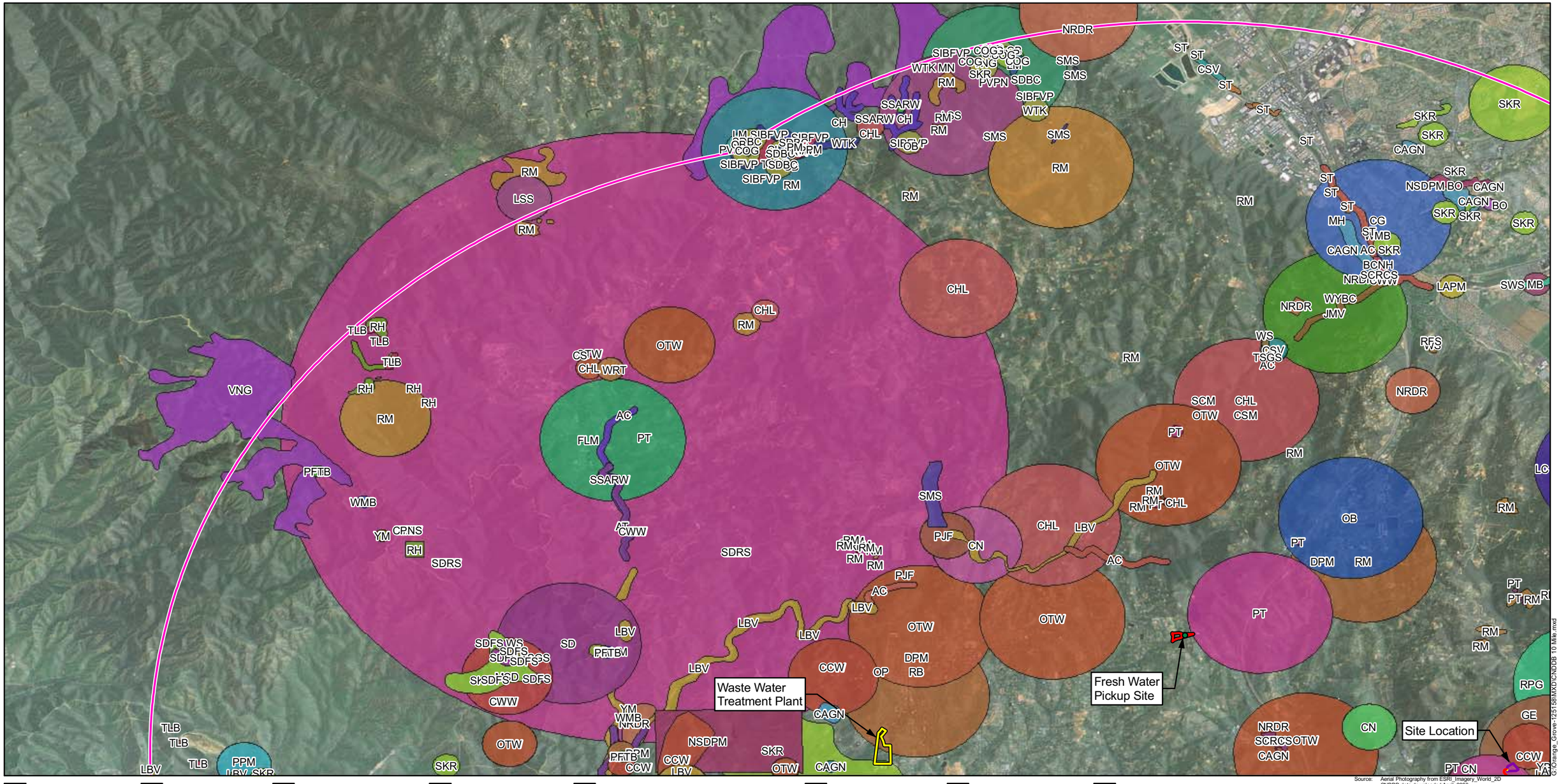


- Bell's sage sparrow (BSS)
- Blochman's dudleya (BD)
- California Orcutt grass (COG)
- California horned lark (CHL)
- California least tern (CLT)
- California screw moss (CSM)
- Campbell's liverwort (CL)
- Coast Range newt (CRN)
- Cooper's hawk (CH)
- Coronado skink (CS)
- Coulter's goldfields (CG)
- Davidson's saltscale (DS)
- Dulzura pocket mouse (DPM)
- Gander's ragwort (GR)
- Hall's monardella (HM)
- Jaeger's milk-vetch (JMV)
- Lakeside ceanothus (LC)
- Moran's navarretia (MN)
- Nevin's barberry (MB)
- Orcutt's brodiaea (OB)
- Orcutt's linanthus (OL)
- Orcutt's pincushion (OP)
- Pacific pocket mouse (PPM)
- Parish's meadowfoam (PM)
- Parry's tetracoccus (PT)
- Payson's jewel-flower (PJF)
- Rainbow manzanita (RM)
- Ramona horkelia (RH)
- Riverside fairy shrimp (RFS)
- Robinson's pepper-grass (RPG)
- Los Angeles pocket mouse (LAPM)
- San Diego button-celery (SDBC)
- San Diego desert woodrat (SDDW)
- San Diego fairy shrimp (SDFS)
- San Diego ringneck snake (SDRS)
- San Diego sunflower (SDS)
- San Miguel savory (SMS)
- arroyo chub (AC)
- arroyo toad (AT)
- Shevock's copper moss (SCM)
- Southern Riparian Forest (SRF)
- Southern Willow Scrub (SWS)
- Stephens' kangaroo rat (SKR)
- chaparral sand-verbena (CN)
- Tecate cypress (TC)
- chaparral nolina (CN)
- burrowing owl (BO)
- chaparral sand-verbena (CSV)
- Vail Lake ceanothus (VLC)
- Yuma myotis (YM)
- coastal cactus wren (CCW)
- dwarf burr ambrosia (DBA)
- Valley Needlegrass Grassland (VNG)
- black-crowned night heron (BCNH)
- San Diego black-tailed jackrabbit (SDBTJR)
- Santa Rosa Plateau fairy shrimp (SRPFS)
- Southern Sycamore Alder Riparian Woodland (SSARW)
- Southern Cottonwood Willow Riparian Forest (SCWRF)
- Southern Interior Basalt Flow Vernal Pool (SIBFVP)
- San Diego Mesa Hardpan Vernal Pool (SDMHVP)
- coast (San Diego) horned lizard (CHL)
- coast patch-nosed snake (CPNS)
- coastal California gnatcatcher (CAGN)
- coastal western whiptail (CWW)
- felt-leaved monardella (FLM)
- golden eagle (GE)
- golden violet (GV)
- hoary bat (HB)
- least Bell's vireo (LBV)
- least bittern (LB)
- light-footed clapper rail (LFCR)
- little mousetail (LM)
- long-spined spineflower (LSS)
- many-stemmed dudleya (MSD)
- mesa horkelia (MH)
- mud nama (Mud Nama)
- northern harrier (NH)
- rosy boa (RB)
- orange-throated whiptail (OTW)
- pallid bat (PB)
- pocketed free-tailed bat (PFTB)
- smooth tarplant (ST)
- sticky dudleya (SD)
- summer holly (SH)
- thread-leaved brodiaea (TLB)
- tidewater goby (TG)
- two-striped garter snake (TSGS)
- western mastiff bat (WMB)
- western spadefoot (WS)
- western yellow bat (WYB)
- yellow warbler (YW)
- southern California rufous-crowned sparrow (SCRCS)
- northwestern San Diego pocket mouse (NSDPM)
- northern red-diamond rattlesnake (NRDR)
- prostrate vernal pool navarretia (PVPN)
- southwestern willow flycatcher (SWF)
- western yellow-billed cuckoo (WYBC)
- slender-horned spineflower (SHP)
- quino checkerspot butterfly (QCB)
- white rabbit-tobacco (WRT)
- yellow-breasted chat (YBC)
- white-tailed kite (WTK)
- white-faced ibis (WFI)
- 10 Mile Site Radius

Figure 6.6-2 A

CNDDB Map
10- Mile Radius

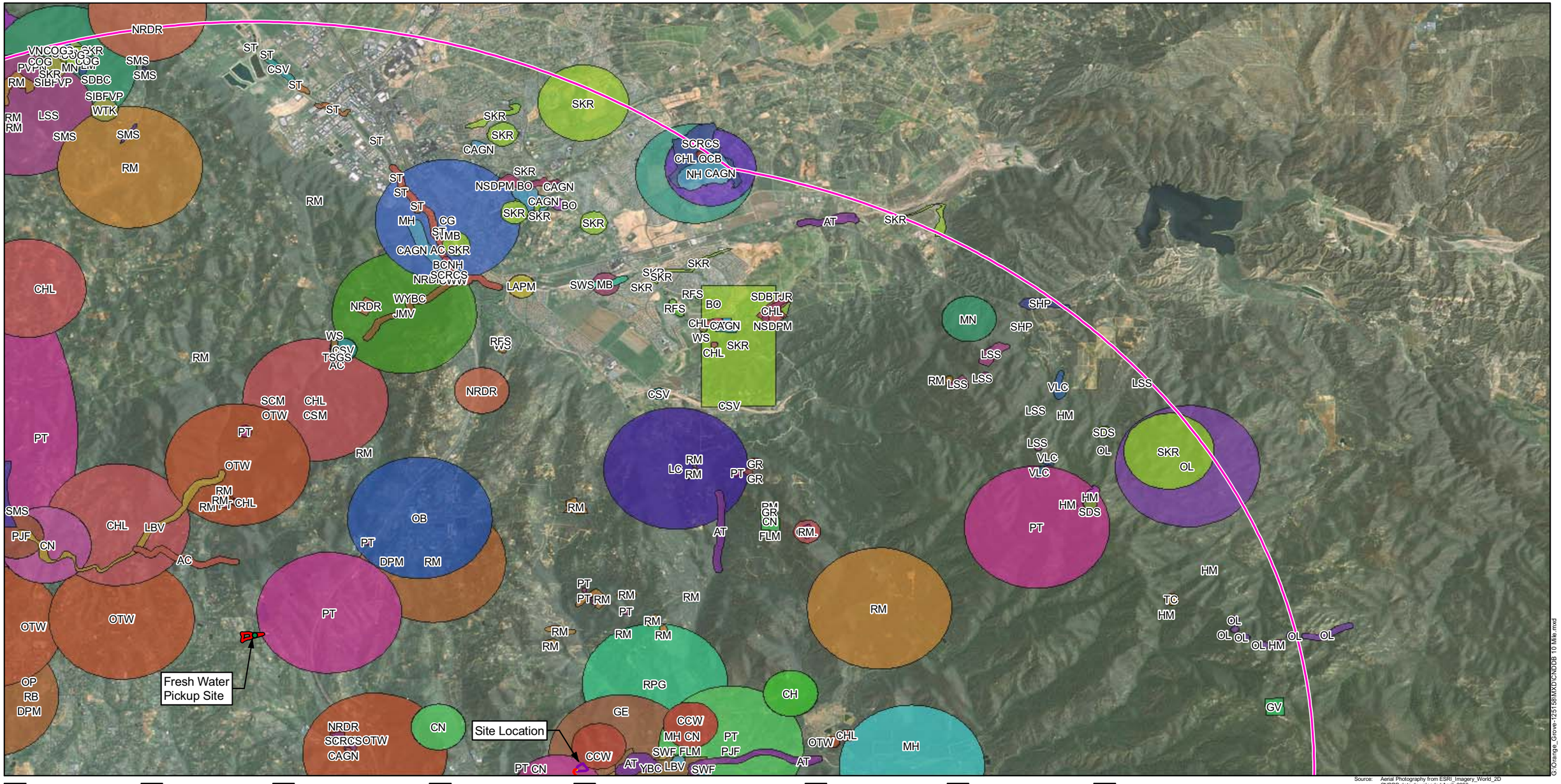
Orange Grove
Project

N

1:100,000

1 0.5 0 1 2 3 Miles

TRC



Source: Aerial Photography from ESRI_Imagery_World_2D
CNDDB data downloaded April, 2008

- Bell's sage sparrow (BSS)
- Blochman's dudleya (BD)
- California Orcutt grass (COG)
- California horned lark (CHL)
- California least tern (CLT)
- California screw moss (CSM)
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- Coronado skink (CS)
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- white-tailed kite (WTK)
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- 10 Mile Site Radius

Figure 6.6-2 B

CNDDB Map
10- Mile Radius

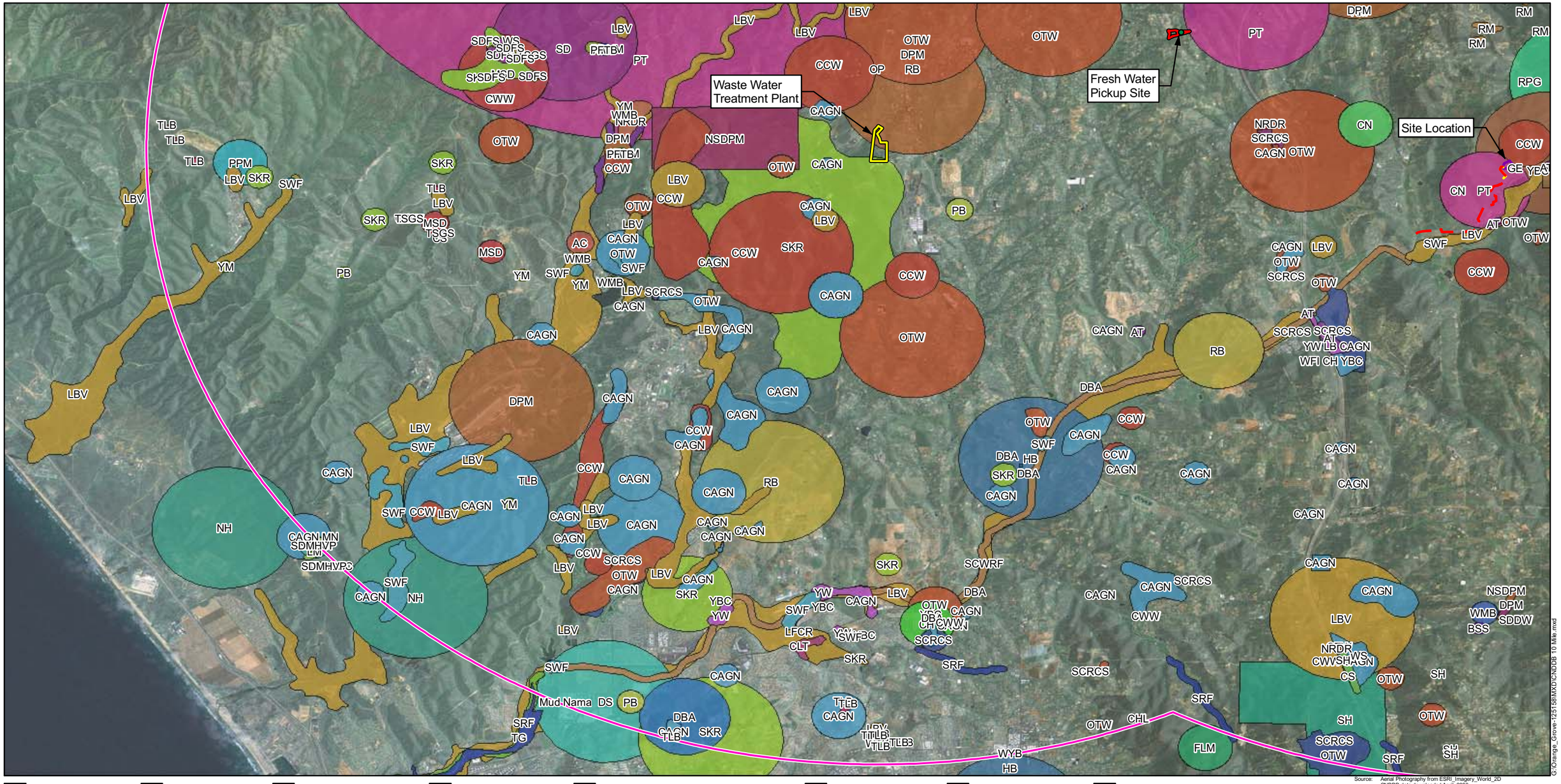
Orange Grove
Project

N

1:100,000

1 0.5 0 1 2 3 Miles

TRC



Source: Aerial Photography from ESRI_Imagery_World_2D
CNDDB data downloaded April, 2008

- Bell's sage sparrow (BSS)
- Blochman's dudleya (BD)
- California Orcutt grass (COG)
- California horned lark (CHL)
- California least tern (CLT)
- California screw moss (CSM)
- Campbell's liverwort (CL)
- Coast Range newt (CRN)
- Cooper's hawk (CH)
- Coronado skink (CS)
- Coulter's goldfields (CG)
- Davidson's saltscale (DS)
- Dulzura pocket mouse (DPM)
- Gander's ragwort (GR)
- Hall's monardella (HM)
- Jaeger's milk-vetch (JMV)
- Lakeside ceanothus (LC)
- Moran's navarretia (MN)
- Nevin's barberry (MB)
- Orcutt's brodiaea (OB)
- Orcutt's linanthus (OL)
- Orcutt's pincushion (OP)
- Pacific pocket mouse (PPM)
- Parish's meadowfoam (PM)
- Parry's tetracoccus (PT)
- Payson's jewel-flower (PJF)
- Rainbow manzanita (RM)
- Ramona horkelia (RH)
- Riverside fairy shrimp (RFS)
- Robinson's pepper-grass (RPG)
- Los Angeles pocket mouse (LAPM)
- San Diego button-celery (SDBC)
- San Diego desert woodrat (SDDW)
- San Diego fairy shrimp (SDFS)
- San Diego ringneck snake (SDRS)
- San Diego sunflower (SDS)
- San Miguel savory (SMS)
- arroyo chub (AC)
- arroyo toad (AT)
- Shevock's copper moss (SCM)
- Southern Riparian Forest (SRF)
- Southern Willow Scrub (SWS)
- Stephens' kangaroo rat (SKR)
- chaparral sand-verbena (CN)
- Tecate cypress (TC)
- chaparral nolina (CN)
- burrowing owl (BO)
- chaparral sand-verbena (CSV)
- Vail Lake ceanothus (VLC)
- Yuma myotis (YM)
- coastal cactus wren (CCW)
- dwarf burr ambrosia (DBA)
- Valley Needlegrass Grassland (VNG)
- black-crowned night heron (BCNH)
- San Diego black-tailed jackrabbit (SDBTJR)
- Santa Rosa Plateau fairy shrimp (SRPFS)
- Southern Sycamore Alder Riparian Woodland (SSARW)
- Southern Cottonwood Willow Riparian Forest (SCWRF)
- Southern Interior Basalt Flow Vernal Pool (SIBFVP)
- San Diego Mesa Hardpan Vernal Pool (SDMHVP)
- coast (San Diego) horned lizard (CHL)
- coast patch-nosed snake (CPNS)
- coastal California gnatcatcher (CAGN)
- coastal western whiptail (CWW)
- felt-leaved monardella (FLM)
- golden eagle (GE)
- golden violet (GV)
- hoary bat (HB)
- least Bell's vireo (LBV)
- least bittern (LB)
- light-footed clapper rail (LFCR)
- little mousetail (LM)
- long-spined spineflower (LSS)
- many-stemmed dudleya (MSD)
- mesa horkelia (MH)
- mud nama (Mud Nama)
- northern harrier (NH)
- rosy boa (RB)
- orange-throated whiptail (OTW)
- pallid bat (PB)
- pocketed free-tailed bat (PFTB)
- smooth tarplant (ST)
- sticky dudleya (SD)
- summer holly (SH)
- thread-leaved brodiaea (TLB)
- tidewater goby (TG)
- two-striped garter snake (TSGS)
- western mastiff bat (WMB)
- western spadefoot (WS)
- western yellow bat (WYB)
- yellow warbler (YW)
- southern California rufous-crowned sparrow (SCRCS)
- northwestern San Diego pocket mouse (NSDPM)
- northern red-diamond rattlesnake (NRDR)
- prostrate vernal pool navarretia (PVPN)
- southwestern willow flycatcher (SWF)
- western yellow-billed cuckoo (WYBC)
- slender-horned spineflower (SHP)
- quino checkerspot butterfly (QCB)
- white rabbit-tobacco (WRT)
- yellow-breasted chat (YBC)
- white-tailed kite (WTK)
- white-faced ibis (WFI)
- 10 Mile Site Radius

Figure 6.6-2 C

CNDDB Map
10- Mile Radius

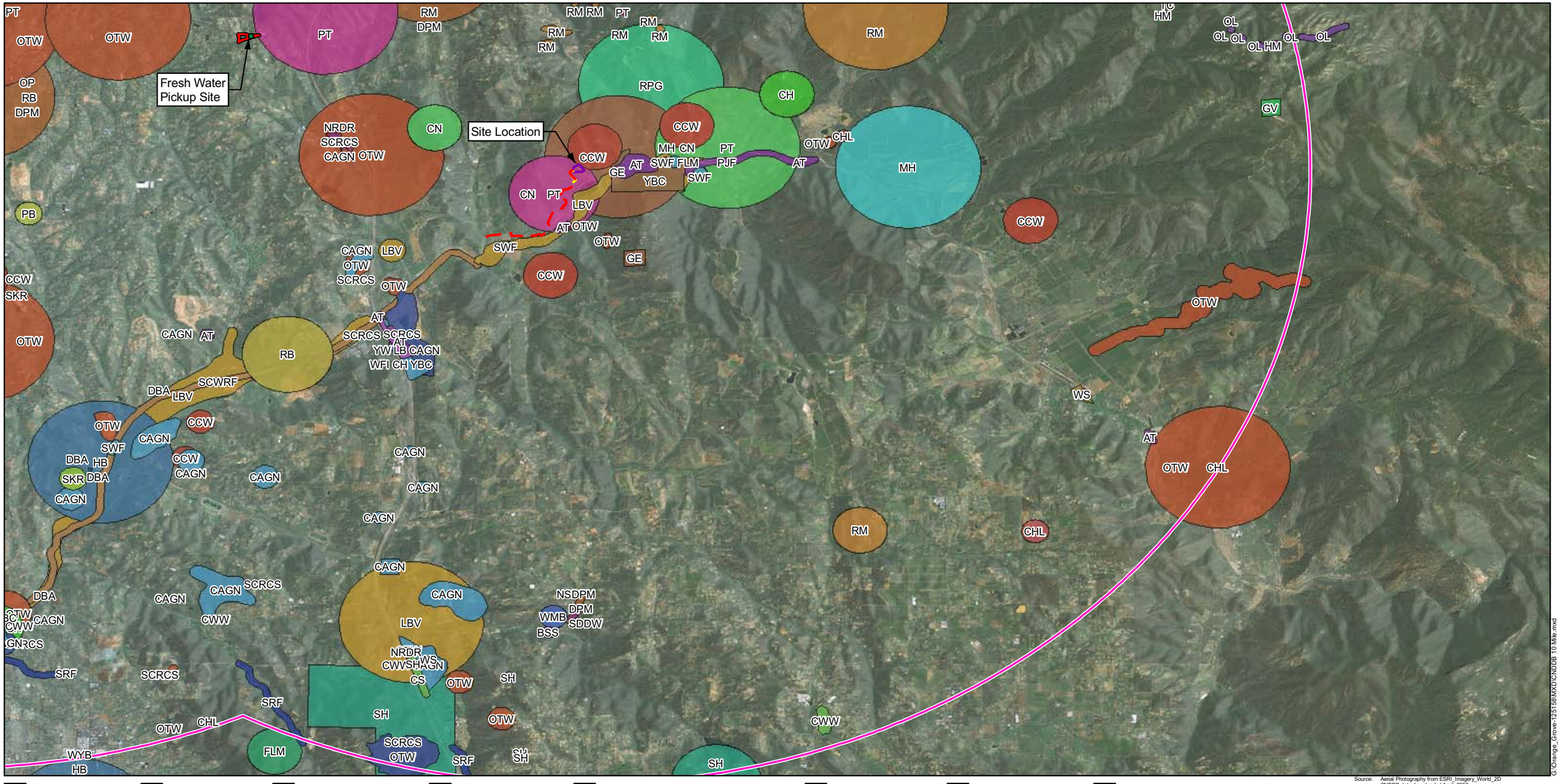
Orange Grove
Project

N

1:100,000

1 0.5 0 1 2 3 Miles

TRC



Source: Aerial Photography from ESRI_Imagery_World_2D
CNDDB data downloaded April, 2008

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- Orcutt's linanthus (OL)
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- San Miguel savory (SMS)
- arroyo chub (AC)
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- San Diego Mesa Hardpan Vernal Pool (SDMHVP)
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- coastal western whiptail (CWW)
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- least Bell's vireo (LBV)
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- white rabbit-tobacco (WRT)
- yellow-breasted chat (YBC)
- white-tailed kite (WTK)
- white-faced ibis (WFI)
- 10 Mile Site Radius

Figure 6.6-2 D

CNDDB Map
10- Mile Radius

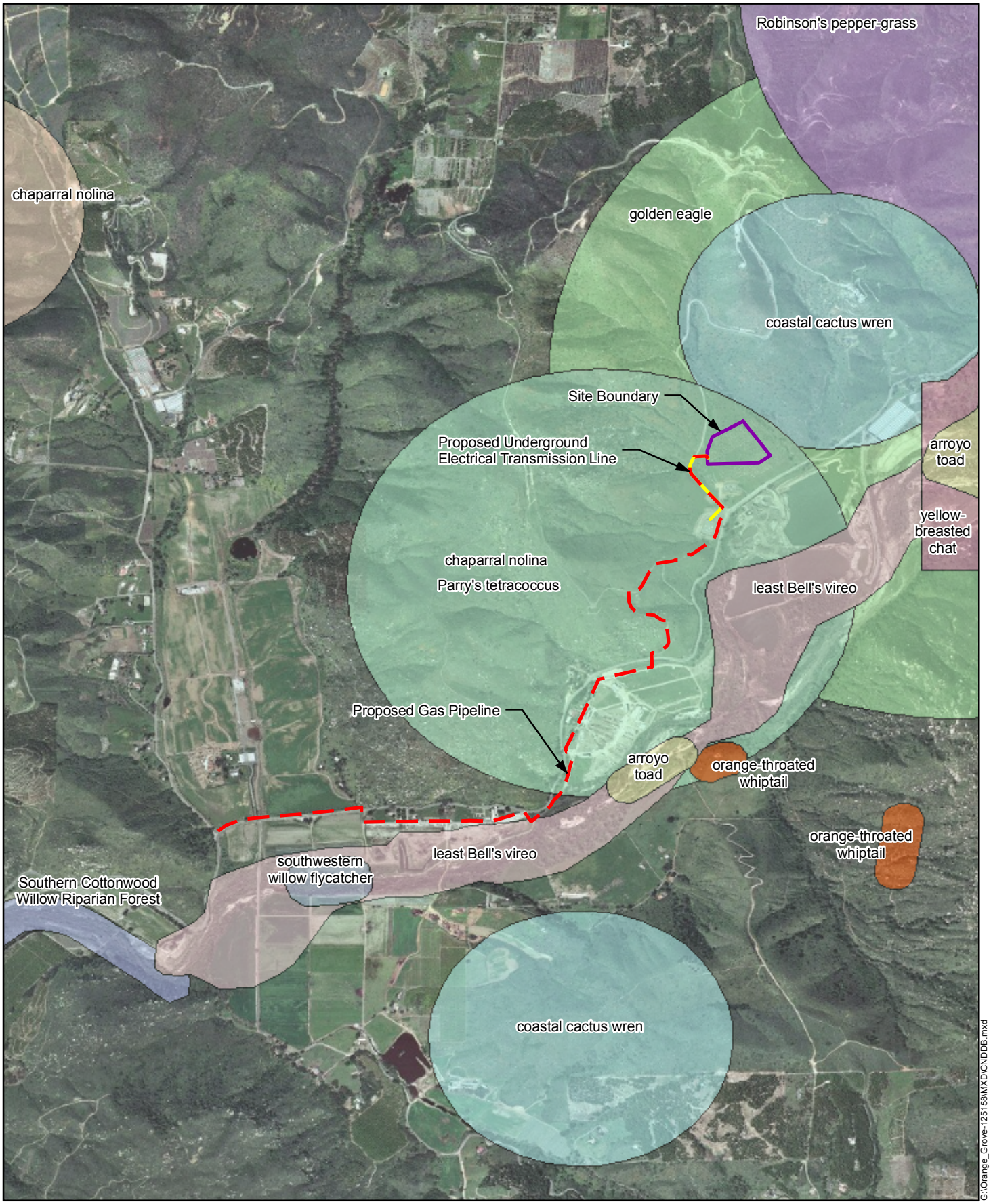
Orange Grove
Project

N

1:100,000

1 0.5 0 1 2 3 Miles

TRC



Parry's tetracoccus
Robinson's pepper-grass
Southern Cottonwood Willow Riparian Forest
arroyo toad
chaparral nolina
coastal cactus wren
golden eagle
least Bell's vireo
orange-throated whiptail
southwestern willow flycatcher
yellow-breasted chat

Source:
Aerial Photography from ESRI_Imagery_World_2D
CNDDB data downloaded April, 2008

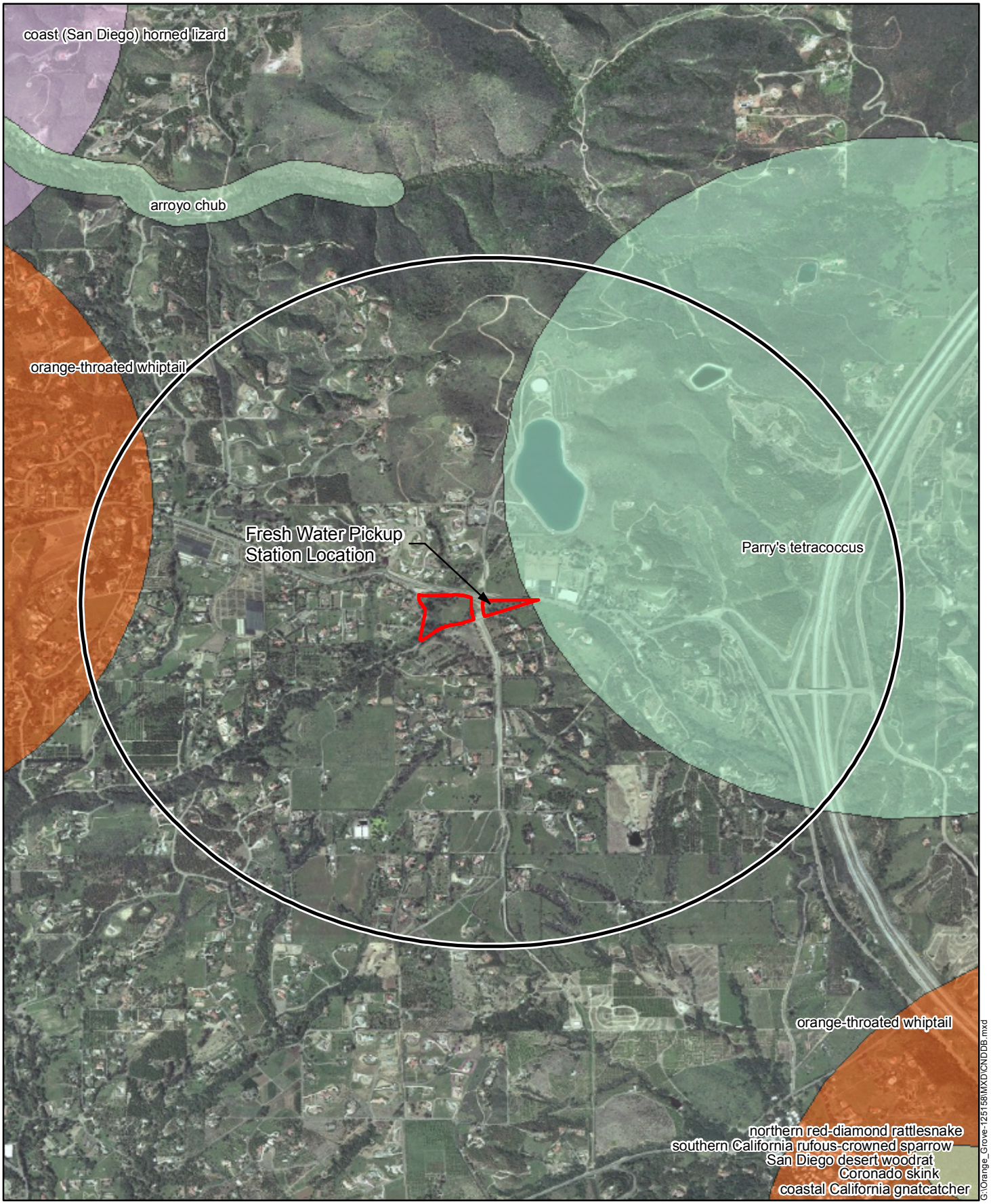
1" = 2,000'

2,000 1,000 0 2,000 4,000 Feet

N

Figure 6.6-3 A
CNDDB Map
1 Mile Radius
Orange Grove
Project

TRC



Coronado skink
Parry's tetracoccus
San Diego desert woodrat
arroyo chub
coast (San Diego) horned lizard
coastal California gnatcatcher
northern red-diamond rattlesnake
orange-throated whiptail
southern California rufous-crowned sparrow

N

1" = 2,000'

2,000 1,000 0 2,000 4,000 Feet

Source:
Aerial Photography from ESRI_Imagery_World_2D
CNDDB data downloaded April, 2008

Figure 6.6-3 B
CNDDB Map
1 Mile Radius
Orange Grove
Project

TRC

SHEET D

SHEET B

SHEET C

San Luis Rey River

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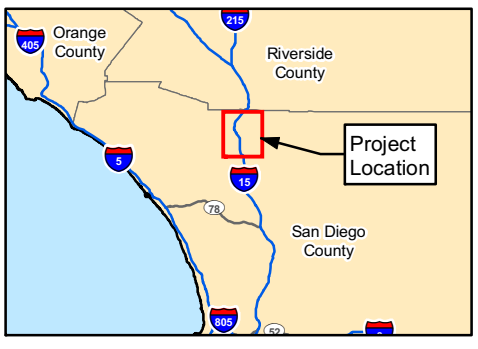


Proposed Gas Line

Survey Boundary

Proposed Underground Electrical Transmission Line

Fresh Water Pickup Station

Site Location

Map Sheets

N
W
E
S

1" = 3,000'

3,000 1,500 0 3,000 6,000 Feet

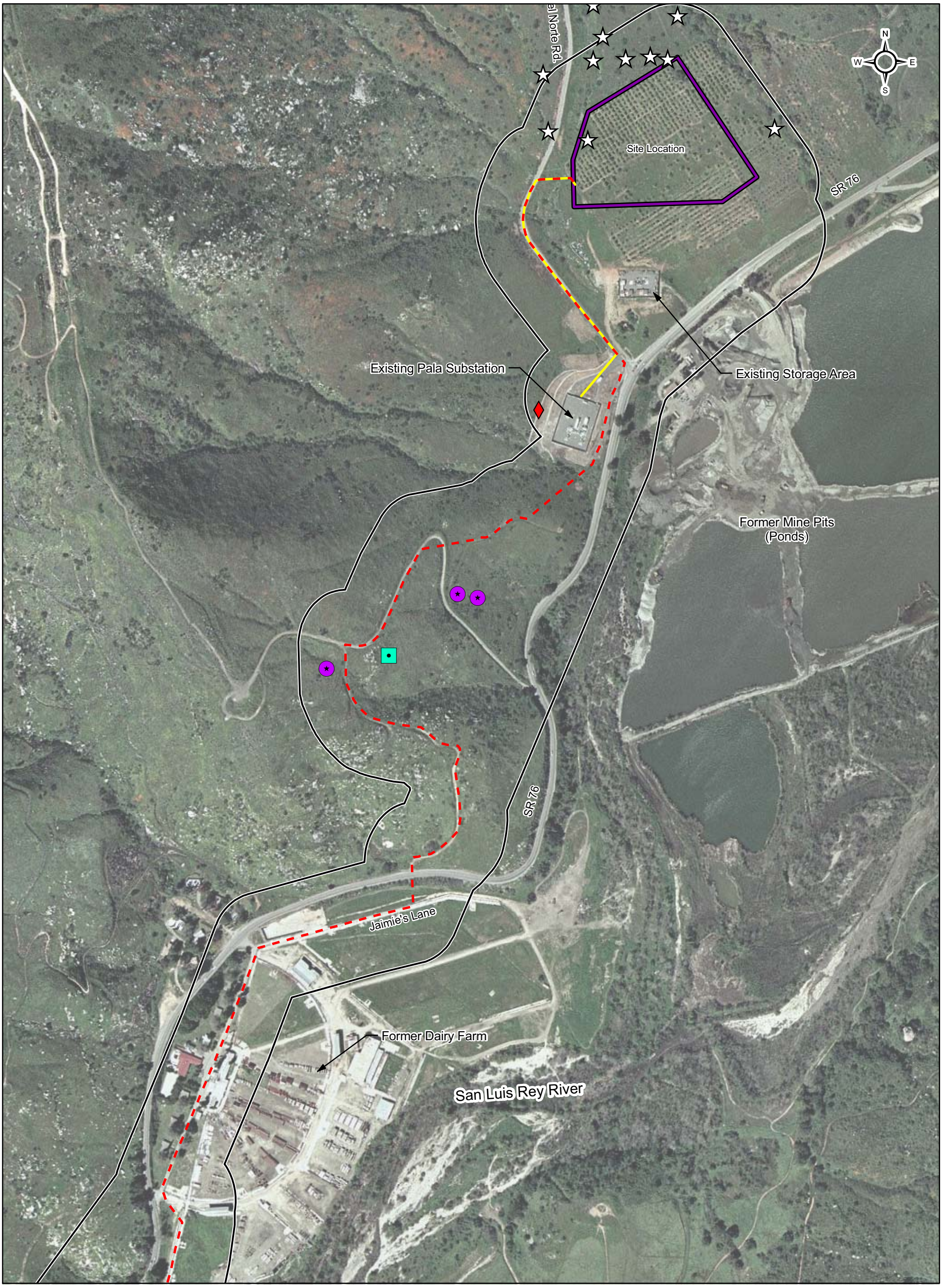
Source:
USGS Topographical Quardrangles: Pala, Bonsall.
Aerial Photography from ESRI_Imagery_World_2D
Library-Remote Sensing 2005

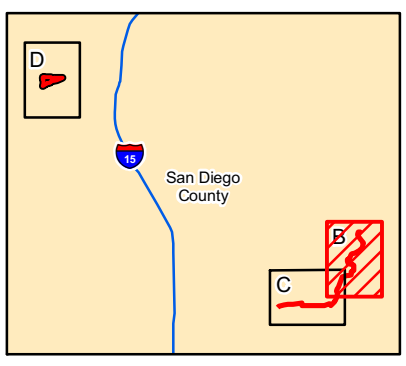
Figure 6.6-4 A

Occurrences of Special-Status Species Recorded During Field Surveys of the Site and Project Linear Corridor

Orange Grove Project

TRC





Proposed Lines
Underground Electrical Transmission Line
Survey Area
Site Boundary
Fresh Water Pickup Station

Parry's tetracoccus (Tetracoccus dioicus)
Least Bell's Vireo
Coastal California Gnatcatcher
Red Diamond Rattlesnake
California Horned Lizard

1" = 400'

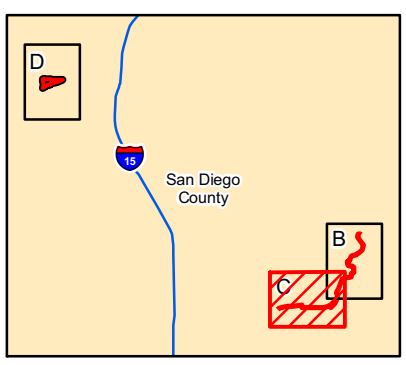
200 100 0 200 400 600 800 Feet

Source:
Aerial Photography from ESRI_Imagery_World_2D

Figure 6.6-4 B
Occurrences of Special-Status Species Recorded During Field Surveys of the Site and Project Linear Corridor

Orange Grove Project

TRC



Proposed Lines
Underground Electrical Transmission Line
Survey Area
Site Boundary
Fresh Water Pickup Station

Parry's tetracoccus (Tetracoccus dioicus)
Least Bell's Vireo
Coastal California Gnatcatcher
Red Diamond Rattlesnake
California Horned Lizard

1" = 400'

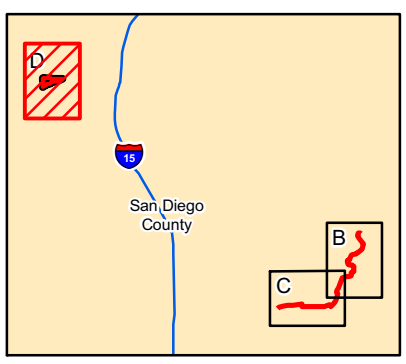
200 100 0 200 400 600 800 Feet

Source:
Aerial Photography from ESRI_Imagery_World_2D

Figure 6.6-4 C
Occurrences of Special-Status Species Recorded During Field Surveys of the Site and Project Linear Corridor

Orange Grove Project

TRC



Proposed Lines
Underground Electrical Transmission Line
Survey Area
Site Boundary
Fresh Water Pickup Station

Parry's tetracoccus (Tetracoccus dioicus)
Least Bell's Vireo
Coastal California Gnatcatcher
Red Diamond Rattlesnake
California Horned Lizard

1" = 400'

200 100 0 200 400 600 800 Feet

Source:
Aerial Photography from ESRI_Imagery_World_2D

Figure 6.6-4 D
Occurrences of Special-Status Species Recorded During Field Surveys of the Site and Project Linear Corridor

Orange Grove Project

TRC

SHEET D

SHEET B

SHEET C

San Luis Rey River

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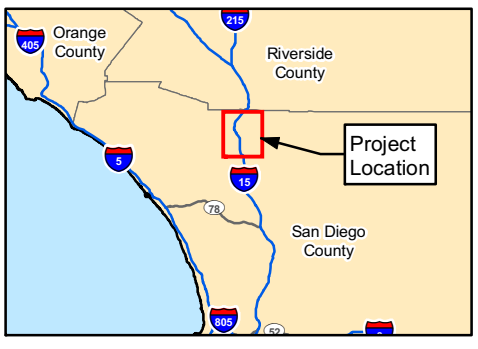


Proposed Gas Line

Survey Boundary

Proposed Underground Electrical Transmission Line

Fresh Water Pickup Station

Site Location

Map Sheets

N
W
E
S

1" = 3,000'

3,000 1,500 0 3,000 6,000 Feet

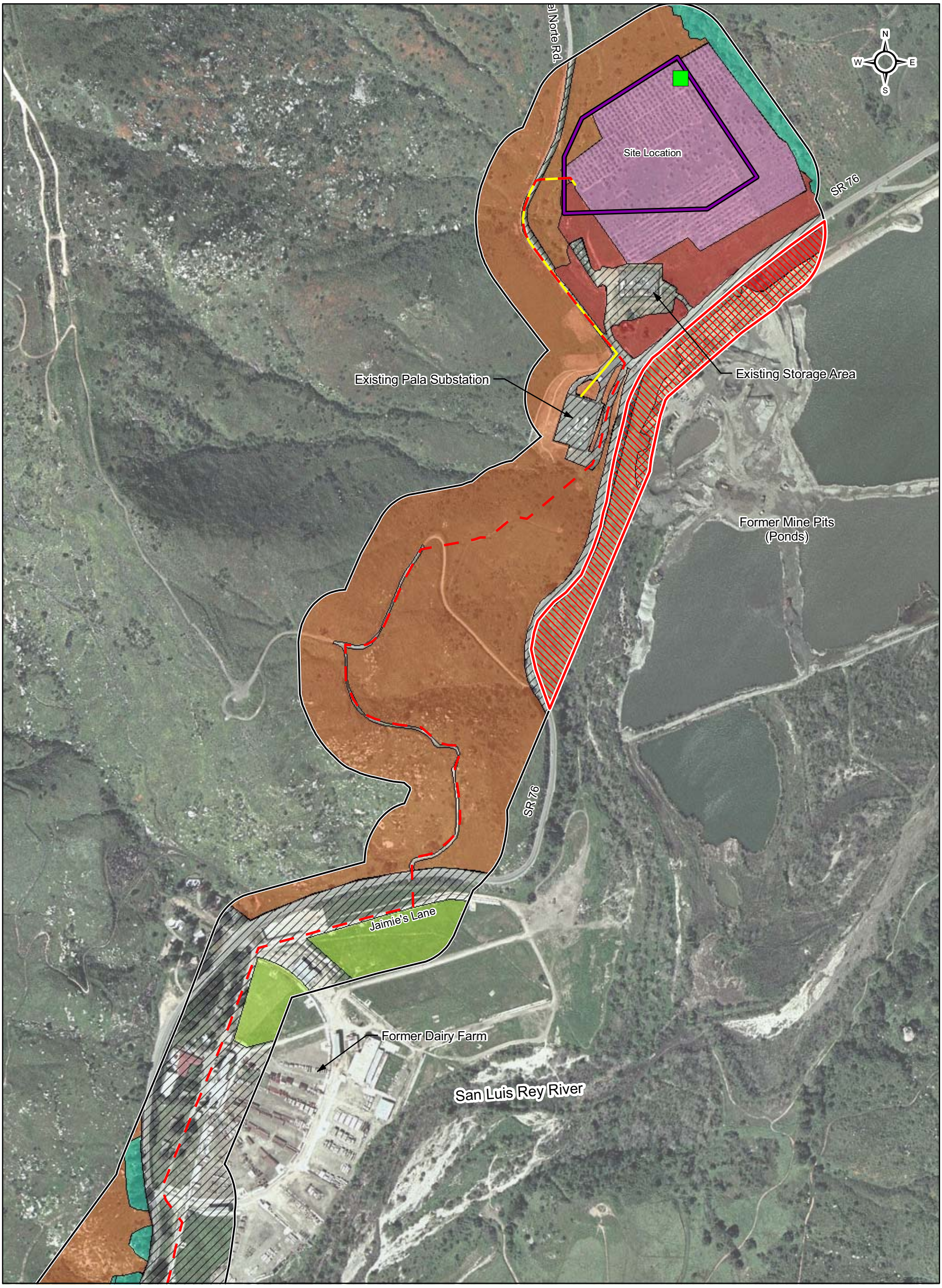
Source:
USGS Topographical Quardrangles: Pala, Bonsall.
Aerial Photography from ESRI_Imagery_World_2D
Library-Remote Sensing 2005

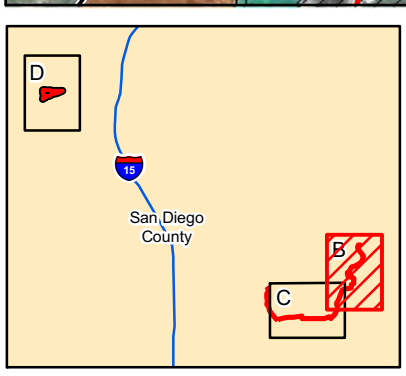
Figure 6.6-5 A

Site Biological Resources

Orange Grove Project

TRC





Proposed Gas Line
Survey Boundary: Full Access Area
Survey Boundary: Limited Access Area*
Survey Boundary: Mapped From Aerials
Fresh Water Pickup Station
Survey Area: Limited Access*
Underground Electrical Transmission Line
Site Boundary

Diegan Coastal Sage Scrub (32500)
Nonnative Grassland (42200)
Open Coast Live Oak Woodland (71161)
Southern Riparian Forest (61300)
Southern Cottonwood Willow Riparian Forest (61330)
Urban Developed (12000)
Reclaimed Mining Area

Large Native Trees/Shrubs
Disturbed (11300)
Orchard (18100)
Agriculture (18000)
Englemann Oak
Quercus engelmannil

*Surveyed by observation from public roads

Source:
Aerial Photography from ESRI_Imagery_World_2D

1" = 400'

400 200 0 400 800 Feet

Figure 6.6-5 B

Site Biological Resources

Orange Grove Project

TRC

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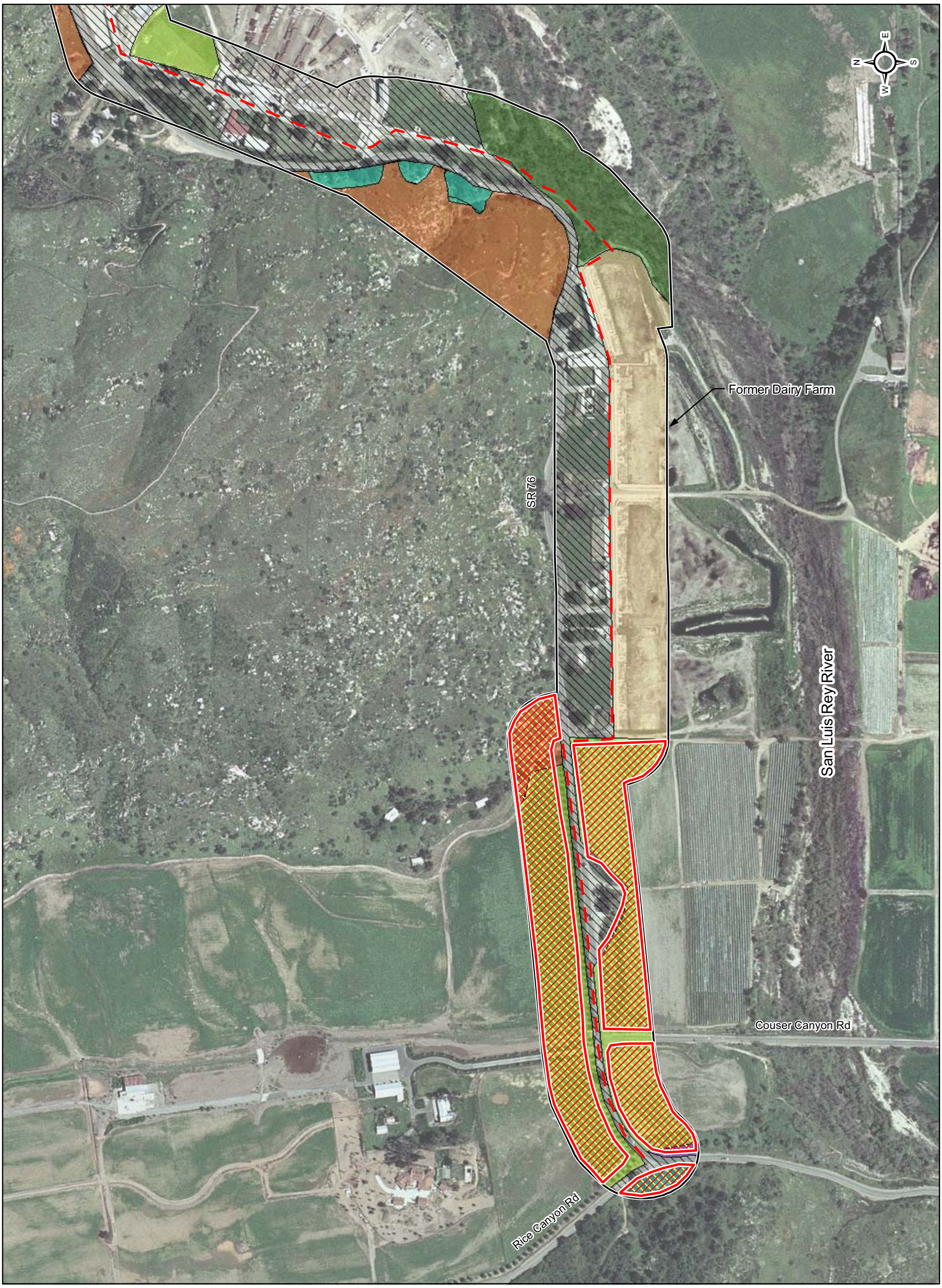

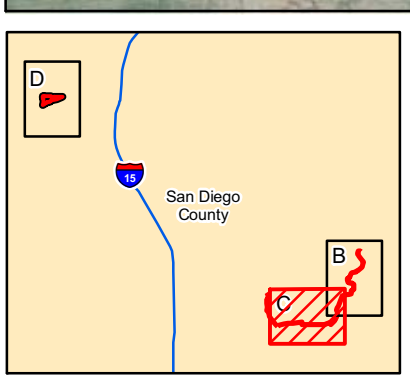

Proposed Gas Line
Survey Boundary: Full Access Area
Survey Boundary: Limited Access Area*
Survey Boundary: Mapped From Aerials
Fresh Water Pickup Station
Survey Area: Limited Access*
Underground Electrical Transmission Line
Site Boundary

*Surveyed by observation from public roads

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Nonnative Grassland (42200)
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Urban Developed (12000)
Reclaimed Mining Area

Large Native Trees/Shrubs
Disturbed (11300)
Orchard (18100)
Agriculture (18000)
Englemann Oak *Quercus engelmannil*

Source: Aerial Photography from ESRI_Imagery_World_2D

1" = 400'

400 200 0 400 800 Feet

Figure 6.6-5 C

Site Biological Resources

Orange Grove Project

TRC

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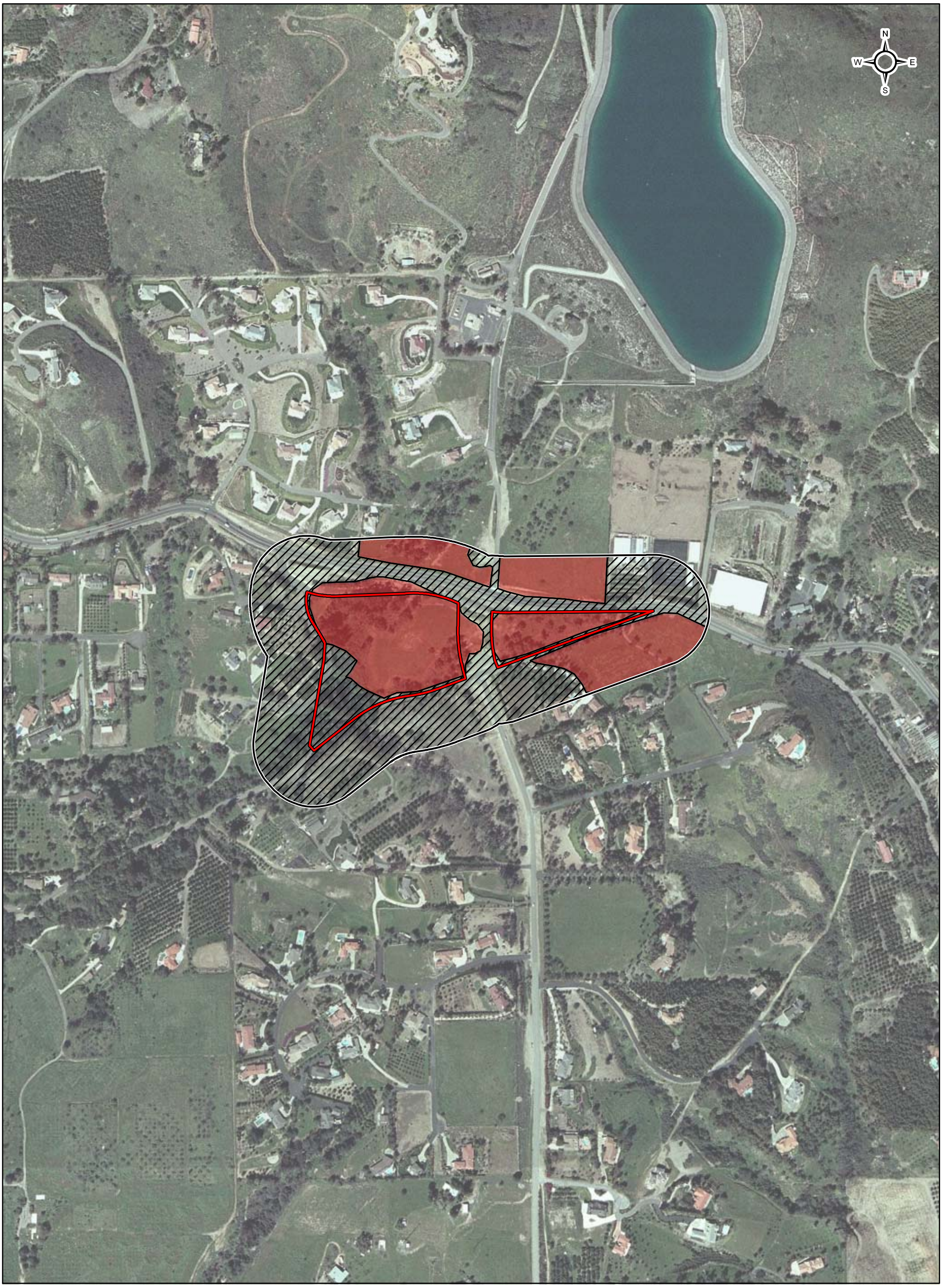

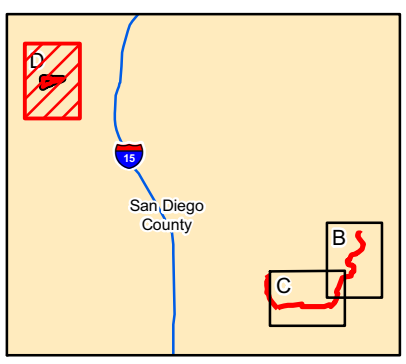

Proposed Gas Line
Survey Boundary: Full Access Area
Survey Boundary: Limited Access Area*
Survey Boundary: Mapped From Aerials
Fresh Water Pickup Station
Survey Area: Limited Access*
Underground Electrical Transmission Line
Site Boundary

*Surveyed by observation from public roads

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Reclaimed Mining Area

Large Native Trees/Shrubs
Disturbed (11300)
Orchard (18100)
Agriculture (18000)
Englemann Oak *Quercus engelmannil*

Source: Aerial Photography from ESRI_Imagery_World_2D

1" = 400'

400 200 0 400 800 Feet

Figure 6.6-5 D

Site Biological Resources

Orange Grove Project

TRC

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APPENDIX 6.6-A – REGIONAL SPECIAL-STATUS WILDLIFE AND PLANT SPECIES POTENTIALLY OCCURRING WITHIN 1 MILE OF THE FPUD FRESHWATER PICKUP STATION

Regional Special-Status Plant Species Potentially Occurring Within 1.0- Mile of the FPUD Reclaimed and Freshwater Pickup Station

SPECIES	LISTING STATUS FEDERAL/ STATE[1]	CALIFORNIA NATIVE PLANT SOCIETY LIST CODE[2]	COUNTY OF SAN DIEGO SENSITIVITY[3]	FLOWERING/ PHENOLOGY	PRESENCE	HABITAT TYPE AND POTENTIAL FOR OCCURRENCE
Blochman's dudleya *(Dudleya blochmaniae ssp. blochmaniae)*	None/None	1B.1	List A	April to June	None Observed	Coastal bluff scrub, chaparral, coastal scrub, valley and foothill grassland. Open, rocky slopes, often serpentine or clay-dominated. Occurs between 5 and 450 meters (m). California Natural Diversity Database (CNDDB) occurrences documented within 10 miles of the Project impact area. **Low potential for occurrence.**
California Orcutt grass *(Orcuttia calfornica)*	FE/SE	1B.1	List A	April to August	None Observed	Vernal pools. Occurs between 15 and 660m. CNDDB occurrences documented within 10 miles of the Project impact area. Project impact area lacks suitable habitat. **No potential for occurrence.**
Campbell's liverwort *(Geothallus tuberosus)*	None/None	1B.1	---	Ephemeral	None Observed	Coastal scrub, vernal pools. Occurs between 10 and 600m. CNDDB occurrences documented within 10 miles of the Project impact area. **Low potential for occurrence.**
Coulter's goldfields *(Lasthenia glabrata ssp. coulteri)*	None/None	1B.1	List A	February to June	None Observed	Marshes and swamps, playas, vernal pools. Occurs between 1 and 1,220m. CNDDB occurrences documented within 10 miles of the Project impact area. **Low potential for occurrence.**
Davidson's saltscale *(Atriplex serenana var. davidsonii)*	None/None	1B.2	List A	April to October	None Observed	Coastal bluff, coastal scrub. Prefers alkaline soils. Occurs between 10 and 200m. CNDDB occurrences documented within 10 miles of the Project impact area. **Low potential for occurrence.**
Dwarf burr ambrosia *(Ambrosia pumila)*	FE/None	1B.1	List A	April to October	None Observed	Chaparral, coastal scrub, valley and foothill grassland. Vernal pools, often in disturbed areas. Sometimes prefers alkaline soils. Occurs between 20 and 415m. CNDDB occurrences documented within 10 miles of the Project impact area. **Low potential for occurrence.**

Regional Special-Status Plant Species Potentially Occurring Within 1.0- Mile of the FPUD Reclaimed and Freshwater Pickup Station

SPECIES	LISTING STATUS FEDERAL/ STATE(1)	CALIFORNIA NATIVE PLANT SOCIETY LIST CODE(2)	COUNTY OF SAN DIEGO SENSITIVITY(3)	FLOWERING/ PHENOLOGY	PRESENCE	HABITAT TYPE AND POTENTIAL FOR OCCURRENCE
Golden violet (Viola aurea)	None/None	2.2	List B	April to June	None Observed	Great Basin scrub, pinyon and juniper woodland. Prefers sandy soils. Occurs between 1,000 and 2,040m. CNDDB occurrences documented within 10 miles of the Project impact area. **Low potential for occurrence.**
Little mousetail *(Myosurus minimus ssp. apus)*	None/None	3.1	List C	March to June	None Observed	Valley and foothill grassland, vernal pools. Prefers alkaline soils. Occurs between 20 and 640m. CNDDB occurrences documented within 10 miles of the Project impact area. **Low potential for occurrence.**
Many-stemmed dudleya *(Dudleya multicaulis)*	None/None	1B.2	List A	April to June	None Observed	Coastal bluff scrub, chaparral, coastal scrub, valley and foothill grassland, rocky. Often prefers clay or serpentine soils. Occurs between 15 and 790m. CNDDB occurrences documented within 10 miles of the Project impact area. **Low potential for occurrence.**
Mud Nama *(Nama* Stenocarpum)	None/None	2.2	List B	January to July	None Observed	Marshes and swamps, lake margins and riverbanks. Occurs between 5 and 500m. CNDDB occurrences documented within 10 miles of the Project impact area. **Low potential for occurrence.**
Orcutt's linanthus (Linanthus orcuttii)	None/None	1B.3	List A	May to June	None Observed	Chaparral, lower montane coniferous forest, pinyon and juniper woodland. Prefers sunny openings. Occurs between 915 and 2,145m. CNDDB occurrences documented within 10 miles of the Project impact area. **Low potential for occurrence.**
Orcutt's pincushion *(Chaenactis glabriuscula var. orcuttiana)*	None/None	1B.1	List A	January to August	None Observed	Coastal bluff and coastal dunes. Occurs between 3 and 100m. CNDDB records document occurrences within the Project impact area. **High potential for occurrence.**

Regional Special-Status Plant Species Potentially Occurring Within 1.0- Mile of the FPUD Reclaimed and Freshwater Pickup Station

SPECIES	LISTING STATUS FEDERAL/ STATE[1]	CALIFORNIA NATIVE PLANT SOCIETY LIST CODE[2]	COUNTY OF SAN DIEGO SENSITIVITY[3]	FLOWERING/ PHENOLOGY	PRESENCE	HABITAT TYPE AND POTENTIAL FOR OCCURRENCE
Parish's meadowfoam *(Limnanthes gracilis ssp. parishii)*	None/SE	1B.2	List A	April to June	None Observed	Lower montane coniferous forest, meadows and seeps, vernal pools, vernally mesic. Occurs between 600 and 2,000m. CNDDB occurrences documented within 10 miles of the Project impact area. **Low potential for occurrence.**
Payson's jewel-flower *(Caulanthus simulans)*	None/None	4.2	List D	March to May	None Observed	Chaparral, coastal scrub. Prefers sandy granitic soils. Occurs between 90 and 2,200m. CNDDB records document occurrences within 1.0-mile of the Project impact area. **Moderate potential for occurrence.**
Prostrate vernal pool navarettia (Navarretia prostrata)	None/None	1B.1	List A	April to June	None Observed	Coastal scrub, meadows and seeps, valley and foothill grassland with alkaline soils, vernal pools, mesic. Occurs between 15 and 700m. CNDDB occurrences documented within 10 miles of the Project impact area. **Low potential for occurrence.**
San Diego button-celery *(Eryngium aristulatum var. parishii)*	FE/SE	1B.1	List A	April to June	None Observed	Coastal scrub, valley and foothill grassland, vernal pools, mesic. Occurs between 20 and 620m. CNDDB occurrences documented within 10 miles of the Project impact area. **Low potential for occurrence.**
Shevock's copper moss (Schizymenium shevockii)	None/None	1B.2	---	Moss	None Observed	Cismontane woodland, metamorphic rock, mesic. Occurs between 750 and 1,400m. CNDDB occurrences documented within 10 miles of the Project impact area. **Low potential for occurrence.**
Smooth tarplant *(Centromadia pungens ssp. laevis)*	None/None	1B.1	List A	April to September	None Observed	Chenopod scrub, meadows and seeps, playas, riparian woodland, valley and foothill grassland. Prefers alkaline soils. Occurs between 0 and 480m. CNDDB occurrences documented within 10 miles of the Project impact area. **Low potential for occurrence.**

Regional Special-Status Plant Species Potentially Occurring Within 1.0- Mile of the FPUD Reclaimed and Freshwater Pickup Station

SPECIES	LISTING STATUS FEDERAL/ STATE(1)	CALIFORNIA NATIVE PLANT SOCIETY LIST CODE(2)	COUNTY OF SAN DIEGO SENSITIVITY(3)	FLOWERING/ PHENOLOGY	PRESENCE	HABITAT TYPE AND POTENTIAL FOR OCCURRENCE
Tecate Cypress *(Cupressus forbesii)*	None/None	1B.1	List A	Perennial evergreen tree	None Observed	Coastal bluff, chaparral, coastal scrub, valley and foothill grassland, rocky. Often prefers clay or serpentine soils. Occurs between 5 and 450m. CNDDB occurrences documented within 10 miles of the Project impact area. **Low potential for occurrence.**
White rabbit tobacco *(Psuedognaphalium leucophalum)*	None/None	2.2	---	August to November	None Observed	Chaparral, cismontane woodland, coastal scrub, riparian woodland. Prefers sandy gravelly soils. Occurs between 0 and 2,100m. CNDDB occurrences documented within 10 miles of the Project impact area. **Low potential for occurrence.**

(1) U.S. Fish And Wildlife Service
FE - Federally listed, endangered: species in danger of extinction throughout a significant portion of its range
FT - Federally listed, threatened: species likely to become endangered within the foreseeable future
State of California
SE - State listed, endangered
SR -State listed, rare

(2) California Native Plant Society
List 1B - Rare, threatened, or endangered in California and elsewhere
List 2 - Rare, threatened, or endangered in California but more common elsewhere
List 3 - Plants which need more information
List 4 - Limited distribution – a watch list
0.1 - Seriously threatened in California (high degree/immediacy of threat)
0.2 - Fairly threatened in California (moderate degree/immediacy of threat)
0.3 - Not very threatened in California (low degree/immediacy of threats or no current threats known)

(3) San Diego County
List A - Plants rare, threatened or endangered in California and elsewhere
List B - Plants rare, threatened or endangered in California but more common elsewhere
List C - Plants which may be quite rare, but need more information to determine their true rarity status
List D - Plants of limited distribution and are uncommon, but need more information to determine their true rarity status
MSCP-NE - Multiple Species Conservation Program – narrow endemic. A narrow endemic is a species that is confined to a specific geographic region, soil type, and/or habitat.

Regional Special-Status Wildlife Species Potentially Occurring Within 1.0-Mile of the FPUD Relcaimed and Freshwater Pickup Station

COMMON NAME/ SCIENTIFIC NAME	LISTING STATUS(1)	POTENTIAL FOR SPECIES OCCURRENCE WITHIN THE PROJECT IMPACT AREA
Mammals		
Hoary bat (*Lasiurus cinereus*)	none	**Low**. The species generally roosts in the dense foliage of larger trees (often in riparian forest or woodland, but also in other woodland and forest associations).
Birds		
Black-crowned night-heron (*Nycticorax nycticorax*)	none	**None**. The Project impact area lacks suitable habitat. The species nests in dense foliaged trees; dense, fresh or brackish emergent wetlands; or dense shrub stands near water. It feeds along the margins of rivers, ponds, reservoirs, and bays.
Least bittern (*Ixobrychus exilis*)	CSC Group 2	**None**. The Project impact area lacks suitable habitat. The species nests in dense tules or cattails. It typically feeds along the margins of tules and cattail (rarely far from cover).
Light-footed clapper rail (*Rallus longirostris levipes*)	FE SE Group 1	**None**. The Project impact area lacks suitable habitat. The subspecies only occurs in coastal wetlands generally in areas dominated by cordgrass and pickleweed.
White-faced ibis (*Plegadis chihi*)	Group 1	**None**. The Project impact area lacks suitable habitat. The species nests in dense tules or cattails. It feeds along the margins of ponds, flooded fields, and irrigated pastures.
Invertebrates/Fish		
Tidewater goby (*Eucyclogobius newberryi*)	FE CSC Group 1	**None**. The Project impact area lacks suitable habitat. The species only occurs in slow-moving, brackish reaches of rivers (generally at the mouth of the river).
Riverside fairy shrimp (*Streptocephalus woottoni*)	FE Group 1	**None**. The Project impact area lacks suitable habitat. The species typically occurs in larger, deeper vernal pools, but occasionally occurs in stock ponds (generally within 10 miles of the coast).
San Diego fairy shrimp (*Branchinecta sandiegonensis*)	FE Group 1	**None**. The Project impact area lacks suitable habitat. The species only occurs in vernal pools (generally on coastal mesas within 30 miles of the coast).
Santa Rosa Plateau fairy shrimp (*Linderiella santarosae*)	none	**None**. The Project impact area lacks suitable habitat. The species is only known from grassland vernal pools at the Mesa de Colorado, Santa Rosa Plateau Reserve in Riverside County.

(1) California Department of Fish and Game
- SE - State listed, endangered
- ST - State listed, threatened
- CSC - California species of special concern
- SFP - State designated, fully protected

U.S. Fish and Wildlife Service
- FE - Federally listed, endangered
- FT - Federally listed, threatened
- FC - Federal candidate species (former Category 1 candidates)
- BCC - U.S. Fish and Wildlife Service Bird of Conservation Concern

San Diego County

Group 1 - Species has a very high level of sensitivity, either because it is listed as threatened or endangered or it has very specific natural history requirements.

Group 2 - Species becoming less common, but not so rare that extirpation or extinction is imminent. Species tends to be prolific within suitable habitat types

APPENDIX 6.6-B – 2007/2008 WINTER AND 2008 BREEDING COASTAL CALIFORNIA GNATCATCHER (*POLIOPTILA CALIFORNICA CALIFORNICA*) SURVEY REPORT FOR THE PROPOSED ORANGE GROVE PROJECT

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June 9, 2008

Ms. Sandra Marquez
U.S. Fish and Wildlife Service
6010 Hidden Valley Road
Carlsbad, California 92011

SUBJECT: 2007/2008 Winter and 2008 Breeding Coastal California Gnatcatcher (*Polioptila californica californica*) Survey Report for the Proposed Orange Grove Project

Permit Number: TE-037508-1

Dear Ms. Marquez:

This letter report summarizes the methodology and findings of protocol-level surveys for the federally listed threatened coastal California gnatcatcher (*Polioptila californica californica*) conducted by TRC in 2007/2008 (winter, non-breeding) and 2008 (spring, breeding) for the proposed Orange Grove Energy Power Plant Project (project) located near Pala, in San Diego County, California. The areas surveyed are located in northeastern San Diego County east of Interstate 15, north of State Route 76, and west of the Pala Casino. Surveys were conducted to determine the presence of coastal California gnatcatchers.

SURVEY LOCATIONS

Surveys were conducted on and up to 250 feet surrounding the proposed project site and on either side of the project linear routes (See Map 1). The survey area also included an area that was at one time a part of the project, but is no longer part of the project area (See Map 2). Only suitable coastal California gnatcatcher habitat was surveyed. Elevation in the survey areas ranged from approximately 250 to 750 feet above sea level. A small portion of the survey area shown on Map 1 falls within coastal California gnatcatcher critical habitat (USFWS Coastal California Gnatcatcher Critical Habitat San Diego County Map, dated December 2007) and all of the survey area shown on Map 2, which is no longer part of the project, falls within the coastal California gnatcatcher critical habitat (please see Map 1 and 2).

The project includes both non-breeding and breeding surveys for different portions of the project. This is due to the fact that a portion of the project changed during the course of the planning and additional gnatcatcher surveys were required. At the time the breeding survey season had begun so it was decided to continue to the non-breeding surveys and then start a new set of surveys under the breeding protocols. Below outlines the two areas.

Winter (Non-breeding) Survey Location

Located north of State Route 76 and along Pala Del Norte Road, the area surveyed included appropriate habitat on and surrounding the proposed project site southwest to the northeast side of the existing San Diego Gas & Electric Pala Substation (see Map 1). This survey area is within T9S, R2W of the U.S. Geological Survey (USGS) Pala 7.5-minute quadrangle.

Spring (Breeding) Survey Locations

Located south of the winter survey area described above, the area surveyed included appropriate habitat west and south of the existing San Diego Gas & Electric Pala Substation along the linear route components of the proposed project, to the north side of State Route 76 (see Map 1). This survey area is within T9S, R2W of the U.S. Geological Survey (USGS) Pala 7.5-minute quadrangle. Additionally, appropriate habitat north of State Route 76 along Rice Canyon Road was included in the surveys. At one time this area was included in the project scope. This survey area is within T10S, R3W of the U.S. Geological Survey (USGS) Bonsall 7.5-minute quadrangle.

PLANT COMMUNITIES

All appropriate coastal sage scrub vegetation found on and within the 250 feet of the proposed project site and linear routes was surveyed. For the winter survey, approximately 30 acres of moderate to good quality coastal sage scrub was surveyed. For the spring survey approximately 45 acres of moderate to good quality coastal sage scrub was surveyed. Dominant native shrub species observed within the coastal sage scrub vegetation include California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), black sage (*Salvia mellifera*), white sage (*Salvia apiana*), California broom (*Lotus scoparius*), lemonadeberry (*Rhus integrifolia*), laurel sumac (*Malosma laurina*), and cholla and prickly pear (*Opuntia* spp.).

METHODOLOGY

Permitted biologist Paula Potenza (Permit No. TE-037508-1), authorized to independently conduct gnatcatcher protocol-level surveys, conducted all the surveys according to the *USFWS Coastal California Gnatcatcher Presence/Absence Survey Protocol* for non-NCCP areas (USFWS, 1993). Ryan Villanueva (on the same permit or recently submitted to be on the same permit) accompanied Paula Potenza on two of the surveys as a biologist authorized to conduct activities for coastal California gnatcatchers under the direct supervision of an independently authorized biologist.

Surveys for coastal California gnatcatcher were conducted in areas surrounding the project that contain coastal sage scrub vegetation. Within the survey areas, only appropriate vegetation was surveyed. For the winter surveys, at least nine surveys were conducted approximately two weeks apart. The spring surveys all occurred within the gnatcatcher-breeding season (March 15 through June 30), with six surveys conducted approximately one week apart. Table 1 below provides the survey dates for the winter and spring surveys.

Table 1: 2007/2008 Survey Schedule

Survey Location	Surveyors	Survey Dates
Winter (Non-breeding)	Paula Potenza	December 5 and 20, 2007; January 3, 26, and 31, 2008; February 15 and 29, 2008; March 14 and 31, 2008; and April 10, 2008
Spring (Breeding)	Paula Potenza Ryan Villanueva	March 28, 2008; April 3, 10, 17, and 25, 2008; and May 2, 2008

All surveys were conducted between approximately 7:00 a.m. and 12:45 p.m. Weather conditions during the surveys consisted of temperatures from 45 to 78 degrees Fahrenheit, winds from 0 to 8 miles per hour, and cloud cover from 0 to 100 percent. Surveys were either not conducted, or were halted during periods of excessive heat, wind, rain, fog, or other inclement weather. Taped vocalizations (used infrequently) and “pishing” sounds were used to initially locate coastal California gnatcatchers. Taped calls were not used to elicit or prompt further behaviors from birds. Surveys were conducted by slowly walking survey routes and no more than 80 acres of suitable gnatcatcher habitat were surveyed per biologist per day.

RESULTS

During the spring surveys a single pair (adult male and adult female) and three juveniles (belonging to this pair) were observed in coastal sage scrub vegetation along the proposed linear route of the project (see Map 1). No coastal California gnatcatchers were observed in the coastal sage scrub surveyed in the area along Rice Canyon Road (see Map 2) and no coastal California gnatcatchers were observed during the winter surveys.

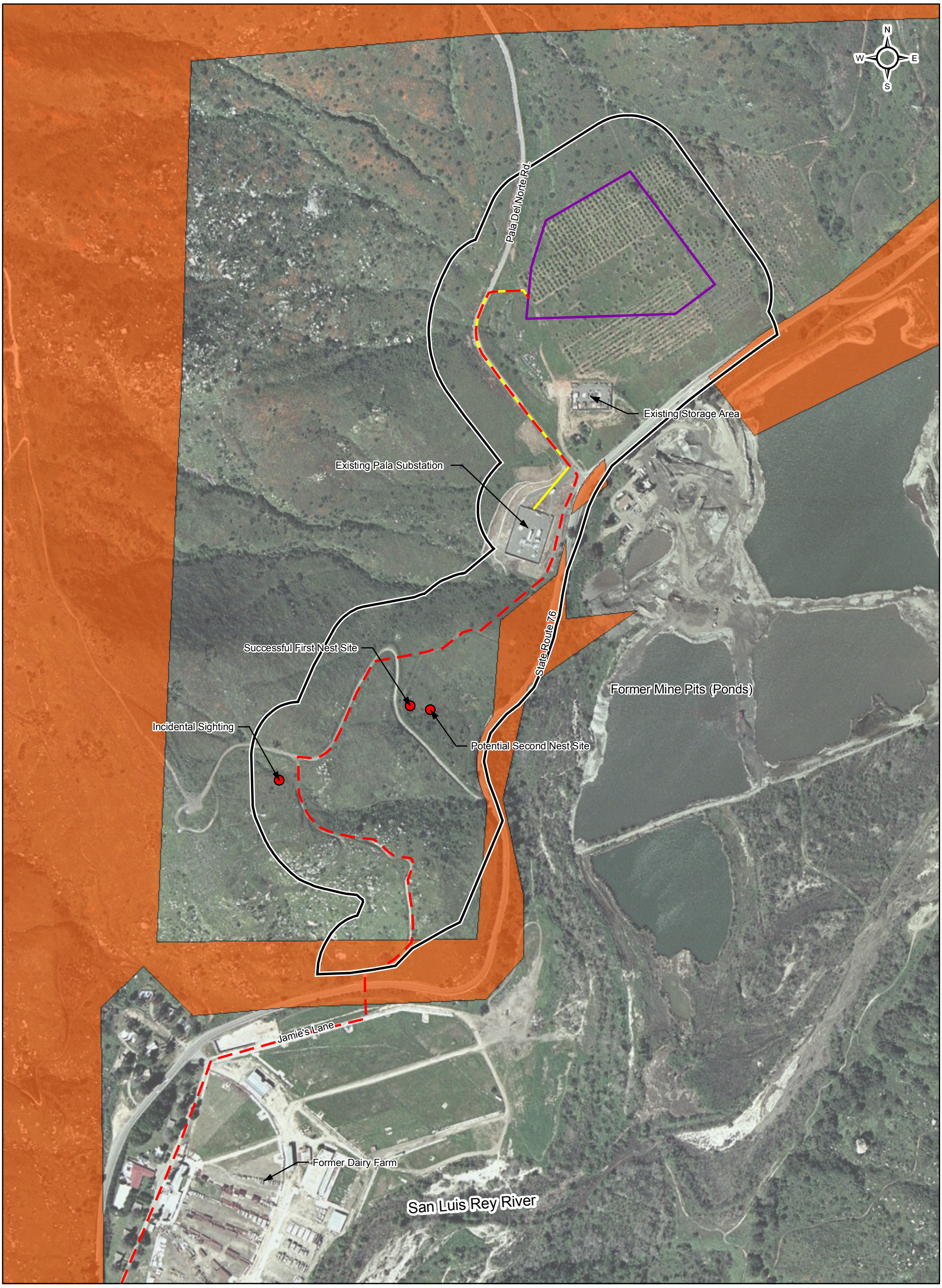
The coastal California gnatcatcher pair was observed during all six surveys. They were observed successfully nesting and fledging three young. By the last survey, the pair appeared to be constructing a second nest and all three juvenile birds were seen in the area with their parents. See Map 1 for the location of the nest sites. Additionally, a single male coastal California gnatcatcher was observed on February 12, 2008 during a habitat assessment of the proposed project linear route (see incidental sighting location on Map 1). This male could have been the male from the pair subsequently seen during the spring surveys or a separate male that moved out of the survey area before the start of the spring surveys.

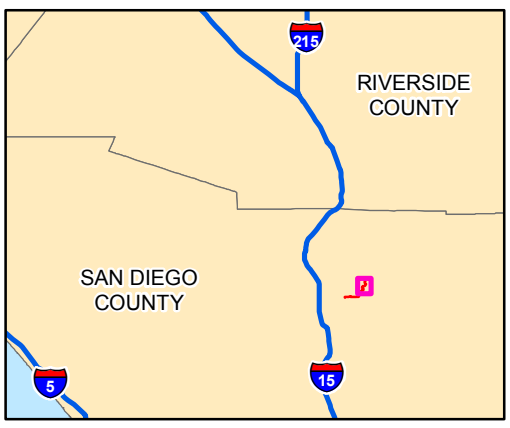
Please contact me at (760) 603-1740 if you have any questions or comments regarding this letter.

Sincerely,

Paula Potenza
Lead Biologist

Attachments





Proposed Gas Line
Survey Area
Proposed Underground Electrical Transmission Line
Coastal California Gnatcatcher Critical Habitat
Site Boundary

Source:
USGS Topographical Quardrangles: Pala, Bonsall.
Aerial Imagery ESRI_Imagery_World_2D
Critical Habitat data from USFWS December 2007

1 " equals 400 '

200 100 0 200 400 600 800 1,000 Feet

Map: 1

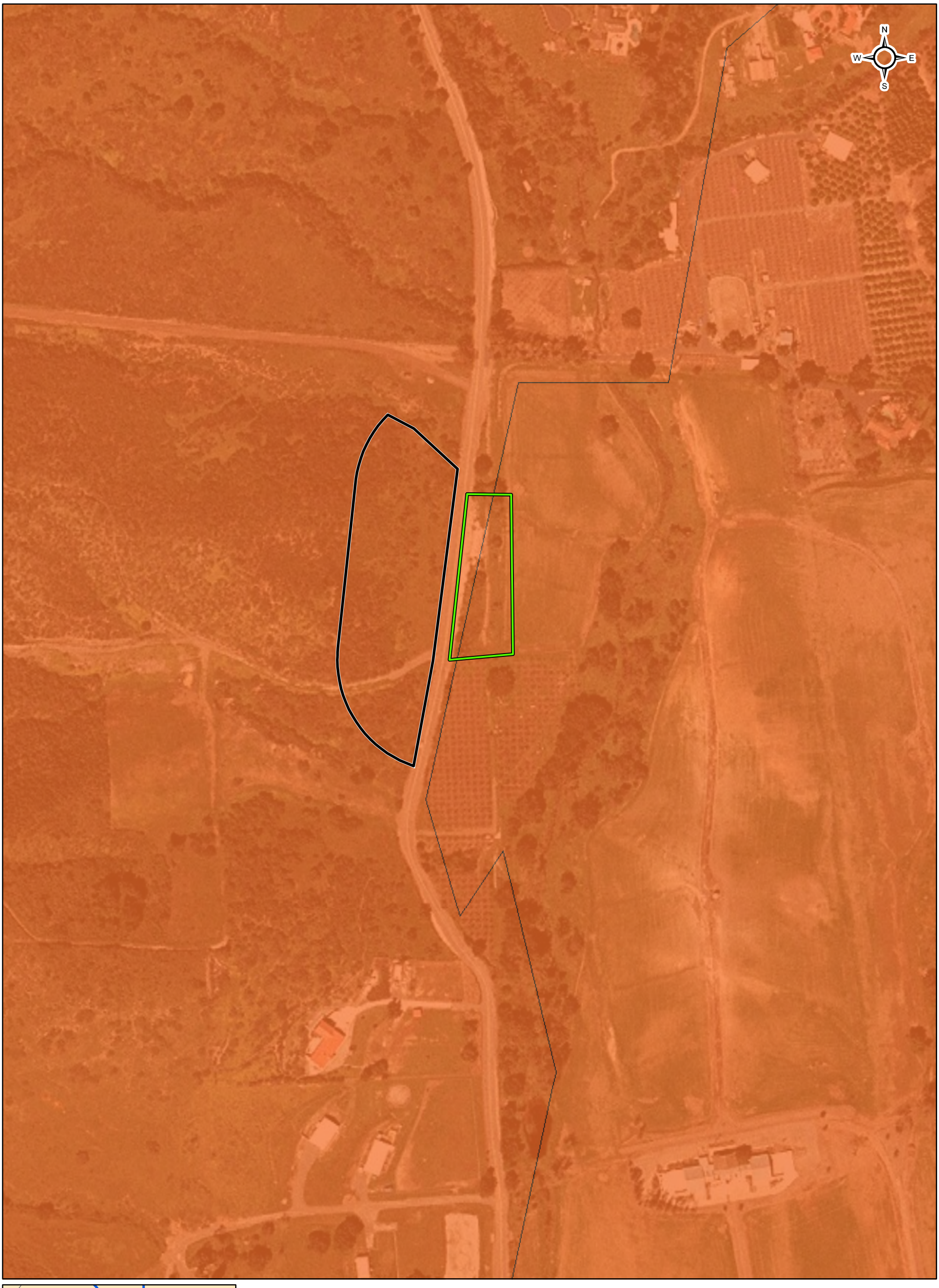
Survey Area for Coastal California Gnatcatcher

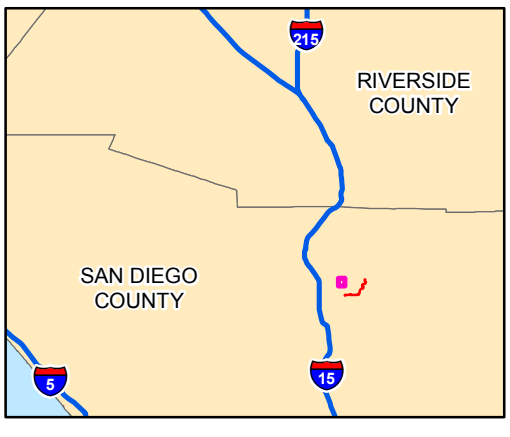
Orange Grove Project

San Diego County

TRC

G:\Orange_Grove-125158\MXD\Gnatcatcher Survey.mxd





Proposed Gas Line
Survey Area
Proposed Underground Electrical Transmission Line
Coastal California Gnatcatcher Critical Habitat
Site Boundary
Hydrant Turnaround Parcel

Map: 2

Survey Area for Coastal California Gnatcatcher

Orange Grove Project

San Diego County

Source:
USGS Topographical Quardrangles: Pala, Bonsall.
Aerial Imagery ESRI_Imagery_World_2D
Critical Habitat data from USFWS December 2007

1 " equals 200 '

200 100 0 200 400 600 Feet

TRC

APPENDIX 6.6-C – 2008 QUINO CHECKERSPOT BUTTERFLY (*EUPHYDRYAS EDITHA QUINO*) PROTOCOL SURVEYS FOR THE ORANGE GROVE PROJECT

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May 27, 2008

Sandra Marquez
Recovery Permit Coordinator
United States Fish and Wildlife Service
Carlsbad Fish and Wildlife Office
6010 Hidden Valley
Carlsbad, CA 92011

RE: 2008 Quino Checkerspot Butterfly (*Euphydryas editha quino*) Protocol Surveys for the Orange Grove Project.

Dear Ms. Marquez:

This letter report summarizes the methodology and findings of protocol-level surveys for the federally listed endangered Quino checkerspot butterfly (Quino) (*Euphydryas editha quino*) conducted by TRC in 2008 for the proposed Orange Grove Energy Power Plant Project (project) site near Pala, in San Diego County, California. Surveys were conducted to determine the presence/absence of Quino in the project area.

Methods

Permitted biologist Paula Potenza (Permit Number TE-037508-1), conducted Quino surveys according to the USFWS Quino Checkerspot Butterfly Survey Protocol Information, dated February 2002. Ryan Villanova, who is on the same permit or recently submitted to be on the same permit, accompanied Paula Potenza on one of the surveys as a biologist authorized to conduct activities for Quino under the direct supervision of an independently authorized biologist.

The portion of the project that falls within Quino Checkerspot Butterfly USFWS Survey Area 2 includes the power plant site (located in an old citrus orchard) and a portion of the linear component just west and south of the power plant site (please see attached map). Where the proposed project falls within Quino Checkerspot Butterfly USFWS Survey Area 2, only suitable habitat within 250 feet of the power plant site and on both sides of the project linear route was surveyed. Excluded areas included vegetated areas with greater than 50 percent cover, developed areas, and the orchard site and related agricultural areas. The habitat assessment survey was

conducted on March 14, 2008. Adult flight surveys began on March 28 and continued until April 24, 2008. For all areas surveyed, five surveys were conducted in suitable habitat approximately one week apart.

Results

No Quino checkerspot butterflies were observed during the protocol-level surveys. Please see the attached project 2008 Quino Checkerspot Butterfly Survey Summary Table for the date of each survey, air temperature, wind speed, weather conditions, and butterflies observed for each of the surveys.

The vegetation types located at the survey sites consisted of coastal sage scrub vegetation. The dominant flowering plants observed during the course of the surveys include popcornflower (*Plagiobothrys* spp.), cryptantha (*Cryptantha* spp.), California poppy (*Eschscholzia californica*), phacelia (*Phacelia* spp.), blue dicks (*Dichelostemma capitatum*), wild-cucumber (*Marah macrocarpus*), wishbone bush (*Mirabilis californica*), long-beak filaree (*Erodium botrys*), black sage (*Salvia mellifera*), chia (*Salvia columbariae*), California broom (*Lotus scoparius*), blue elderberry (*Sambucus mexicana*), shooting star (*Dodecatheon clevelandii*), lupines (*Lupinus* sp.), blue-eyed grass (*Sisyrinchium bellum*), California encelia (*Encelia californica*), mustard (*Brassica* sp.), fiddleneck (*Amsinckia* sp.), bindweed (*Convolvulus arvensis*), golden-yarrow *(Eriophyllum confertiflorum)*, slender-pod jewelflower (*Caulanthus stenocarpus*), sunflower (*Helianthus* sp.), Spanish broom (*Spartium junceum*), ceanothus (*Ceanothus* sp.), chinese houses (*Collinsia* sp.), and tidy-tips (*Layia platyglossa*). The larval primary host plant, plantain (*Plantago erecta*), was observed. Locations of larval host plants were not separately depicted on the attached map because all areas surveyed had plantain scattered throughout. Therefore, the areas delineated on the attached map as surveyed for Quino are also the areas where the larval host plant plantain was observed.

Conclusion

No Quino checkerspot butterflies were observed during the protocol level survey. San Diego County experienced seasonal appropriate amounts of rainfall in the winter months of 2007/2008 followed by periods of warm weather. This weather trend led to an abundance of plant germination and growth as well as abundance of flowering plants, including plantain, during the 2008 Quino adult flight season in the project area. Even though suitable Quino habitat and an abundance of larval host and adult nectaring plants were present in the project area this season, because no Quino were observed during the surveys in 2008, the survey area was considered to be unoccupied for the 2008 adult flight season.

Please call (760) 603-1740 if you have any questions about this Quino checkerspot survey report or its contents.

Sincerely,

Paula Potenza
Lead Biologist

Attachments:

Quino Checkerspot Butterfly Actual Survey Area Map
2008 Quino Checkerspot Butterfly Survey Summary Table
Survey Data Sheets

Orange Grove Project

2008 Quino Checkerspot Butterfly Surveys Summary Table

Date	Biologists	Hours	Weather Conditions	Butterflies Observed
14 March 2008 (Habitat assessment)	P. Potenza	1245 to 1345	65°F, winds 3 to 8 (mph), cloud cover 0%	Painted Lady, Behr's Metalmark, Common Buckeye, Southern Blue, Funereal Duskywing
28 March 2008 (1st Survey)	P. Potenza	1130 to 1330	70° to 72° F, winds 0 to 8 (mph), cloud cover 0%	Painted Lady, Behr's Metalmark, Cabage White, Checkered White, West Coast Lady, Common Buckeye, Pale Swallowtail, Funereal Duskywing, Sara Orange-tip, Acmon Blue, W. Pigmy Blue, Queen, White-lined Sphinx Moth
4 April 2008 (2nd Survey)	P. Potenza	1200 to 1300	63° to 64° F, winds 2 to 6 (mph), cloud cover 20% to 40%	Painted Lady, West Coast Lady, Behr's Metalmark, Cabage White, Checkered White, Common Buckeye, Funereal Duskywing, Sara Orange-tip, Southern Blue, White-lined Sphinx Moth, Dainty Sulfur
10 April 2008 (3rd Survey)	P. Potenza and Ryan Villanova	1215 to 1400	74° to 78° F, winds 2 to 8 (mph) with gusts to 12 (mph), cloud cover 0%	Painted Lady, Behr's Metalmark, Cabage White, Checkered White, Common Buckeye, Funereal Duskywing, Sara Orange-tip, Acmon Blue, Western Tiger Swallow-tail, White-lined Sphinx Moth, Dainty Sulfur
17 April 2008 (4th Survey)	P. Potenza	1100 to 1215	78° to 82° F, winds 2 to 7 (mph), cloud cover 0%	Painted Lady, Behr's Metalmark, Cabage White, Checkered White, Common Buckeye, Funereal Duskywing, Sara Orange-tip,
24 April 2008 (5th Survey)	P. Potenza	1030 to 1200	64° to 68° F, winds 1 to 8 (mph), cloud cover 0%	Painted Lady, West Coast Lady, Behr's Metalmark, Cabage White, Checkered White, Common Buckeye, Funereal Duskywing, Sara Orange-tip, Acmon Blue, Dainty Sulfur, Sulfur (species not identified)

Quino Checkerspot General Form **Adult Survey**

Location Orange Crow Park Project - SD Co. Survey Segment _____
Surveyor Patolenze Date 04/24/08 Survey Week Number 5 - Last
Survey Partner(s) _____
Total Acres: _____ Portion Surveyed: all Elevation: Max _____ Min _____

Time (24 hr)	% Cloud	Sky	Wind (range)	Temp (F)
Start 1030	0	clear patchy overcast drizzle shower	1-4 w/gst to 6+	64-92
		clear patchy overcast drizzle shower		
		clear patchy overcast drizzle shower		
		clear patchy overcast drizzle shower		
		clear patchy overcast drizzle shower		
		clear patchy overcast drizzle shower		
Stop 1200	0	clear patchy overcast drizzle shower	5mm	68°F

Habitat onsite (circle as applicable): hilltops, ridges, rock outcrops, open soils, soil crusts, clay soils, old roads, *Plantago*, *Castilleja*, *Cordylanthus*, *Antirrhinum*, nectar sources.

Butterfly Species	Count (Total)	Hill-topping	Butterfly Species	Count (Total)	Hill-topping
Nymphalidae (Brush Footed Butterflies)			*Leptotes marina* (Marine Blue)		
Euphydras editha quino (Quino Checkerspot)			*Philotes sonorensis* (Sonoran Blue)		
Euphydras chalcedona (Chalcedon Checkerspot)			*Plebejus melissa* (Melissa Blue)		
Charidryas gabbii (Gabb's Checkerspot)			*Everes amyntula* (Western Tailed-Blue)		
Phycoides mylitta (Mylitta Crescent)			*Brephidium exilis* (Western Pygmy-Blue)		
Thessalia leanira (Leanira Checkerspot)			**Riodinidae (Metalmarks)**		
Nymphalis antiopa (Mourning Cloak)			* *Apodemia mormo* (Mormon Metalmark) ~~IIII~~ ~~IIII~~ ~~IIII~~	15	
Basilarchia lorquini (Lorquin's Admiral)			**Papilionidae (Swallowtails)**		
* *Junonia coenia* (Common Buckeye) ~~IIII~~ ~~IIII~~ II	12		*Papilio eurymedon* (Pale Swallowtail)		
* *Vanessa annabella* (West Coast Lady) III	3		*Papilio rutulus* (Western Tiger Swallowtail)		
Vanessa atalanta (Red Admiral)			*Papilio zelicaon* (Anise Swallowtail)		
* *Vanessa cardui* (Painted Lady) ~~IIII~~ ~~IIII~~ II	12		**Pieridae (Whites and Orangetips)**		
Vanessa virginiensis (American Lady)			*Anthocharis cethura* (Desert Orangetip)		
Danaidae			* *Anthocharis sara* (Sara's Orangetip) ~~IIII~~ ~~IIII~~ ~~IIII~~ IIII	19	
Danaus gilippus (Queen)			* *Pieris rapae* (Cabbage White) III	3	
Danaus plexippus (Monarch)			* *Pontia protodice* (Checkered White) IIII	4	
Hesperidae			*Colias eurytheme* (Orange Sulphur)		
Heliopetes ericetorum (Northern White-Skipper)			*Colias harfordii* (Harford's Sulphur)		
Hylephila phyleus (Fiery Skipper)			*Eurema nicippe* (Sleepy Orange)		
Pyrgus albescens (White Checkered-Skipper)			**Satyridae (Satyrids)**		
Erynnis funeralis (Funereal Duskywing)			*Coenonympha californica* (Common California Ringlet)		
Erynnis tristis (Mournful Duskywing)			**OTHERS:**		
Erynnis propertius (Propertius Duskywing)			* Dainty Sulfur - IIII	4	
Ochlodes agricola (Rural Skipper)			* Sulfur (?) I	1	
Lycaenidae (Hairstreaks)					
Atlides halesus (Great Purple Hairstreak)					
Incisalia augustinus (Western Brown Elfin)					
Callophrys perplexa (Perplexing Hairstreak)					
Strymon melinus (Gray Hairstreak)					
Glaucopsyche lygdamus (Southern Blue)					
* *Icaricia acmon* (Acmon Blue) ~~IIII~~ II	7				
Celastrina ladon (Echo Blue)					

(5)

Surveyor P. Potenza **Segment #** _____ **Date:** 04/24/08

Comments:

Butterfly adults reduced

Nesting sum - adults much reduced.

Dry & minimal continuing sum - habitat, nesting source, wildflower plants, ~~[illegible]~~ are dying up and adults much reduced.

Plant Communities and Habitat Information:

Host Plants Present: Plantago mostly dried up

Nectar Plants Present: Added to list - massive use filling flowers.

☐ **Quino Sighting** **Date:** **S Location:**

Photographs Taken:

1.	2.	3.
4.	5.	6.
7.	8.	9.
10.	11.	12.

Quino Checkerspot General Form **Adult Survey**

Location Orange Grove/Pale Alpine - SD. Co. Survey Segment _____
Surveyor P. Pitenze Date 04/17/08 Survey Week Number 4
Survey Partner(s) _____
Total Acres: _____ Portion Surveyed: all Elevation: Max _____ Min _____

Time (24 hr)	% Cloud	Sky	Wind (range)	Temp (F)
Start 1100	0	clear patchy overcast drizzle shower	0-7mph	78°F
		clear patchy overcast drizzle shower		
		clear patchy overcast drizzle shower		
		clear patchy overcast drizzle shower		
		clear patchy overcast drizzle shower		
		clear patchy overcast drizzle shower		
Stop 1235		clear patchy overcast drizzle shower	sun	82°F

Habitat onsite (circle as applicable): hilltops, ridges, rock outcrops, open soils, soil crusts, clay soils, old roads, *Plantago*, *Castilleja*, *Cordylanthus*, *Antirrhinum*, nectar sources.

Butterfly Species	Count (Total)	Hill-topping	Butterfly Species	Count (Total)	Hill-topping
Nymphalidae (Brush Footed Butterflies)			*Leptotes marina* (Marine Blue)		
Euphydras editha quino (Quino Checkerspot)			*Philotes sonorensis* (Sonoran Blue)		
Euphydras chalcedona (Chalcedon Checkerspot)			*Plebejus melissa* (Melissa Blue)		
Charidryas gabbii (Gabb's Checkerspot)			*Everes amyntula* (Western Tailed-Blue)		
Phycoides mylitta (Mylitta Crescent)			*Brephidium exilis* (Western Pygmy-Blue)		
Thessalia leanira (Leanira Checkerspot)			**Riodinidae (Metalmarks)**		
Nymphalis antiopa (Mourning Cloak)			* *Apodemia mormo* (Mormon Metalmark) ~~IIII~~ ~~IIII~~	10	
Basilarchia lorquini (Lorquin's Admiral)			**Papilionidae (Swallowtails)**		
* *Junonia coenia* (Common Buckeye) ~~IIII~~ I	6		*Papilio eurymedon* (Pale Swallowtail)		
Vanessa annabella (West Coast Lady)			*Papilio rutulus* (Western Tiger Swallowtail)		
Vanessa atalanta (Red Admiral)			*Papilio zelicaon* (Anise Swallowtail)		
* *Vanessa cardui* (Painted Lady) ~~IIII~~ ~~IIII~~ ~~IIII~~ I	16		**Pieridae (Whites and Orangetips)**		
Vanessa virginiensis (American Lady)			*Anthocharis cethura* (Desert Orangetip) ~~IIII~~ ~~IIII~~ I		
Danaidae			* *Anthocharis sara* (Sara's Orangetip) ~~IIII~~ ~~IIII~~ ~~IIII~~	26	
Danaus gilippus (Queen)			* *Pieris rapae* (Cabbage White) III	3	
Danaus plexippus (Monarch)			* *Pontia protodice* (Checkered White) ~~IIII~~	5	
Hesperidae			*Colias eurytheme* (Orange Sulphur)		
Heliopetes ericetorum (Northern White-Skipper)			*Colias harfordii* (Harford's Sulphur)		
Hylephila phyleus (Fiery Skipper)			*Eurema nicippe* (Sleepy Orange)		
Pyrgus albescens (White Checkered-Skipper)			**Satyridae (Satyrids)**		
* *Erynnis funeralis* (Funereal Duskywing) III	3		*Coenonympha californica* (Common California Ringlet)		
Erynnis tristis (Mournful Duskywing)			**OTHERS:**		
Erynnis propertius (Propertius Duskywing)					
Ochlodes agricola (Rural Skipper)					
Lycaenidae (Hairstreaks)					
Atlides halesus (Great Purple Hairstreak)					
Incisalia augustinus (Western Brown Elfin)					
Callophrys perplexa (Perplexing Hairstreak)			* Reduced Butterfly Abundance *		
Strymon melinus (Gray Hairstreak)					
Glaucopsyche lygdamus (Southern Blue)					
Icarcia acmon (Acmon Blue)					
Celastrina ladon (Echo Blue)					

(4) Surveyor P. Potenza Segment # _____ Date: 04/17/08

Comments: Butterfly abundance reduced from previous surveys

Nectaring flower abundance also reduced from previous weeks; however still some variety and available nectar sources

Plant Communities and Habitat Information: plantago mostly dried up and brittle.

Host Plants Present: chain fruit were abundant on slope w/CSS; however not to open.

Nectar Plants Present: Additional nectar flower since previous surveys: — yarrow, chinese houses — still here some — CA poppy, some Phacelia sp, bird weed, eremostachys sp, blk mustard, a few blue dicks, blk sage, Elderberry, very little popcorn flow still in bloom

☐ **Quino Sighting** **Date:** **S Location:**

Photographs Taken:

1.	2.	3.
4.	5.	6.
7.	8.	9.
10.	11.	12.

Quino Checkerspot General Form **Adult Survey**

Location Orange Grove/Pala Project - SD. Co. Survey Segment _____
Surveyor D. Potenza Date 04/10/08 Survey Week Number (3)
Survey Partner(s) Ryan Villanova
Total Acres: _____ Portion Surveyed: All Elevation: Max _____ Min _____

Time (24 hr)	% Cloud	Sky	Wind (range)	Temp (°F)
Start 1215	0	(clear) patchy overcast drizzle shower	5-8 mph & 12	74°F
		clear patchy overcast drizzle shower		
		clear patchy overcast drizzle shower		
		clear patchy overcast drizzle shower		
		clear patchy overcast drizzle shower		
		clear patchy overcast drizzle shower		
Stop 1400	0	(clear) patchy overcast drizzle shower	2-5 mph & 7	78°F

Habitat onsite (circle as applicable): hilltops, ridges, rock outcrops, open soils, soil crusts, clay soils, old roads, *Plantago*, *Castilleja*, *Cordylanthus*, *Antirrhinum*, nectar sources
Tiosta flow also Chinese houses

Butterfly Species	Count (Total)	Hill-topping	Butterfly Species	Count (Total)	Hill-topping
Nymphalidae (Brush Footed Butterflies)			*Leptotes marina* (Marine Blue)		
Euphydras editha quino (Quino Checkerspot)			*Philotes sonorensis* (Sonoran Blue)		
Euphydras chalcedona (Chalcedon Checkerspot)			*Plebejus melissa* (Melissa Blue)		
Charidryas gabbii (Gabb's Checkerspot)			*Everes* amyntula (Western Tailed-Blue)		
Phycoides mylitta (Mylitta Crescent)			*Brephidium exilis* (Western Pygmy-Blue)		
Thessalia leanira (Leanira Checkerspot)			**Riodinidae (Metalmarks)**		
Nymphalis antiopa (Mourning Cloak)			* *Apodemia mormo* (Mormon Metalmark)	20	
Basilarchia lorquini (Lorquin's Admiral)			**Papilionidae (Swallowtails)**		
* *Junonia coenia* (Common Buckeye)	29		*Papilio eurymedon* (Pale Swallowtail)		
Vanessa annabella (West Coast Lady)			* *Papilio rutulus* (Western Tiger Swallowtail)	1	
Vanessa atalanta (Red Admiral)			*Papilio zelicaon* (Anise Swallowtail)		
* *Vanessa cardui* (Painted Lady)	9		**Pieridae (Whites and Orangetips)**		
Vanessa virginiensis (American Lady)			*Anthocharis cethura* (Desert Orangetip)		
Danaidae			* *Anthocharis sara* (Sara's Orangetip)	23	
Danaus gilippus (Queen)			* *Pieris rapae* (Cabbage White)	5	
Danaus plexippus (Monarch)			* *Pontia protodice* (Checkered White)	6	
Hesperidae			*Colias eurytheme* (Orange Sulphur)		
Heliopetes ericetorum (Northern White-Skipper)			*Colias* harfordii (Harford's Sulphur)		
Hylephila phyleus (Fiery Skipper)			*Eurema nicippe* (Sleepy Orange)		
Pyrgus albescens (White Checkered-Skipper)			**Satyridae (Satyrids)**		
* *Erynnis funeralis* (Funereal Duskywing)	2		*Coenonympha californica* (Common California Ringlet)		
Erynnis tristis (Mournful Duskywing)			**OTHERS:**		
Erynnis propertius (Propertius Duskywing)					
Ochlodes agricola (Rural Skipper)			* Dainty Sulfur	1	
Lycaenidae (Hairstreaks)					
Atlides halesus (Great Purple Hairstreak)					
Incisalia augustinus (Western Brown Elfin)					
Callophrys perplexa (Perplexing Hairstreak)					
Strymon melinus (Gray Hairstreak)					
Glaucopsyche lygdamus (Southern Blue)					
* *Icarcia acmon* (Acmon Blue)	3				
Celastrina ladon (Echo Blue)					

(3)

Surveyor P. Potenza Segment # Date: 04/10/08

Comments:

Plant Communities and Habitat Information:

Host Plants Present: Plantago, a few owl's clover, Chinese house on slopes,

Nectar Plants Present: Blue dicks, blk mustard, bird weed, CA poppy, popcorn flower, Eriogonum sp, Chia, phacelia sp, Spanish broom, blk sage, owl's clover, couple of plants, Chinese houses, Amsinkia sp, dun weed, tidbits, ~~[illegible]~~, yarrow

☐ **Quino Sighting** **Date:** **S Location:**

Photographs Taken:

1.	2.	3.
4.	5.	6.
7.	8.	9.
10.	11.	12.

Quino Checkerspot General Form **Adult Survey**

Location Orange Grove Park Project - SD Co. Survey Segment _____
Surveyor P. Potenza Date 04/03/08 Survey Week Number 2
Survey Partner(s) _____
Total Acres: _____ Portion Surveyed: All Elevation: Max _____ Min _____

Butterflies + flowers so well surv

Time (24 hr)	% Cloud	Sky	Wind (range)	Temp (F)
Start 1200	40	clear (patchy) ~~overcast~~ drizzle shower	2-6	63°F
		clear patchy overcast drizzle shower		
		clear patchy overcast drizzle shower		
		clear patchy overcast drizzle shower		
		clear patchy overcast drizzle shower		
		clear patchy overcast drizzle shower		
Stop 1300	20	(clear) (patchy) overcast drizzle shower	Same	64°F

Habitat onsite (circle as applicable): hilltops, (ridges), rock outcrops, (open soils), soil crusts, clay soils, (old roads), (*Plantago*, *Castilleja*, *Cordylanthus*, *Antirrhinum*, nectar sources).

Butterfly Species	Count (Total)	Hill-topping	Butterfly Species	Count (Total)	Hill-topping
Nymphalidae (Brush Footed Butterflies)			*Leptotes marina* (Marine Blue)		
Euphydras editha quino (Quino Checkerspot)			*Philotes sonorensis* (Sonoran Blue)		
Euphydras chalcedona (Chalcedon Checkerspot)			*Plebejus melissa* (Melissa Blue)		
Charidryas gabbii (Gabb's Checkerspot)			*Everes amyntula* (Western Tailed-Blue)		
Phycoides mylitta (Mylitta Crescent)			*Brephidium exilis* (Western Pygmy-Blue)		
Thessalia leanira (Leanira Checkerspot)			**Riodinidae (Metalmarks)**		
Nymphalis antiopa (Mourning Cloak)			* *Apodemia mormo* (Mormon Metalmark) 𝍸 𝍸 ||||	14	
Basilarchia lorquini (Lorquin's Admiral)			**Papilionidae (Swallowtails)**		
* *Junonia coenia* (Common Buckeye) 𝍸 |||	8		*Papilio eurymedon* (Pale Swallowtail)		
* *Vanessa annabella* (West Coast Lady) ||||	4		*Papilio rutulus* (Western Tiger Swallowtail)		
Vanessa atalanta (Red Admiral)			*Papilio zelicaon* (Anise Swallowtail)		
* *Vanessa cardui* (Painted Lady) 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 ||||	39		**Pieridae (Whites and Orangetips)**		
Vanessa virginiensis (American Lady)			*Anthocharis cethura* (Desert Orangetip)		
Danaidae			* *Anthocharis sara* (Sara's Orangetip) |	1	
Danaus gilippus (Queen)			* *Pieris rapae* (Cabbage White) 𝍸 |||	8	
Danaus plexippus (Monarch)			* *Pontia protodice* (Checkered White) 𝍸 𝍸	10	
Hesperidae			*Colias eurytheme* (Orange Sulphur)		
Heliopetes ericetorum (Northern White-Skipper)			*Colias harfordii* (Harford's Sulphur)		
Hylephila phyleus (Fiery Skipper)			*Eurema nicippe* (Sleepy Orange)		
Pyrgus albescens (White Checkered-Skipper)			**Satyridae (Satyrids)**		
* *Erynnis funeralis* (Funereal Duskywing) ||||	4		*Coenonympha californica* (Common California Ringlet)		
Erynnis tristis (Mournful Duskywing)			**OTHERS:**		
Erynnis propertius (Propertius Duskywing)					
Ochlodes agricola (Rural Skipper)			Dainty Sulfur 1	1	
Lycaenidae (Hairstreaks)					
Atlides halesus (Great Purple Hairstreak)			White-lined Sphinx Moth	2	
Incisalia augustinus (Western Brown Elfin)			4 11		
Callophrys perplexa (Perplexing Hairstreak)					
Strymon melinus (Gray Hairstreak)					
* *Glaucopsyche lygdamus* (Southern Blue) ||	2				
Icarcia acmon (Acmon Blue)					
Celastrina ladon (Echo Blue)					

(2)

Surveyor P. Poteriza Segment # _____ Date: 04/03/06

Comments:

Plant Communities and Habitat Information:

Host Plants Present:

Nectar Plants Present: - See last survey

☐ **Quino Sighting** **Date:** **S Location:**

Photographs Taken:

1.	2.		3.
4.	5.		6.
7.	8.		9.
10.	11.		12.

Quino Checkerspot General Form **Adult Survey**

Location Orangebrow/Palm Project/SD. Co. Survey Segment _____
Surveyor P. Potenza Date 03/28/08 Survey Week Number 0
Survey Partner(s) _____
Total Acres: _____ Portion Surveyed: All Elevation: Max _____ Min _____

Time (24 hr)	% Cloud	Sky	Wind (range)	Temp (F)
Start 1130	0	(clear) patchy overcast drizzle shower	0–8	~70°
		clear patchy overcast drizzle shower		
		clear patchy overcast drizzle shower		
		clear patchy overcast drizzle shower		
		clear patchy overcast drizzle shower		
		clear patchy overcast drizzle shower		
Stop 1330		(clear) patchy overcast drizzle shower	same	~72

Habitat onsite (circle as applicable): hilltops, ridges, rock outcrops, open soils, soil crusts, clay soils, old roads, *Plantago*, *Castilleja*, *Cordylanthus*, *Antirrhinum*, nectar sources.

Butterfly Species	Count (Total)	Hill-topping	Butterfly Species	Count (Total)	Hill-topping
Nymphalidae (Brush Footed Butterflies)			*Leptotes marina* (Marine Blue)		
Euphydras editha quino (Quino Checkerspot)			*Philotes sonorensis* (Sonoran Blue)		
Euphydras chalcedona (Chalcedon Checkerspot)			*Plebejus melissa* (Melissa Blue)		
Charidryas gabbii (Gabb's Checkerspot)			*Everes* amyntula (Western Tailed-Blue)		
Phycoides mylitta (Mylitta Crescent)			* *Brephidium exilis* (Western Pygmy-Blue) ||	2	
Thessalia leanira (Leanira Checkerspot)			**Riodinidae (Metalmarks)** ~~||||~~ ~~||||~~ ~~||||~~ ||		
Nymphalis antiopa (Mourning Cloak)			* *Apodemia mormo* (Mormon Metalmark) ~~||||~~ ~~||||~~	27	
Basilarchia lorquini (Lorquin's Admiral)			**Papilionidae (Swallowtails)**		
* *Junonia coenia* (Common Buckeye) ||||	4		* *Papilio eurymedon* (Pale Swallowtail) |	1	
* *Vanessa annabella* (West Coast Lady) ||||	4		*Papilio rutulus* (Western Tiger Swallowtail)		
Vanessa atalanta (Red Admiral)			*Papilio zelicaon* (Anise Swallowtail)		
* *Vanessa cardui* (Painted Lady) ~~||||~~ ~~||||~~ ~~||||~~ ~~||||~~ ~~||||~~ ~~||||~~ ~~||||~~	48		**Pieridae (Whites and Orangetips)**		
Vanessa virginiensis (American Lady) ~~||||~~ ~~||||~~ |||			*Anthocharis cethura* (Desert Orangetip)		
Danaidae			* *Anthocharis sara* (Sara's Orangetip) ~~||||~~	5	
* *Danaus gilippus* (Queen) |	1		* *Pieris rapae* (Cabbage White) ~~||||~~ |	6	
Danaus plexippus (Monarch)			* *Pontia protodice* (Checkered White) ~~||||~~ ||||	9	
Hesperidae			*Colias eurytheme* (Orange Sulphur)		
Heliopetes ericetorum (Northern White-Skipper)			*Colias* harfordii (Harford's Sulphur)		
Hylephila phyleus (Fiery Skipper)			*Eurema nicippe* (Sleepy Orange)		
Pyrgus albescens (White Checkered-Skipper)			**Satyridae (Satyrids)**		
* *Erynnis funeralis* (Funereal Duskywing) ~~||||~~	5		*Coenonympha californica* (Common California Ringlet)		
Erynnis tristis (Mournful Duskywing)			**OTHERS:**		
Erynnis propertius (Propertius Duskywing)					
Ochlodes agricola (Rural Skipper)			* White-lined Sphinx Moth ~~||||~~ ||	7	
Lycaenidae (Hairstreaks)					
Atlides halesus (Great Purple Hairstreak)					
Incisalia augustinus (Western Brown Elfin)					
Callophrys perplexa (Perplexing Hairstreak)					
Strymon melinus (Gray Hairstreak)					
Glaucopsyche lygdamus (Southern Blue)					
* *Icaricia acmon* (Acmon Blue) ~~||||~~	5				
Celastrina ladon (Echo Blue)					

Surveyor: P. Potenza Segment #: Date: 03/28/08

Comments:

Plant Communities and Habitat Information:

See habitat assessment.

Host Plants Present: Plantago

Nectar Plants Present: CA poppy, fiareliaceae (both sp.), popcornflower, deerweed, wild mustard, Erodium sp, Amsinkia sp, wild cucumber, ~~morning glory~~, blue dicks, lupin sps, Chia, wishbone, blue-eyed grass, birdweed, CA primrose, jewel flower, wild sage, sunflower, ~~pom-button~~ yarrow, tidy tips,

☐ **Quino Sighting** Date: S Location:

Photographs Taken:

1.	2.		3.
4.	5.		6.
7.	8.		9.
10.	11.		12.

Quino Checkerspot General Form **Adult Survey**

Location Otay Mountain Project - SD. Co. Survey Segment _____
Surveyor P. Potenza Date 03/14/09 Survey Week Number HA Habitat Assess.
Survey Partner(s) _____
Total Acres: _____ Portion Surveyed: all Elevation: Max _____ Min _____

Time (24 hr)	% Cloud	Sky	Wind (range)	Temp (F)
Start 1245	0	clear patchy overcast drizzle shower	3 to 6	65°
		clear patchy overcast drizzle shower		
		clear patchy overcast drizzle shower		
		clear patchy overcast drizzle shower		
		clear patchy overcast drizzle shower		
		clear patchy overcast drizzle shower		
Stop 1345	0	clear patchy overcast drizzle shower		

Habitat onsite (circle as applicable): hilltops, ridges, rock outcrops, open soils, soil crusts, clay soils, old roads, *Plantago*, *Castilleja*, *Cordylanthus*, *Antirrhinum*, nectar sources.

Butterfly Species	Count (Total)	Hill-topping	Butterfly Species	Count (Total)	Hill-topping
Nymphalidae (Brush Footed Butterflies)			*Leptotes marina* (Marine Blue)		
Euphydras editha quino (Quino Checkerspot)			*Philotes sonorensis* (Sonoran Blue)		
Euphydras chalcedona (Chalcedon Checkerspot)			*Plebejus melissa* (Melissa Blue)		
Charidryas gabbii (Gabb's Checkerspot)			*Everes* amyntula (Western Tailed-Blue)		
Phycoides mylitta (Mylitta Crescent)			*Brephidium exilis* (Western Pygmy-Blue)		
Thessalia leanira (Leanira Checkerspot)			**Riodinidae (Metalmarks)**		
Nymphalis antiopa (Mourning Cloak)			*Apodemia mormo* (Mormon Metalmark)	X	
Basilarchia lorquini (Lorquin's Admiral)			**Papilionidae (Swallowtails)**		
Junonia coenia (Common Buckeye)	X		*Papilio eurymedon* (Pale Swallowtail)		
Vanessa annabella (West Coast Lady)			*Papilio rutulus* (Western Tiger Swallowtail)		
Vanessa atalanta (Red Admiral)			*Papilio zelicaon* (Anise Swallowtail)		
Vanessa cardui (Painted Lady)	X		**Pieridae (Whites and Orangetips)**		
Vanessa virginiensis (American Lady)			*Anthocharis cethura* (Desert Orangetip)		
Danaidae			*Anthocharis sara* (Sara's Orangetip)		
Danaus gilippus (Queen)			*Pieris rapae* (Cabbage White)		
Danaus plexippus (Monarch)			*Pontia protodice* (Checkered White)		
Hesperidae			*Colias eurytheme* (Orange Sulphur)		
Heliopetes ericetorum (Northern White-Skipper)			*Colias* harfordii (Harford's Sulphur)		
Hylephila phyleus (Fiery Skipper)			*Eurema nicippe* (Sleepy Orange)		
Pyrgus albescens (White Checkered-Skipper)			**Satyridae (Satyrids)**		
Erynnis funeralis (Funereal Duskywing)	X		*Coenonympha californica* (Common California Ringlet)		
Erynnis tristis (Mournful Duskywing)			**OTHERS:**		
Erynnis propertius (Propertius Duskywing)					
Ochlodes agricola (Rural Skipper)					
Lycaenidae (Hairstreaks)					
Atlides halesus (Great Purple Hairstreak)					
Incisalia augustinus (Western Brown Elfin)					
Callophrys perplexa (Perplexing Hairstreak)					
Strymon melinus (Gray Hairstreak)					
Glaucopsyche lygdamus (Southern Blue)	X				
Icarcia acmon (Acmon Blue)					
Celastrina ladon (Echo Blue)					

Surveyor HA P. Peterson Segment # _____ Date: 03/14/08

Comments: *See map for area suitable for Quino at to be surv

Plant Communities and Habitat Information: - mostly CSS surrounding site and area rock - w/open patches w/ plantago, CA poppy, propcem flr etc. alng perimeter good & mostly of site - Pebble site and steep orchard w/ dense veg and very plant understory - no host plants & few nectar - dirt road adjacent and east of site open exposed grass w/ plantago in patches & verbena plants on and along road CSS on other side 75% cover

Host Plants Present:

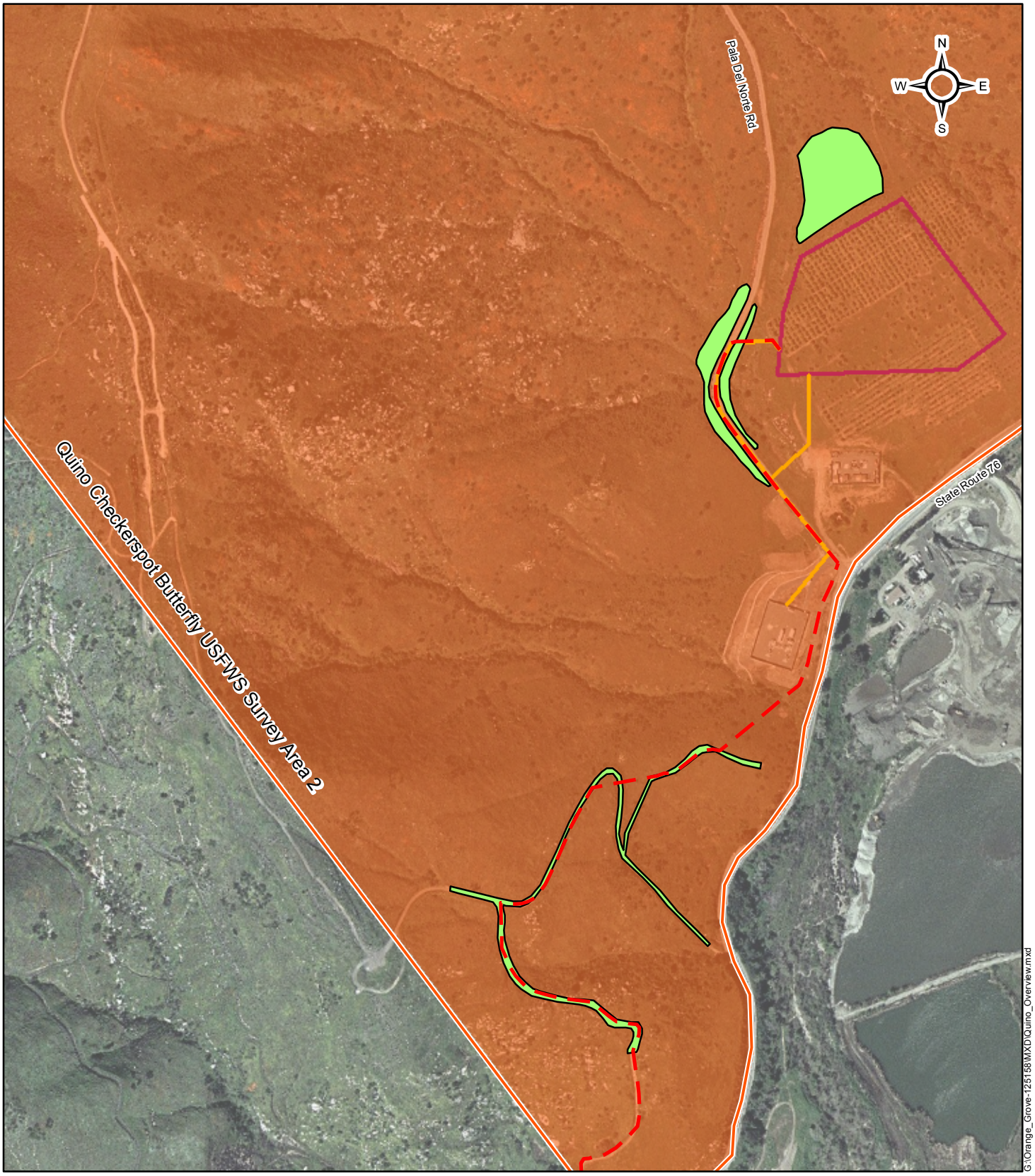
- dot seed plantago

Nectar Plants Present: lots of CA poppy, propcem flr, phacelia sp (bordspan), blue dicks, wild cucumber, erodium sp, San Ldle sage, chia, shooting star, channel snapdrg, Lupin sps., whishbone, Cuscuta sp, tidelotus.

☐ Quino Sighting Date: S Location:

Photographs Taken:

1.	2.	3.
4.	5.	6.
7.	8.	9.
10.	11.	12.



Proposed Gas Line

Proposed Underground Electrical Transmission Line

Site Location

Actual Quino Checkerspot Butterfly Survey Area

Quino Checkerspot Butterfly USFWS Survey Area 2

Orange Grove Project

Quino Checkerspot Butterfly
Actual Survey Area Map

San Diego County

Source:
USGS Topographical Quardrangles: Pala, Bonsall.
Aerial Photography from ESRI_Imagery_World_2D
Library-Remote Sensing 2005

1" = 500'

500 250 0 500 1,000 Feet

TRC

APPENDIX 6.6-D - BIOLOGICAL RESOURCES REPORT FOR THE FPUD RECLAIMED WATER PICKUP LOCATION

1903 Wright Place
Suite 190
Carlsbad, CA 92008

760.603.1740 PHONE
760.603.1750 FAX

www.TRCsolutions.com

December 19, 2007

Joe Stenger
TRC Solutions, Inc.
2666 Rodman Drive
Los Osos, CA 93402

Subject: Orange Grove Project: Water Filling Station, Fallbrook, San Diego County

Dear Joe:

The purpose of this letter is to summarize a biological assessment conducted on December 14, 2007 on Fallbrook Public Utility District (FPUD) property in Fallbrook, California. The survey was conducted to evaluate an area proposed for a water filling station and its associated access road and turn-around area for the Orange Grove Project.

Site Description and Biological Assessment

The proposed water filling station, access road, and turn-around area site are located on property owned by FPUD. Within the proposed project site, the eastern portion of the FPUD property is leased to a plant nursery and the remaining portion consists of dirt roads and open space that is routinely maintained. Because the proposed project site (excluding any dirt roads) is disked on a regular basis, vegetation within the proposed project site is very minimal. Vegetation observed in the area of proposed improvements is limited to some seedlings of mustard (*Brassica* sp.), nonnative grasses, and red-stem filaree (*Erodium cicutarium*). In addition, a few fennel (*Foeniculum vulgare*), which is a perennial herbaceous plant, have resprouted since the area was last disked. Vegetation to the west and north of the proposed project site consists of nonnative grasses, mustard, Russian thistle (*Salsola tragus*), western ragweed (*Ambrosia psilostachya*), and scattered ornamental trees, including eucalyptus (*Eucalyptus* sp.), yucca (*Yucca* sp.), and Peruvian pepper tree (*Schinus molle*). A poorly defined drainage is located outside and approximately 200 feet south of the proposed project site. Vegetation surrounding and lining the drainage includes eucalyptus, castor bean (*Ricinus communis*), fennel, and Bermuda grass (*Cynodon dactylon*). The proposed project site is bordered by the plant nursery to the east.

The project site can be accessed on existing dirt roads from either the FPUD facility

located approximately 0.25 mile to the north or from Alturas Road to the east, via an existing dirt road through the plant nursery. The road through the nursery would be improved and would serve as the only access road to the proposed water filling station.

Conclusion

The proposed project site consists of existing dirt roads and maintained area. Only a very small amount of vegetation was observed within the project site and was limited primarily to seedlings of nonnative herbaceous species. No sensitive plant or animal species and no nesting birds or nest structures were observed during the site assessment or were observed surrounding the project site.

Photographs of the proposed project site are included with this letter report and an aerial of the proposed project site with an overlay of the project footprint is attached. Please contact me at (760) 603-1740 if you have any questions.

Sincerely,

Karen D. Wilson

Karen D. Wilson
Lead Biologist

Attachment

Existing access road through a plant nursery on FPUD property, facing east-northeast. The access road will be improved and will serve as the only access road for the proposed project.

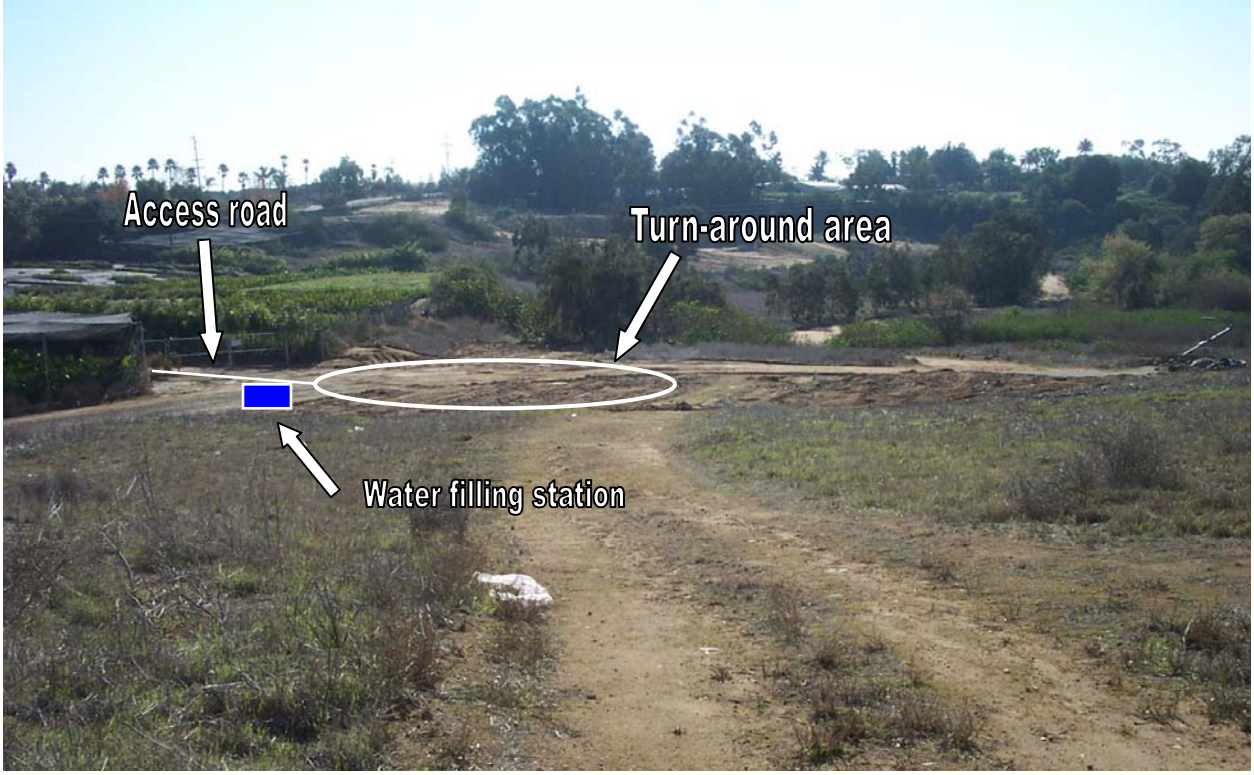
Existing access road through a plant nursery on FPUD property, facing west-southwest. The access road will be improved and will serve as the only access road for the proposed project. The photograph is taken from Alturas Road.

Approximate location of the proposed water filling station, facing north. The FPUD facilities are located approximately 0.25 mile to the north.

Overview of the approximate location of a portion of the proposed turn-around area, facing west.

Overview of the approximate locations of the proposed turn-around area and access road, facing east.

Overview of the approximate location of the proposed turn-around area and the existing dirt road, facing north.



Overview of the approximate locations for the proposed turn-around area, access road, and water filling station, facing south. Note drainage in background

DISCLAIMER: By accepting this map, you agree that the Fallbrook Public Utility District assumes no liability or responsibility of any kind arising from use of this map. This map, its Data, and any calculations associated with this map is provided without warranty of any kind.

LEGEND

- Road Extent
- Recycled Water Line

PROPOSED FILLING STATION ROAD

0.01 0.005 0 0.01 0.02 0.03 0.04 Miles

0 50 100 200 300 400 Feet

Map Created by Todd Jester (12-14-07). X:\GIS\Data - Inside\Project Specific\RECLAIMED WATER ROAD_FILLING STATION\Filling_Station.mxd

Projection: California State Plane, NAD 83, Feet, Epoch 1991.35 Source: Eagle Aerial 2006, SANGIS,FPUD

Fallbrook Public Utility District

APPENDIX 6.6-E – RESULTS OF A HABITAT ASSESSMENT FOR THE FEDERALLY ENDANGERED STEPHEN'S KANGAROO RAT (*DIPODOMYS STEPHENSI*) FOR THE ORANGE GROVE ENERGY PROJECT

SJM BIOLOGICAL CONSULTANTS

20 May 2008 SJMBC.755

Attention: Ms. Elisha Back
TRC Companies
21 Technology Drive
Irvine, CA 92618
(949) 727-7371

SUBJECT: Results of a habitat assessment for the federally endangered Stephens' kangaroo rat (*Dipodomys stephensi*) (SKR) for the Orange Grove Energy Project (i.e., project); located near the Community of Pala in the northern portion of San Diego County, California (Figure 1).

Dear Ms. Back:

This letter-report presents the results of a site assessment for SKR at the above-described project site.

STUDY AREA DESCRIPTION

The project study area consists of a 250-foot strip of land centered on the proposed gas line alignment that begins at Rice Canyon Road and extends approximately 2.5 miles eastward mostly along or in close proximity to Pala Road (SR76). This area consists primarily of historically disturbed lands used for agriculture (including an abandoned orchard at the eastern terminus where gas line facilities are proposed), but also encompasses parts of the San Luis Rey River floodplain at a couple locations.

The gas line will be installed in a trench within the 250-foot study area. In addition to the gas line itself, a small area of disturbed weedy habitat located at the east edge of Rice Canyon Road ½ mile north of Pala Road is proposed as a water loading site for this project.

BACKGROUND

General natural history features and habitat requirements of SKR are fairly well known (O'Farrell 1987, 1990). Habitats occupied by SKR characteristically occur on level to gently sloping terrain, although the species has occasionally been found on relatively steep slopes (Montgomery 1990; M.J. O'Farrell, pers. comm.). Soils in habitats harboring SKR are typically loamy in nature, while soils dominated by clay or sand very rarely support this species (Price and Endo 1989; S.J. Montgomery, pers. observ.; O'Farrell 1987; O'Farrell and Uptain 1989).

Stephens' kangaroo rats typically occupy lands described as disturbed annual grassland and characterized by a relatively sparse cover of both shrubs and herbaceous vegetation. Although resident SKR have occasionally been found in relatively dense stands of sage scrub in Riverside County (S.J. Montgomery, pers. observ.), such occurrences are by far the exception to the rule. Occupied habitats commonly exhibit an abundance of bare soil during much of the year. Nonetheless, spring/early summer flushes of forb (e.g., *Erodium* sp.) growth often temporarily reduce the amount of visible exposed ground. This phase of the yearly cycle of vegetation cover is subsequently transformed by the desiccating forces of the summer season, which cause non-grass herbaceous vegetation (i.e., forbs) to dry up and disarticulate, again revealing the bare ground that is so characteristic of occupied SKR habitat. Reflecting this preference for open ground, a high ratio of forbs to grasses increases the suitability of grassland for SKR.

Stephens' kangaroo rats are capable of occupying small patches of favorable habitat amidst otherwise unsuitable habitats (e.g., dense grass). They also readily use narrow strips of open habitat to move between larger blocks of suitable habitat (S. Montgomery, pers. observ.; O'Farrell 1990; Price and Kelly 1992).

The Stephens' kangaroo rat is known to occur widely in Riverside County, and its distribution in that county is generally well known (RCHCA 1995). However, the distribution of SKR and information regarding its populations in San Diego County are less well documented. Stephens' kangaroo rats presently inhabit or historically inhabited several widely scattered localities in San Diego County including Camp Pendleton Marine Corps Base (CPMCB) and Fallbrook Naval Weapons Station (FNWS); adjacent parts of Oceanside and nearby lands adjacent to the San Luis Rey River; the general grassland region encompassing Lake Henshaw and Warner Springs; Guejito Ranch east of Escondido; and Ramona (Beauchamp 1984; Lackey 1967; Montgomery 1991; O'Farrell et al. 1989, 1987, 1986; Ogden 1998; Thomas 1975, 1973; USFWS 1997, 1993). The recent discoveries of sizable populations of this species at the Guejito Ranch and Ramona in San Diego County, and in Norco and Anza Valley in Riverside County (Montgomery 1990, 1992), suggest that the limits of its range may still remain to be completely delineated.

Several populations of SKR also occur in more coastal sections of San Diego County, all of which fall within the Western Conservation Planning Area identified in the Draft Recovery Plan for the Stephen's Kangaroo Rat (USFWS 1997). A sizable population, encompassing approximately 2700 acres of occupied and 2300 acres of potentially occupied SKR habitat, was reported for the FNWS immediately west of the town of Fallbrook (USFWS 1993). Several relatively small populations of the species are known to occur on CPMCB, immediately west and south of the FNWS. The total area of occupied habitat on CPMCB was most recently estimated at approximately 700 acres by Montgomery (1997). Nonetheless, both of these populations may have decreased in area since the reports listed above (Montgomery 1994). Scattered populations also historically occurred nearby to the south and east of CPMCB and Fallbrook, along the San Luis Rey River Valley, and on adjoining hillsides (Lackey 1967; Thomas 1973). However, no populations of SKR have been identified in the San Luis Rey River area in recent years,

and the species is probably extirpated in this area (Davenport 1997; O'Farrell and Uptain 1989; USFWS 1997).

Stephens' kangaroo rats are not known to occur closer than within approximately seven miles of the project (California Natural Diversity Data Base 2008). Known populations of SKR nearest to the project occur several miles to the northwest at the FNWS and CPMCB. Nonetheless, due to the general proximity of known occupied SKR habitat in the vicinity of the project, a field check for potentially suitable habitat and/or kangaroo rat sign potentially attributable to SKR was required by San Diego County.

METHODS

The entire project area was visited on 3 May 2008 and assessed for its potential to support SKR. All grassland habitats, including agricultural fields and sparse sage scrub stands, were evaluated for their potential to harbor this species. Open ruderal portions of previously or currently developed lands (e.g., abandoned dairies, etc.) also were inspected for habitat conditions known to be suitable for SKR as well as typical kangaroo rat sign such as tracks, burrows, and scat.

RESULTS

Substrates in most of the study area have been heavily disturbed for many years and would therefore be generally unsuitable for SKR. No areas exhibiting the typical grassland or open sage scrub habitats known to be used/occupied by this species were found to exhibit sign of SKR. Furthermore, the absence of known populations of SKR in the vicinity generally eliminates the potential for future colonization of the project area by this species.

In summary, SKR are not present in any portion of the project area. Thus, impacts to this species would not occur in association with construction or operation of the proposed project.

Please contact me with any questions you may have regarding this report or the subject matter contained therein.

Sincerely,

Stephen J. Montgomery
U.S. Fish and Wildlife Service Permit TE745541-10

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APPENDIX 6.6-F – 2008 SOUTHWESTERN WILLOW FLYCATCHER SURVEY REPORT FOR THE PROPOSED ORANGE GROVE PROJECT

July 9, 2008

Ms. Sandra Marquez
U.S. Fish & Wildlife Service
Carlsbad Field Office
6010 Hidden Valley Way
Carlsbad, CA 92011

Dear Sandra;

The following is my 45 day Southwestern Willow Flycatcher (*Empidonax traillii extimus*) report (Permit TE- 787376) for the Orange Grove Energy Power Plant project located near Pala, in San Diego County, CA. No Southwestern Willow Flycatchers were found.

The proposed Orange Grove Energy Power Plant Project (Project) includes:

- a 96 megawatt (MW) electric generating plant located on an approximately 8.5 acre site (the "Site");
- an approximately 0.3 mile underground electric transmission line interconnection between the Site and the existing Pala substation;
- an approximately 2.4-mile natural gas pipeline lateral (the "gas pipeline") that will connect the Site to an existing San Diego Gas and Electric (SDG&E) regional gas transmission main;
- A fresh water pickup station where water trucks will be filled from an existing Fallbrook Public Utility District (FPUD) water main for hauling to the Site;
- a reclaim water pickup station where water trucks will be filled at an existing FPUD water reclamation plant for hauling to the Site; and
- Pala substation upgrades as required for interconnection and transmission system mitigation to be agreed upon with the California Independent System Operator (CAISO) and SDG&E.

The Project is located near Pala, in San Diego County, California (Vicinity Map). The areas surveyed are located in northeastern San Diego County east of Interstate 15, south of State Route 76, and west of the Pala Casino along the San Luis Rey River (Survey Maps 1 & 2).

PLANT COMMUNITIES

All appropriate riparian vegetation found on and within the 250 feet of the proposed project site and linear routes was surveyed. Approximately 6.7 acres of good quality southern cottonwood-willow riparian forest was surveyed (Survey Area 1 – Map 1) and approximately 3.7 acres of moderate quality southern coast live oak riparian forest (with some elements of southern cottonwood-willow riparian forest) was surveyed (Survey Area 2 – Map 2). Dominant plant species observed within Survey Area 1 include western cottonwood (*Populus fremontii*), black willow (*Salix goodingii*), arroyo willow (*Salix lasiolepis*), mule-fat (*Baccharis salicifolia*), mugwort (*Artemisia douglasiana*), ragweed (*Ambrosia* sp.), cattails (*Typha lattifolia*), and poison oak (*Toxicodendron diversilobum*). Dominant plant

species observed within Survey Area 2 include coast live oak (*Quercus agrifolia*), western cottonwood, black willow, toyon (*Heteromeles arbutifolia*), mule-fat, mugwort, ragweed, and poison oak.

SURVEY LOCATIONS

Surveys were conducted on and up to 250 feet surrounding the proposed project site and on either side of the project linear routes (See Map 1 and Map 2). Only suitable flycatcher habitat was surveyed. Elevation in the survey areas was approximately 300 feet above sea level. Surveys were conducted in two separate areas where riparian habitat is located within 250 feet of the project route.

Survey Area 1 Location

Located south of State Route 76 and along the north side of the San Luis Rey River, the area surveyed included appropriate southern cottonwood-willow riparian forest within the survey corridor for the linear portion of the project route (see Survey Area 1 – Map 1). This survey area is within T9S/T10s, R2W of the U.S. Geological Survey (USGS) Pala 7.5-minute quadrangle.

Survey Area 2 Locations

Survey Area 2 is located north of Survey Area 1 on the north side of the San Luis Rey River and along the southern shoulder of State Route 76 in more marginal habitat, consisting of southern coast live oak riparian forest with some elements of southern cottonwood-willow riparian forest found (see Survey Area 2 – Map 2). This survey area is within T9S, R2W of the U.S. Geological Survey (USGS) Pala 7.5-minute quadrangle.

METHODOLOGY

Peter Bloom conducted 5 presence/absence surveys occurring as follows; one survey between May 15 and May 31 (**May 23**), one survey between June 1 and June 21 (**June 3**), and 3 surveys between June 22 and July 17 (**June 28, July 3, and July 9**). All surveys were conducted according to the *USFWS Southwestern Willow Flycatcher Survey Protocol* (Sogge et al. 1997 and July 11, 2000 FWS amendment).

RESULTS

No Southwestern Willow flycatchers were found. A list of avian species detected during the protocol surveys is provided in Appendix A - Species Compendia.

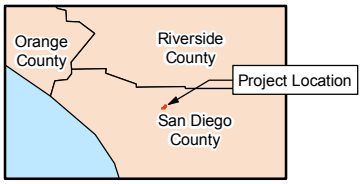
APPENDIX A – SPECIES COMPENDIA

COMMON NAME	SCIENTIFIC NAME
MALLARD	*Anas platyrhynchos*
RED-SHOULDERED HAWK	*Buteo lineatus elegans*
AMERICAN KESTREL	*Falco sparverius*
CALIFORNIA QUAIL	*Callipepla californica*
COOPER'S HAWK	*Accipiter copperii*
BARN OWL	*Tyto alba*
WESTERN SCREECH OWL	*Otius kennicottii*
GREATER ROAD RUNNER	*Geococcyx californianus*
RUDDY DUCK	*Oxyura jamaicensis*
MOURNING DOVE	*Zenaida macriura*
NORTHERN MOCKINGBIRD	*Mimus polyglottos*
COMMON RAVEN	*Corvus corax*
AMERICAN CROW	*Corvus brachyrhyncos*
LEAST BELL'S VIREO	*Vireo bellii*
GOLDEN EAGLE	*Aquila chrysaetos*
RED-WINGED BLACKBIRD	*Agelaus phoeniceus*
PACIFIC SLOPE FLYCATCHER	*Empidonax difficilis*
ASH-THROATED FLYCATCHER	*Myiarchus cinerascens*
WESTERN SCRUB JAY	*Aphelocoma californica*
BUSHTIT	*Psaltriparus minimus*
COMMON YELLOW-THROAT	*Geothlypis trichas*
BLACK-HEADED GROSBEAK	*Pheucticus melanocephalus*
BLUE GROSBEAK	*Guiraca caerulea*
SPOTTED TOWHEE	*Pipilo maculatus*
CALIFORNIA TOWHEE	*Toxostoma redivivum*
BROWN HEADED COWBIRD	*Molothrus ater*
BREWERS BLACKBIRD	*Euphagus cyanocephalus*
HOUSE FINCH	*Carpodacus cassinii*
LESSER GOLDFINCH	*Carduelis psaltria*
AMERICAN GOLDFINCH	*C. tristis*
GREAT BLUE HERON	*Ardea herodias*
BLACK-CROWNED NIGHT HERON	*Nycticorax nycticorax*
RED-TAILED HAWK	*Buteo jamaicensis*

SONG SPARROW	*Melospiza melodia*
CALIFORNIA THRASHER	*Toxostoma redivivum*
CLIFF SWALLOW	*Petrochelion pyrrhonota*
BULLOCK'S ORIOLE	*Icterus bullockii*
LARK SPARROW	*Chondestes grammacus*
CALIFORNIA GULL	*Larus californicus*

Should you have any questions or comments, please do not hesitate to ask.

Peter H. Bloom
Zoologist



Proposed Gas Line

Southwestern Willow Flycatcher Survey Area

1" = 200'

200 100 0 200 400 Feet

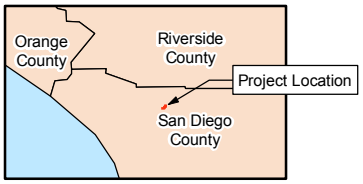
SWF Survey Area 1

Map: 1

Orange Grove Project

TRC

Source:
Aerial photography from ESRI_Imagery_World_2D



Proposed Gas Line

Southwestern Willow Flycatcher Survey Area

1" = 200'

200 100 0 200 400 Feet

SWF Survey Area 2

Map: 2

Orange Grove Project

TRC

Source:
Aerial photography from ESRI_Imagery_World_2D

APPENDIX 6.6-G – 2008 LEAST BELL'S VIREO SURVEY REPORT FOR THE PROPOSED ORANGE GROVE PROJECT

1903 Wright Place
Suite 190
Carlsbad, CA 92008

760.603.1740 PHONE
760.603.1750 FAX

www.TRCsolutions.com

July 1, 2008

Ms. Sandra Marquez
U.S. Fish and Wildlife Service
6010 Hidden Valley Road
Carlsbad, California 92011

SUBJECT: 2008 Least Bell's Vireo (*Vireo bellii pusillus*) Survey Report for the Proposed Orange Grove Project

Permit Number: TE-037508-1

Dear Ms. Marquez:

This letter report summarizes the methodology and findings of protocol-level surveys for the federally and state endangered least Bell's vireo (vireo). The surveys were conducted by TRC in 2008 (spring, breeding) for the proposed Orange Grove Energy Power Plant Project (project) located near Pala, in San Diego County, California. The areas surveyed are located in northeastern San Diego County east of Interstate 15, south of State Route 76, and west of the Pala Casino along the San Luis Rey River. Surveys were conducted to determine the presence/absences of vireo.

SURVEY LOCATIONS

Surveys were conducted on and up to 250 feet surrounding the proposed project site and on either side of the project linear routes (See Map 1 and Map 2). Only suitable vireo habitat was surveyed. Elevation in the survey areas was approximately 300 feet above sea level. Surveys were conducted in two separate areas where riparian habitat is located within 250 feet of the project route. According to the U.S. Fish and Wildlife Service's online Critical Habitat Mapper Portal (visited June 27, 2008 from http://criticalhabitat.fws.gov/) all of the areas surveyed for this project fall within designated least Bell's vireo critical habitat.

Survey Area 1 Location

Located south of State Route 76 and along the north side of the San Luis Rey River, the area surveyed included appropriate southern cottonwood-willow riparian forest within the survey corridor for the linear portion of the project route (see LBV Survey Area 1 – Map 1). This survey area is within T9S/T10s, R2W of the U.S. Geological Survey (USGS) Pala 7.5-minute quadrangle.

Survey Area 2 Locations
Survey Area 2 is located north of Survey Area 1 on the north side of the San Luis Rey River and along the southern shoulder of State Route 76 in more marginal habitat, consisting of southern coast live oak riparian forest with some elements of southern cottonwood-willow riparian forest found (see LBV Survey Area 2 – Map 2). This survey area is within T9S, R2W of the U.S. Geological Survey (USGS) Pala 7.5-minute quadrangle.

PLANT COMMUNITIES
All appropriate riparian vegetation found on and within the 250 feet of the proposed project site and linear routes was surveyed. Approximately 6.7 acres of good quality southern cottonwood-willow riparian forest was surveyed (Survey Area 1 – Map 1) and approximately 3.7 acres of moderate quality southern coast live oak riparian forest (with some elements of southern cottonwood-willow riparian forest) was surveyed (Survey Area 2 – Map 2). Dominant plant species observed within Survey Area 1 include western cottonwood (*Populus fremontii*), black willow (*Salix goodingii*), arroyo willow (*Salix lasiolepis*), mule-fat (*Baccharis salicifolia*), mugwort (*Artemisia douglasiana*), rageweed (*Ambrosia* sp.), cattails (*Typha* sp.), and poisoin oak (*Toxicodendron diversilobum*). Dominant plant species observed within Survey Area 2 include coast live oak (*Quercus agrifolia*), western cottonwood, black willow, toyon (*Heteromeles arbutifolia*), mule-fat, mugwort, rageweed, and poisoin oak.

METHODOLOGY
Paula Potenza (TRC Biologist) conducted eight presence/absence surveys at least ten days apart for least Bell's vireo from April 14, 2008 to June 23, 2008, according to the *USFWS Least Bell's Vireo Presence/Absence Survey Protocol* for non - NCCP areas (USFWS, 1992). Surveys were conducted on April 14 and 24, 2008; May 4, 14, and 24, 2008; and June 3, 13, and 23, 2008. Because Paula Potenza is not permitted to conducted vireo nest surveys, no taped calls were played and vireos were often not followed so that any nest or nesting behavior was not affected. Vireos were typically identified by calls/songs and by sight and were watched and followed only until identification and locations were confirmed.

All surveys were conducted between approximately 7:00 a.m. and 11:00 a.m. Weather conditions during the surveys consisted of temperatures from 58 to 76 degrees Fahrenheit, winds from 0 to 5 miles per hour, and cloud cover from 0 to 100 percent. Surveys were either not conducted or were halted during periods of excessive heat, wind, rain, fog, or other inclement weather. Taped vocalizations were not used to locate vireos. Surveys were conducted by slowly walking survey routes along the edges and through the riparian vegetation were possible and no more than 3 linear kilometers or 50 hectares of vireo habitat were surveyed on a single survey day.

RESULTS
Least Bell's vireo pairs exhibiting territorial behavior were observed in appropriate riparian habitat in Survey Area 1 (Map 1). No least Bell's vireos were observed in Survey Area 2 (Map 2). A total of eight vireos were observed; seven adult vireos (three pairs and one single male) and one juvenile vireo (with one of the adult pairs) were observed during the eight protocol-level surveys (see LBV Survey Area 1 – Map 1). However, no nests were located or searched for during the surveys and no leg bands or markers were observed on any of the vireos encountered. In addition, brown-headed cowbirds (*Molothrus ater*) were observed during all eight surveys of Survey Area 1.

Survey Area 1 Location
Two singing male least Bell's vireos were first heard and observed during the first survey, on April 14, within the southwestern end of Survey Area 1 along an old dirt road that parallels all and cuts through a small portion of the riparian survey area (see attached Map 1). Both of the two signing males were heard and/or observed during all subsequent surveys in the same general area. These two males were observed counter singing and exhibiting territorial behavior. On at least three different occasions during the surveys a female vireo was observed with each of the males; therefore, it was assumed that these were paired vireos. These two vireo pairs are labeled as Pair 1 and Pair 2 within LBV Survey Area 1 on the attached Map 1. No nest or juveniles were observed with Pair 1 or Pair 2 during the eight surveys. A rough approximation of Pair 1 and Pair 2 territories are depicted as "Area Observed" within LBV Survey Area 1 on the attached Map 1 based on observations of these two male's locations during all eight surveys.

During the second to last survey, on June 13, a third vireo pair was observed southwest of Pair 2 (see Pair 3 within LBV Survey Area 1 on Map 1) and during the last survey, on June 23, a vireo pair with one juvenile was observed near were Pair 3 had been observed on June 13. This pair was likely the same pair as observed on June 13 because of their observed locations; therefore, they were counted as the same pair in the total of vireos observed. Also during the last survey a single male vireo was observed singing within the northeastern end of the survey area (see LBV Survey Area 1 - Map 1). The single male was moving around and eventually moved to the southwest and was lost in heavy riparian vegetation.

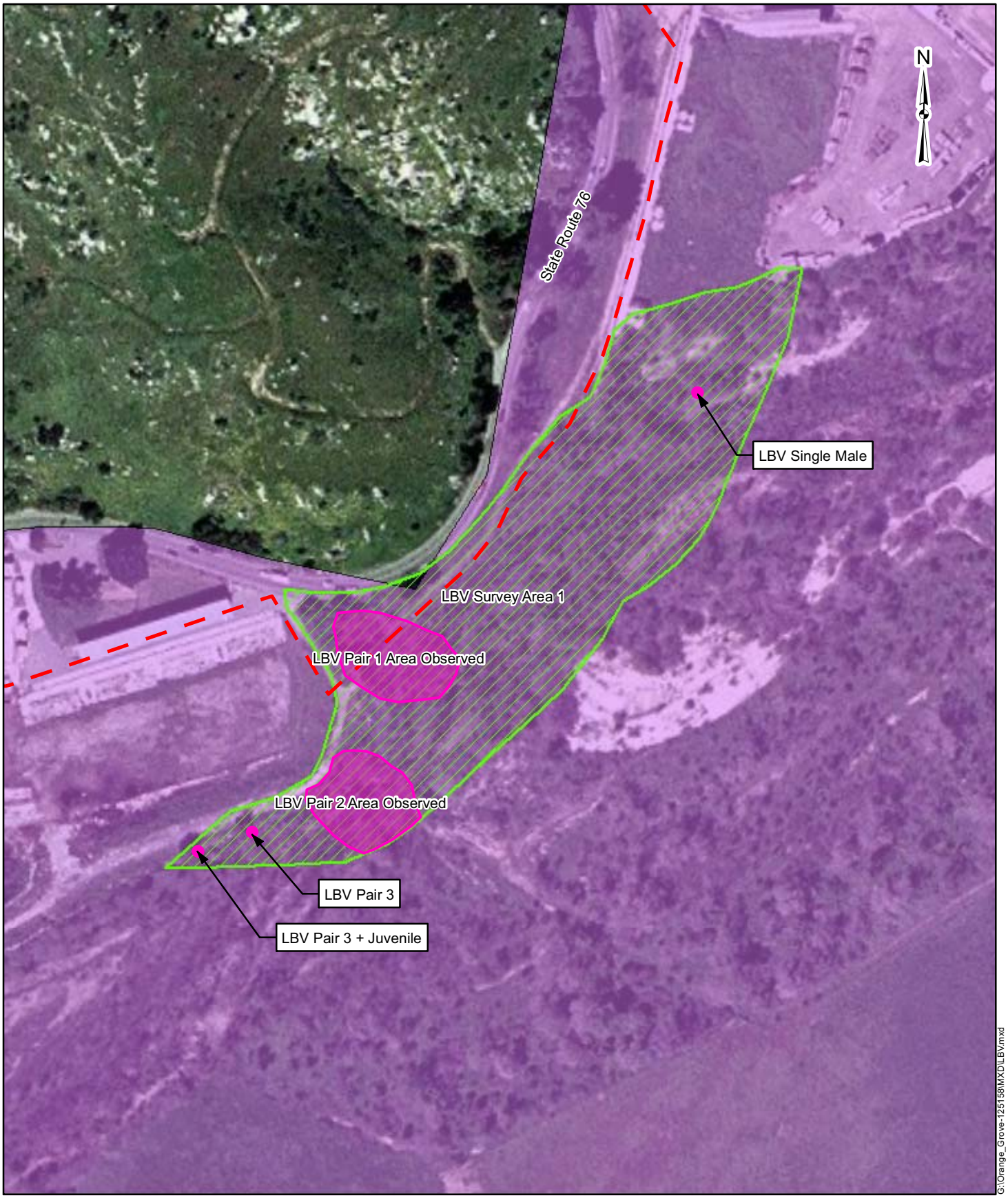
Survey Area 2 Location
No least Bell's vireos were observed during the eight surveys conducted in this survey location.

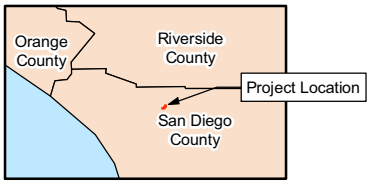
Please contact me at (760) 603-1740 if you have any questions or comments regarding this letter.

Sincerely,

Paula Potenza
Lead Biologist

Attachments





Proposed Gas Line

Least Bell's Vireo Individual Sightings

Least Bell's Vireo Survey Area

Least Bell's Vireo Critical Habitat

1" = 200'

200 100 0 200 400 Feet

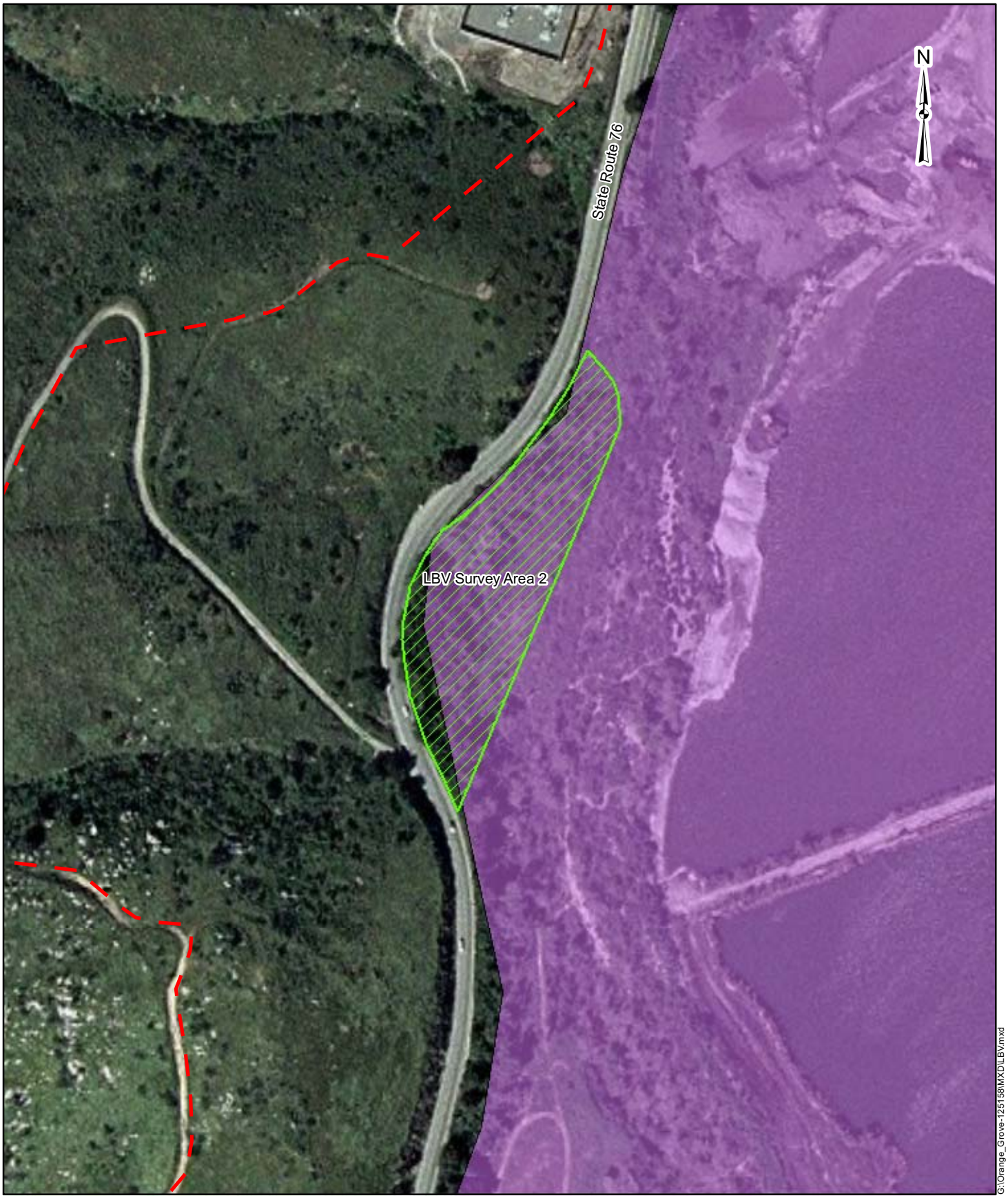
LBV Survey Area 1

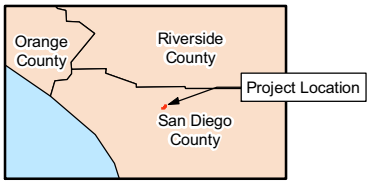
Map: 1

Orange Grove Project

TRC

Source:
Aerial photography from ESRI_Imagery_World_2D





Proposed Gas Line

Least Bell's Vireo Individual Sightings

Least Bell's Vireo Survey Area

Least Bell's Vireo Critical Habitat

1" = 200'

200 100 0 200 400 Feet

LBV Survey Area 2

Map: 2

Orange Grove Project

TRC

Source:
Aerial photography from ESRI_Imagery_World_2D

APPENDIX 6.6-H – RESULTS OF ARROYO TOAD HABITAT ASSESSMENT FOR THE ORANGE GROVE PROJECT, SAN DIEGO COUNTY, CALIFORNIA

May 15th, 2008

Ms. Elisha Back
TRC Companies, Inc.
21 Technology Drive
Irvine, CA 92618

Subject: Results of Arroyo Toad Habitat Assessment for the Orange Grove Project, San Diego County, California

Dear Ms. Back:

This letter presents the results of a breeding and upland habitat assessment for the federally endangered arroyo toad (*Bufo californicus*) within the Orange Grove Project study area (Study Area) located approximately two to four miles west of Pala, San Diego County, California.

STUDY AREA LOCATION/DESCRIPTION

The Orange Grove Project (project) is a proposed 96-megawatt power plant with ancillary facilities including an approximately 2.4-mile natural gas pipeline and an offsite water truck loading station. The Study Area encompasses the power plant site, a 250-foot radius bordering the power plant site, and the proposed natural gas pipeline alignment extending from Pala Del Norte Road in a southwest direction to Rice Canyon Road as shown in Attachment A, Arroyo Toad Habitat Assessment. The Study Area also includes the proposed water truck loading site located adjacent to Rice Canyon Road approximately one mile north of the SR-76 intersection. The Study Area is characterized as abandoned orchards (proposed facilities location), disturbed/developed (existing Pala substation, and former dairy farm facilities), coast live oaks/woodlands, coastal sage scrub, non-native grassland, ruderal, southern mixed chaparral, southern cactus scrub, sumac scrub, and agricultural lands. The Study Area also extends into the vegetated portion of the San Luis Rey River flood prone area at two locations. These two locations are dominated by southern cottonwood willow riparian forest as shown in Attachment A, Arroyo Toad Habitat Assessment.

BACKGROUND

The arroyo toad was listed as an endangered species by the U.S. Fish and Wildlife Service (USFWS) on December 16, 1994 (59 FR 241: 64859-64866) (USFWS 1994), and is considered a species of special concern by the California Department of Fish and Game. This rather uniformly warty, stocky toad has a light-colored stripe across the head that includes the eyelids. The parotoid glands are oval-shaped, widely separated, and pale toward the front. The underside of the arroyo toad is usually buff-colored and unspotted, and the cranial crests are absent or weak. Early descriptions of the habitat requirements for the arroyo toad are based on detailed life history studies conducted over a period of years by Sweet (1992, 1993). Much of that work was conducted in the Los Padres National Forest in Santa Barbara County. Subsequent to this work, additional studies of populations in other portions of the range have resulted in a somewhat broader habitat description (e.g., Griffin et al. 1999, Ramirez et al. 1999, 2000, 2001, 2002). It can generally be said that the arroyo toad frequents third order or larger washes, streams, and arroyos in semiarid parts of the southwest. Stream substrates range from sands to small cobble, with sandy banks supporting mule fat (*Baccharis salicifolia*), willows (*Salix* spp.), cottonwoods (*Populus* spp.), or

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sycamores (*Platanus racemosa*). The arroyo toad breeds both within streams and in small backwater pools that form along the stream margins, usually in relatively shallow water (four inches).

METHODS

Ruben S. Ramirez, Jr., research biologist, conducted a review of literature pertaining to the life history, habitat requirements, and distribution of the arroyo toad within and adjacent to the Study Area. Prior to initiating the site survey, the Study Area boundary was mapped onto a recent digitally orthorectified aerial photograph for the purpose of accurately surveying all areas within and adjacent to the potential direct/indirect impact area. A reconnaissance survey of the Study Area was conducted by Mr. Ramirez on April 7th, 2008 to qualitatively assess potential breeding and upland habitat for the arroyo toad. The survey included an assessment of all habitats and culverts (potential movement routes) present within and adjacent to the Study Area.

RESULTS

Arroyo Toad Distribution within Vicinity of Study Area

The arroyo toad has been documented within the San Luis Rey River flood prone area throughout the reach located adjacent to and partially within the Study Area (USFWS 2007, CNDDB 2008). Suitable breeding and high quality upland habitat occurs within those portions of the San Luis Rey River flood prone area located immediately adjacent to the Study Area.

Characteristics of Suitable Arroyo Toad Breeding and Upland Habitat

Arroyo toads have very specific habitat requirements (Jennings and Hayes 1994). Suitable habitat includes rivers and streams with the following primary constituent elements (i.e., physical and biological features that are essential to the conservation of the species) based on studies completed by Sweet (1992, 1993), Griffin (1999), and Ramirez (1999, 2000, 2001, 2002) and summarized by the USFWS (2000):

1. A hydrologic regime that supplies sufficient flowing water of suitable quality for breeding followed by complete metamorphosis (i.e., hatching from eggs into tadpoles and completed development from tadpoles into juvenile toads) must be present. In the northern portion of the range, surface water, either as stream flow or persisting pools, must last into at least July.

2. Low gradient stream segments with shallow breeding pools for mating and egg laying, sandy or fine gravel beds where egg masses are deposited and tadpoles develop, and sparsely vegetated sand and gravel bars that are sufficiently wet, at least temporarily, for juvenile toads to forage and burrow must be present.

3. A natural flooding regime, which reworks sand and gravel bars, scours dense streamside vegetation, and deposits streamside sand bars and upland sand terraces such that breeding pools, terraces, and vegetation requirements are maintained for all life stages of the toad must be present.

4. Upland sandy terrace habitats of sufficient width and quality with areas of loose sandy soil where adult toads can burrow outside the breeding season must be present. Non-breeding estivation sites generally posses an associated canopy cover (mule fat, willow spp.) and layer of detritus.

5. Few or no non-native wildlife species (e.g., crustaceans, gamefish, and bullfrogs) which may compete with or prey on adult or juvenile toads and/or tadpoles and plants (e.g., giant reed which chokes out native vegetation and may alter flood patterns) should be present.

6. Streams and upland areas absent of artificial barriers which interfere with natural flooding regimes and toad movement (e.g., migration to and from breeding pools, dispersal between populations, or recolonization of previously occupied areas) should be present.

7. Habitats undisturbed by grading, agriculture, or other human-associated land use conversions should be present.

This suite of conditions is vital to the persistence of viable arroyo toad populations, yet occur in dynamic stream systems that are inherently unstable and can change within the lifetime of an individual, for example by a flood event. Arroyo toad habitat is generally produced and maintained by narrow drainages of intermediate size (Sweet 1992), typically third to sixth order streams or larger, generally where the stream is still bordered by ridges of moderate relief and the stream gradient is low. In headwater areas above these stream segments, the higher stream gradient, lack of sediment build up, and smaller amount of available water result in sections that dry too soon. Downstream of these areas, the broader canyons and increased streambed width result in early loss of surface flows or increased stream gradients drain available water too quickly.

Characteristics of Suitable Arroyo Toad Breeding and Upland Habitat within and Adjacent to the Study Area

To evaluate the presence of potentially suitable breeding and upland habitat within and adjacent to the Study Area, habitat conditions observed during the site survey were compared with the primary constituent elements identified above.

Breeding Habitat

Habitats located within the Study Area do not represent suitable breeding habitat for the arroyo toad. The two channels that occur in the southwestern-most portion of the Study Area which drain in a southward direction through culverts (1) and (2) have scattered regions of inundation as shown in Attachment B, Culvert (1) Photographs, Attachment C, Culvert (2) Photographs. Based on the lack of suitable substrate conditions and degraded adjacent vegetation (due to active agriculture), the arroyo toad is not expected to breed in these channels. Also, no suitable arroyo toad breeding habitat was documented within the two portions of the San Luis Rey River flood prone area characterized as southern cottonwood willow riparian forest (Area 1 and 2) located within the Study Area. The isolated inundated areas documented within Area 2 as noted in Attachment A, Arroyo Toad Habitat Assessment, were characterized as freshwater marsh habitat and did not possess suitable substrates and an open canopy representative of arroyo toad breeding habitat. No arroyo toad larvae or clutches were documented or are expected to occur at this location. However, as discussed below, Areas 1 and 2 represent high quality arroyo toad foraging, movement, and estivation habitat.

Upland Habitat

The following upland habitat assessment is based on the presence and/or absence of suitable estivation habitat located onsite and within the vicinity of potential movement routes between the San Luis Rey River flood prone area and Study Area.

The majority of the Study Area is expected to have been utilized historically as upland habitat by the arroyo toad. However, traffic flows on SR-76 are expected to significantly reduce the likelihood of

successful movement between the San Luis Rey River flood prone area and those habitats located north and west of SR-76. Although SR-76 in the absence of traffic does not represent a barrier to potential arroyo toad movement, based on current conditions and traffic flow generated by the Pala and Pauma Indian Casinos during all hours of the day, large culverts are expected to represent the primary routes for successful arroyo toads movements between the San Luis Rey River and upland resources located north of SR-76. Arroyo toads were documented utilizing a large culvert near Gird Road to move between upland aestivation habitat and the San Luis Rey River during previous studies within the watershed (Personal Observation).

A portion of the northern Study Area extends into the San Luis Rey River flood prone area and is characterized as southern cottonwood willow riparian forest (Area 1) as shown in Attachment A, Arroyo Toad Habitat Assessment. This region represents high quality arroyo toad estivation habitat. However, project initiation would not result in either a direct and/or indirect impact to the arroyo toad in this portion of the Study Area. All construction activities near Area 1 would occur west of SR-76.

A portion of the central Study Area also extends into the San Luis Rey River flood prone area and is characterized as southern cottonwood willow riparian forest (Area 2) as shown in Attachment A, Arroyo Toad Habitat Assessment and Attachment D, Study Area Photographs. Portions of this area represent high quality arroyo toad upland habitat. However, project initiation is not expected to result in either a direct and/or indirect impact to the arroyo toad in this portion of the Study Area if standard avoidance measures are implemented. All construction activities in this area would occur along an existing dirt road and would not result in any direct impact to riparian vegetation (potential arroyo toad upland habitat). Although arroyo toads may occasionally utilize the dirt road for foraging and movement, the rip/rap slope located between the dirt road and riparian canopy would prevent direct access by arroyo toads.

The balance of the vegetation communities within the San Luis Rey River flood prone area located south and east of SR-76 and within the Study Area are disturbed, developed, or agricultural lands. None of these areas represent suitable arroyo toad estivation habitat. However, arroyo toads may utilize portions of these lands for movement, foraging, and temporary burrowing during the breeding season. Nonetheless, project initiation is not expected to result in either a direct and/or indirect impact to the arroyo toad in this portion of the Study Area if standard avoidance measures are implemented.

Based on the known movement capacity of the arroyo toad within drainages (>1.0 mile) and within upland terraces outside of flood prone areas(0.8 mile), two (2) channels/culverts represent potential movement routes between the San Luis Rey River flood prone area and Study Area. The two channels/culverts which represent potential movement routes are approximately 1 foot in diameter as shown in Attachments B and C.

Channel/Culvert 1 is accessible to the arroyo toad as a potential movement route between the Study Area and San Luis Rey flood prone area. Culvert 1 is located near the intersection of SR-76 and Rice Canyon Road. As the channel extends south of Culvert 1, a small reach of this drainage/bench habitat, which occurs within the Study Area, represents marginal arroyo toad upland habitat. The parcel located between this reach and Couser Canyon Road is characterized as agricultural lands. Although this habitat is not characteristic of quality upland arroyo toad estivation habitat, based on the lack of obstructions which would preclude the arroyo toad from moving between this area and the San Luis Rey River flood prone area and presence of suitable soils, the species may infrequently utilize this area when foraging or searching for upland estivation habitat. Arroyo toads have been documented to use similar habitat types when no obstructions exist between breeding and upland aestivation sites (San Mateo Creek, Griffin 1999). As the channel extends 4,000 feet north of Pala Road from Culvert 1, the conditions both within and adjacent to the channel are extensively disturbed (concrete channelized, agricultural terraces) and

do not represent suitable upland estivation habitat. The channel finally extends upstream to coast live oak woodland habitat located within the Study Area surrounding the proposed water truck loading station as shown in Attachment E, Rice Canyon Photographs and Attachment F, Study Area Photographs. Although I would characterize this woodland as suitable arroyo toad upland habitat, it remains unlikely that the species is moving over existing obstacles and disturbed conditions to this habitat. No direct or indirect impacts to the arroyo toad would be expected from project initiation at this location given that all construction activities would be conducted outside of the channel.

Culvert 2 is accessible to the arroyo toad as a potential movement route between the Study Area and San Luis Rey flood prone area. The lands located immediately east and west of this reach and Couser Canyon Road are characterized as agricultural lands as shown in Attachment F, Study Area Photographs. This habitat is not characteristic of quality upland estivation habitat. However, based on the lack of obstructions which would preclude the arroyo toad from moving between this area and the San Luis Rey River flood prone area and the presence of suitable soils, the species may infrequently utilize this area when foraging or searching for upland estivation habitat.

All project-related activities in the vicinity of Channels/Culverts 1 and 2 are proposed north of SR-76 and no direct impacts to the arroyo toad are expected in this area. In addition, no indirect impacts to arroyo toad breeding habitat in the San Luis Rey River associated with inadvertent discharges into Rice and Couser stream channels are expected given implementation of the Storm Water Pollution Prevention Plan (SWPPP) associated with the project.

RECOMMENDATIONS

No potential arroyo toad breeding habitat is present within the Study Area. Therefore, USFWS protocol surveys are not warranted. The USFWS protocol surveys were developed to determine presence/absence at potential arroyo toad breeding sites and are not intended or adequate for assessing potential upland habitat utilization.

Breeding Season Conservation Measures

For construction activities that occur between March 1st and August 31st (breeding season for this region), implementation of the following conservation measures would likely avoid adverse impacts to the arroyo toad.

1 Exclusionary fencing should be installed between the southern cottonwood willow riparian forest (Area 2 as shown in Attachment A) and the impact area. Specifically, the fencing would be installed on the southwest side of the dirt road where the pipeline would be installed. Such fencing would consist of woven nylon netting approximately 3 feet in height attached to wooden stakes. Prior to installing the fencing, a narrow trench approximately 3 to 6 inches in depth would be excavated and the fence buried, to prevent burrowing beneath the fence. All fencing materials (i.e., mesh, stakes, etc.) would be removed following construction. Ingress and egress of construction equipment and personnel would be kept to a minimum, but when necessary, equipment and personnel would use a single access point to each of the project areas. Toad exclusionary fencing should be checked daily by the contractor before and after each day's construction activities for damage and all necessary repairs should be made immediately. All fencing would be removed following completion of all project related activities.

2 Project-related vehicle travel should be limited to daylight hours, as potential roadway mortality of arroyo toads would be expected to be greatest at night.

3 A monitoring biologist should be onsite during initial clearing and grubbing activities to ensure compliance with all proposed conservation measures. The monitoring biologist

would prepare reports for the project proponent and permitting agency (if required) that document compliance with these measures. The biologist should perform the following duties:

a. Submit weekly reports (including photographs of impact areas) to the project proponent during: a) initial clearing and grubbing activities; and b) installation of exclusionary fencing. The weekly reports should document that authorized impacts were not exceeded and general compliance with all conservation measures were met.

b. The biologist should prepare a final report for the project proponent within 60 days of project completion that includes: as-built construction drawings with an overlay of habitat that was impacted, photographs of the project areas, and other relevant summary information documenting general compliance with all avoidance measures.

4 The applicant should ensure that the following conditions are implemented during project construction:

a. Employees should strictly limit their activities, vehicles, equipment, and construction materials to predetermined staging areas or existing roads.

b. To avoid attracting predators, project areas should be kept as clean of debris as possible. All food-related trash items should be enclosed in sealed containers and regularly removed from the project areas.

c. No pets should be allowed in the project areas.

d. Brush and other debris should be properly managed.

e. All equipment maintenance, staging, and dispensing of fuel, oil, or coolant should occur within a predetermined staging area. Contractor equipment should be checked for leaks prior to operation and repaired as necessary. “No-fueling zones” should be designated on gas pipeline construction plans, if fueling will occur outside of the designated pipeline construction staging areas.

f. A qualified biologist should conduct an endangered species awareness training session for all project personnel prior to the start of the proposed construction activities. The training would include a description of the arroyo toad and its habitats, general provisions of the ESA, need to adhere to the provisions of the ESA, penalties associated with violating the ESA, general measures that are being implemented to conserve the arroyo toad (as they relate to the project), and construction site boundaries.

Non-Breeding Season Conservation Measures

For construction activities that occur between August 1st and February 28th (non-breeding season for this region), implementation of conservation measures 3 and 4 above would likely avoid adverse impacts to the arroyo toad.

If you have any comments or questions, please contact me at 949.300.0212 or e-mail me at r.ramirez@cadreenvironmental.com.

Sincerely,
Cadre Environmental

Ruben S. Ramirez, Jr.
Research Biologist

ATTACHMENT A - Arroyo Toad Habitat Assessment
ATTACHMENT B - Culvert (1) Photograph
ATTACHMENT C - Culvert (2) Photographs
ATTACHMENT D - Study Area Photographs
ATTACHMENT E – Rice Canyon Photographs
ATTACHMENT F - Study Area Photographs

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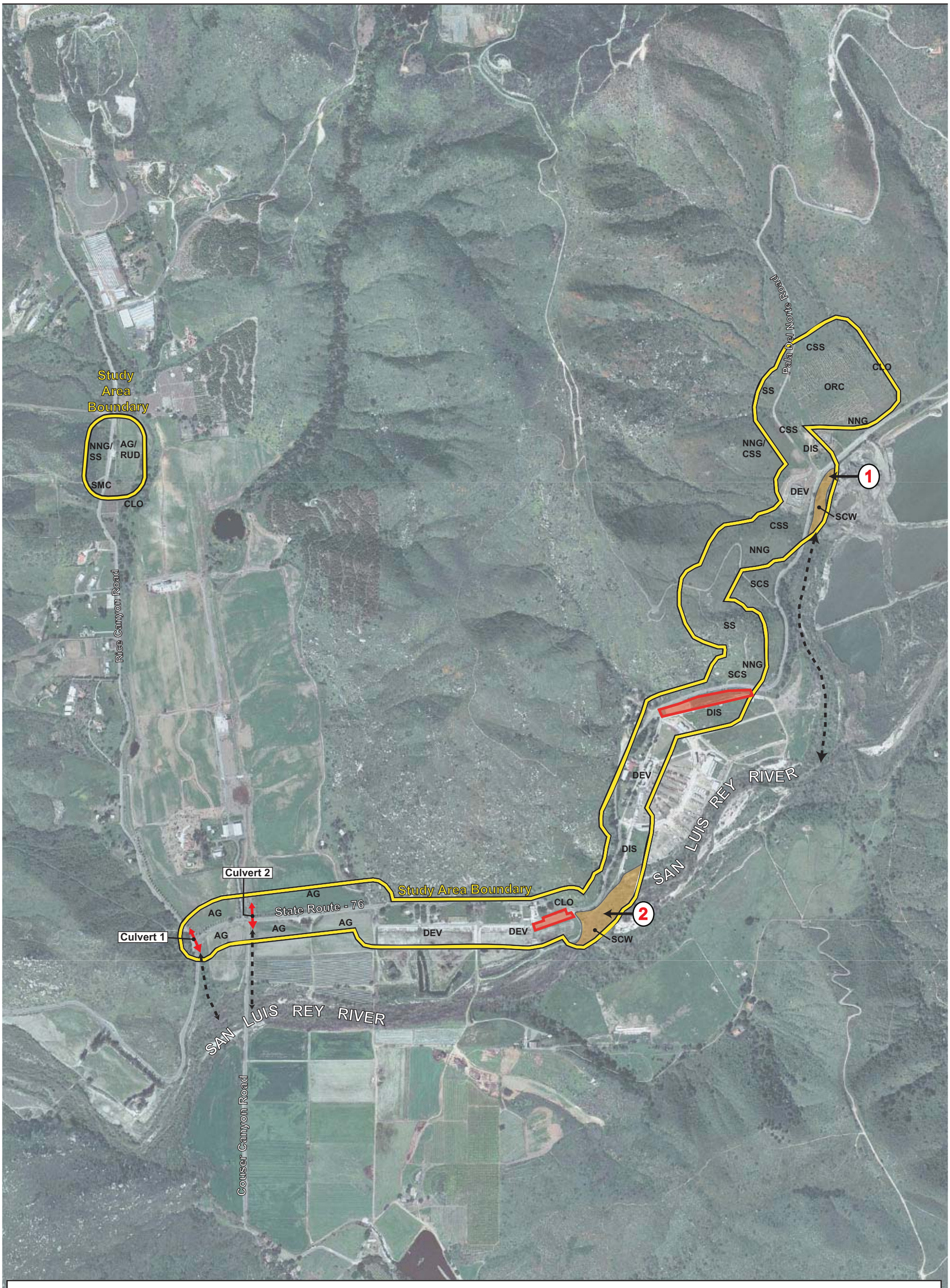

LEGEND

- Culvert - Potential Access Point North of SR-76
- Arroyo Toad Potential Estivation Habitat
- Potential Movement Routes
- Staging Areas

ORC - Abandoned Orchard
DIS - Disturbed
DEV - Developed
CLO - Coast Live Oak
CSS - Coastal Sage Scrub
NNG - Non-native Grassland

SCW - Southern Cottonwood Willow Riparian Forest
RUD - Ruderal
SMC - Southern Mixed Chaparral
SCS - Southern Cactus Scrub
SS - Sumac Scrub
AG - Agricultural Lands

Source: Aerial Coverage & Survey Boundary - TRC

Attachment A - Arroyo Toad Habitat Assessment
Orange Grove Project
San Diego County, California

CADRE Environmental

N

1 inch = 1,000 feet

Top: This culvert (1) (approx. 1ft diameter) is accessible to the arroyo toad as a potential movement route from the San Luis Rey River flood prone area north of SR-76. However based on the disturbed conditions of the creek for approx 4,000 feet including rip/rap, concrete channelization and lack of adjacent upland habitat, it is unlikely that the arroyo toad is utilizing these areas extensively.

Bottom: Downstream of culvert (1) located within the study area and south of SR-76. The narrow floodprone area represents marginal upland habitat for the arroyo toad.

Attachment B - Culvert (1) Photographs
Orange Grove Project
San Diego County, California

CADRE Environmental

Top: This culvert (2) (approx. 1ft diameter) is accessible to the arroyo toad as a potential movement route from the San Luis Rey River flood prone area north of SR-76. The channel reach shown in the photograph is located immediately east of Couser Canyon Road and south of SR-76.

Bottom: The channel extends north of SR-76. The channel reach located within the study area does not represent suitable breeding or estivation habitat for the arroyo toad.

Attachment C - Culvert (2) Photographs
Orange Grove Project
San Diego County, California

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Top: Former dairy farm located within the survey area south of SR-76. Although this region does not represent suitable arroyo toad estivation habitat, individuals may utilize this area for foraging and movement.

Bottom: Two regions of the study area are characterized as southern cottonwood willow riparian forest and represent high quality arroyo toad estivation habitat. The proposed project impacts would occur within the existing dirt road illustrated in the photograph and no direct impacts to potential estivation habitat would occur as a result of project initiation and implementation of standard avoidance measures.

Top: The cement channelized reach of this channel (adjacent to Rice Canyon Road) is approximately 1,000ft upstream from Culvert (1). There is also small sized rip/rap located on the downstream edge of the channel.

Bottom: The channel is unvegetated for approximately 3,000 feet upstream from the cement channelized reach. Adjacent habitats to this reach are disturbed/agriculture. The channel finally extends upstream to coast live oak woodland habitat located within the study area. Although under different circumstances I would characterize this woodland region as suitable arroyo toad upland habitat, it remains unlikely that the species is moving over the existing obstacles and disturbed conditions to this resource.

Top: Southwestern region of study area where the dominant vegetation community is agricultural lands. Although the arroyo toad may occasionally forage and burrow in this region during the breeding season, this habitat does not represent suitable estivation habitat.

Bottom: Proposed water truck loading station study area located adjacent to Rice Canyon Road. Dominant vegetation communities located within the study area include agricultural lands/ruderal, non-native grassland/sumac scrub, and southern mixed chaparral. This region is not expected to be utilized by the arroyo toad for breeding or upland estivation.

Attachment F - Study Area Photographs
Orange Grove Project
San Diego County, California

CADRE Environmental

Attachment F
Water Resources Section of the Orange Grove Project AFC

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SECTION ACRONYMS/ABBREVIATIONS

ACRONYM/ ABBREVIATION	DEFINITION
ACOE	United States Army Corps of Engineers
AFC	Application for Certification
AFY	Acre Feet per Year
BMPs	Best Management Practices
CBO	Chief Building Officer
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CDWR	California Division of Water Resources
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CWA	Clean Water Act
DEIR	Draft Environmental Impact Report
DPLU	San Diego County Department of Planning and Land Use
EIR	Environmental Impact Report
FPUD	Fallbrook Public Utility District
gpd	Gallons per Day
gpm	Gallons per Minute
HA	Hydrologic Area
HDD	Horizontal Directional Drilling
LORS	Laws, Ordinances, Regulations and Standards
mg/L	Milligrams per Liter
MCL	Maximum Contaminant Level
MS4	Municipal Separate Storm Sewer System
MWD	Metropolitan Water District of Southern California
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
Orange Grove Energy	Orange Grove Energy, L.P.
Project	Subject of this AFC, Orange Grove Project

ACRONYM/ ABBREVIATION	DEFINITION
Project Site	Approximately 8.5 acre parcel to be leased for the power plant Site (a.k.a. “Site”)
RMWD	Rainbow Municipal Water District
RO	Reverse Osmosis
RWQCB	Regional Water Quality Control Board
SDCWA	San Diego County Water Authority
SDG&E	San Diego Gas and Electric
Site	Approximately 8.5 acre parcel to be leased for the power plant Site (a.k.a. “Site”)
SLRMWD	San Luis Rey Municipal Water District
SPCC	Spill Prevention, Control and Countermeasures
SR	State Route
Stormwater Ordinance	County of San Diego Watershed Protection, Stormwater Management and Discharge Control Ordinance
SUSMP	Standard Urban Stormwater Mitigation Plan
SWMP	Storm Water Management Plan
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TDS	Total Dissolved Solids
WDRs	Waste Discharge Requirements

6.5 WATER RESOURCES

6.5.1 Existing Conditions

This section describes the existing water resources in the region and vicinity, and potential impacts of the Project on those resources.

The Site is located on a Very Old (CDMG, 2000a) alluvial fan surface north of State Route (SR) 76. The Site is located on a former citrus orchard with a small upstream watershed. Site facilities have been located and designed to avoid disturbance to drainages. No aspect of the Project will affect any wetlands. The transmission line interconnection and gas pipeline will be installed beneath several small and normally dry drainage crossings using horizontal directional drilling (HDD) so the Project will avoid disturbance to United States Army Corps of Engineers (ACOE) jurisdictional waters. A notification to the California Department of Fish and Game (CDFG) for streambed alteration will be submitted for HDD at drainage crossings. Project disturbances will occur almost exclusively in areas where natural conditions have been disturbed by past activities, so there will be little new ground disturbance. Surface drainage from the power plant will flow to an on site detention basin designed to detain flows from the 100-year storm and to manage storm water runoff in accordance with the County Watershed Protection, Stormwater Management and Discharge Control Ordinance (Stormwater Ordinance).

The Applicant has secured a water supply for the Project, including tertiary-treated reclaim water to supply the Project water demand for cooling.

6.5.1.1 Surface Water

6.5.1.1.1 Hydrology

The Project region is within the jurisdiction of the San Diego (Region 9) Regional Water Quality Control Board (RWQCB), in the San Luis Rey Hydrologic Unit (Figure 6.5-1). The San Luis Rey Hydrologic Unit is an east-west trending drainage area of about 565 square miles that is tributary to the Pacific Ocean. Inflow to the Hydrologic Unit is primarily from surface water runoff (SLRMWD, 2006). Average annual rainfall within the Hydrologic Unit ranges from approximately 11 inches at low elevations near the coast, to more than 45 inches in the highest elevations of the headwaters. The region is typically dry in the spring, summer and fall, with most of the precipitation occurring from December through March.

The major tributary in the San Luis Rey Hydrologic Unit is the San Luis Rey River. In the upper reaches of the Hydrologic Unit, river drainage is controlled by Lake Henshaw, one of the largest man-made water storage reservoirs in the San Diego region. The reservoir aids in the prevention of flooding in the lower reaches of the river. The San Luis Rey Hydrologic Unit is divided into three Hydrologic Areas (HA), with the Project being located in the Monserate HA as shown in Figure 6.5-1. This Project is located within the Pala Hydrologic Subarea (3.21) of the Monserate HA.

Figure 6.5-2 shows the Existing Regional Surface Drainage and Topography in the Project area. Figure 6.5-3 shows the Existing Site Drainage. Results of a preliminary drainage study are provided in Appendix 6.5-A and Drawing C400 in Appendix 2-A**.** The Site and surrounding lands drain generally southward to culverts crossing SR 76. The Site is located on a former orchard located between two drainages. The orchard is on a gently convex slope that disperses runoff, so there is minimal run-on to the Site footprint. The drainages that occur to the east and west of the Site are normally dry, but can have surface flow in response to precipitation events.

The San Luis Rey River runs south of SR 76. Near the Site, the San Luis Rey River was diverted southward by mining operations and is now confined to a diked channel located approximately 0.5 mile south of SR 76 (Figure 6.5-2). In the Project vicinity, flow in the San Luis Rey River is intermittent, responding to seasonal precipitation. The closest perennial surface waters to the Site are ponds that occur in the river bed where past mining has exposed the water table in the alluvial aquifer (Figure 6.5-2 and 6.5-3). Water quality in these ponds is expected to be generally representative of the local ground water quality described in Section 6.5.1.2. The lower 19 miles of the San Luis Rey River is on the Clean Water Act (CWA) Section 303(d) list of impaired waters, with chloride and total dissolved solids (TDS) being the only constituents identified as exceeding water quality standards. Identified sources of chloride include urban runoff/storm sewer, and unknown point and non-point sources. A wide variety of sources are identified as contributing to high TDS including agriculture, urban development and natural sources. The impaired segment is downstream of the Project area, west of Interstate 15, in more urbanized areas. The segment of the San Luis Rey River that occurs in the Site vicinity is not listed as an impaired segment (RWQCB, 2006).

The Stormwater Ordinance defines the "Rainy Season" as November 11 through April 30. The 85th percentile precipitation for the Project area is between 0.80 and 0.85 inch (San Diego County Department of Public Works, 2003). The 85th percentile precipitation is the 24-hour rainfall total for which 85 percent of 24-hour rainfall totals will be less than this amount. Average monthly rainfalls in inches for the Project area are as follows (RMWD, 2005):

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
2.8	2.55	2.43	1.05	0.23	0.13	0.04	0.08	0.28	0.54	1.46	1.69	13.28

Drawing C400 in Appendix 2-A provides a preliminary drainage area map and hydrology for the Site and surrounding area. Hydrology and hydraulics calculations are provided in Appendix 6.5-A and include isopluvial maps showing the statistical rainfall events for 2-, 5-, 10-, 25-, 50- and 100-year storms.

A map of the 100-year flood zone is provided in Figure 6.5-4. All Project facilities are located outside the 100-year flood zone, except the western portion of the gas pipeline.

6.5.1.1.2 Jurisdictional Waters and Wetlands

Detailed mapping has been completed of Waters of the United States subject to Sections 401 and 404 of the CWA, Waters of the State subject to Section 1600 of the California Fish and Game Code, and wetlands. Maps of the survey area and results, descriptions, field data sheets, and other details of this work are comprehensively reported in Appendix 6.5-B. As documented in that report, there are no wetlands within the Project disturbance footprint. Wetlands occur within the San Luis Rey River channel, which will not be disturbed by the Project (see Appendix 6.5-B).

There are no Waters of the United States or Waters of the State within the footprint of construction for the Site facilities, the fresh water pickup station, or the reclaim water pickup station. The transmission line interconnection and gas pipeline will cross a total of six typically dry drainages that are Waters of the United States and Waters of the State (see Appendix 6.5-B), but HDD will be used to avoid surface disturbance in these drainages.

6.5.1.2 Ground Water

Section 6.3 of this Application for Certification (AFC) describes the geology of the Project region. The rock and sediment lithologies described in that section control the occurrence and movement of ground water. As described in that section, plutonic basement rock is exposed at the ground surface over much of the region. The basement rock can have secondary (fracture) permeability but even where it contains water it is not thought to be a significant source (San Luis Rey Municipal Water District, 2006). Very Old (approximately 500,000 to 2 million years old) alluvium overlies the basement rock in the Site vicinity that also does not yield significant ground water (SLRMWD, 2006; Moreland, 1974). With the non-water-bearing rock that underlies it, the Site is not located over any ground water basin.

In the Project area, the San Luis Rey Valley Ground Water Basin (California Department of Water Resources Basin 9-7) is located on the south side of SR 76. This basin is an alluvial aquifer extending along the San Luis Rey river bed, (CDWR, 2003), comprised primarily of alluvial deposits that are younger than 10,000 years. Ground water in the San Luis Rey Valley Ground Water Basin flows westward toward the Pacific Ocean. The ground water basin is divided into several segments (subbasins). In the Project vicinity, the river bed alluvium is within the Pala Subbasin (San Luis Rey Municipal Water District, 2005). The Pala Subbasin occurs over an approximately 7 mile segment of the San Luis Rey River, with the downstream terminus at a narrow constriction in the alluvial aquifer just downstream of Rice Canyon referred to as the Monserate Narrows (Figure 6.5-2).

The alluvial aquifer in the Pala Subbasin ranges from 0 feet in thickness along the basin margins to more than 100 feet (SLRMWD, 2006). The reported well yields for the alluvium in the Subbasin range from 10 to 400 gallons per minute (gpm) (CDWR 1971). In the Site vicinity, the alluvial aquifer of the Pala Subbasin occurs south of SR 76, where aggregate extraction has occurred in the river channel. North of SR 76, where the Site is located, geologic material above the basement rock consists of Very Old alluvium and the subbasin is not present. A hydrogeologic cross section through the Site is provided in Figure 6.5-5. Geotechnical borings

were completed near the Site for the recent construction of the San Diego Gas and Electric (SDG&E) Pala substation (GeoCon, 1994). Borings drilled to as much as 40 feet deep did not encounter ground water. Ground water beneath the Site is expected to occur at an elevation of approximately 330 feet, which is about 50 to 100 feet below the ground surface, depending on the location onsite. Beneath the portion of the pipeline route that is on the flood plain of the San Luis Rey River, ground water can occur at relatively shallow depth.

The closest known ground water wells are located in the alluvial aquifer within and around the mined area south of SR 76. Known ground water wells within a mile of the Site are shown in Figure 6.5-2.

The ground water quality in the Pala Subbasin is characterized by relatively high TDS concentrations. Estimated average TDS concentrations in the Pala Subbasin are reported to be between 600 and 1,200 milligrams per liter (mg/L) (NBS/Lowry 1993). Chloride and sulfate concentrations are typically at or above secondary maximum contaminant levels (MCL). Both chloride and sulfate have a recommended secondary MCL of 250 mg/L, and an upper limit secondary MCL of 500 mg/L.

6.5.1.3 Water Resource Policies and Plans

6.5.1.3.1 Basin Plan

The RWQCB Basin Plan designates beneficial uses of ground water in the Pala Hydrologic Subarea as municipal and domestic supply, agricultural and industrial service supply (San Diego RWQCB, 1994). The ephemeral San Luis Rey River and tributary intermittent streams in the Project region have designated beneficial uses for agricultural supply, industrial service supply, water contact recreation, non-contact water recreation, warm freshwater habitat, rare threatened or endangered species habitat and ground water recharge. In accordance with Section 303 of the CWA, and the Porter-Cologne Water Quality Control Act, the Basin Plan includes water quality objectives and implementation policies to enhance beneficial uses and protect beneficial uses against water quality degradation. Water quality objectives are achieved primarily through the adoption of Waste Discharge Requirements (WDRs) (including National Pollutant Discharge Elimination System [NPDES] permits) and through enforcement orders.

This Project is consistent with the Basin Plan and will be protective to water quality, due, in part, to the following:

- The Project is designed for no discharge of process water.
- Sanitary wastewater discharge will be to a septic system on site that will be designed and constructed to meet County Health and Sanitation Ordinances and other applicable Laws, Ordinances, Regulations and Standards (LORS).
- The Project will implement storm water quality Best Management Practices (BMPs) to protect water quality. The Project will implement a Storm Water Management Plan (SWMP) during construction and operations in accordance with the Stormwater Ordinance. Storm water discharges will meet County performance criteria identified

in Section 6.5.1.3.4. For construction, the Project will also comply with the State General Permit for storm water discharges from construction sites (WQO 99-08-DWQ).

- Storm water runoff from the power plant will be collected and routed to a detention basin. The detention basin will be sized to control runoff from the 100-year storm and will reduce peak discharge rates and provide for gravity settling of pollutants.

6.5.1.3.2 Water Quality Control Policy on the Use and Disposal of Inland Waters Used for Power Plant Cooling (Resolution No. 75-58)

The Project is consistent with the use preference hierarchy and water quality protection measures of the Water Quality Control Policy on the use and disposal of Inland Waters Used for Power Plant Cooling (SWRCB 1975). This policy is provided for planning of new power generating facilities to protect beneficial uses of the state's water resources and to keep the consumption of fresh water for power plant cooling to that minimally essential for the welfare of the citizens of the state. The Project will conform to this guidance by using tertiary-treated reclaim water, as further described in Section 6.5.1.4, and by not discharging cooling water or otherwise impacting beneficial uses.

6.5.1.3.3 California Energy Commission Policy of Fresh Water Use and Waste Water Discharge for Power Plant Cooling

The California Energy Commission's (CEC) integrated energy policy recognizes State Water Resources Control Board (SWRCB) Resolution 75-58 as reflective of the state's concerns over discharges from power plant cooling, as well as the conservation of fresh water for cooling purposes. The Warren-Alquist Act also encourages conserving water and using alternative sources of water supply. Consistent with Resolution 75-58 and the Warren-Alquist Act, the CEC has adopted a policy of approving the use of fresh water for power plant cooling purposes only where alternative water supply sources and alternative cooling technologies are shown to be "environmentally undesirable" or "economically unsound" (CEC, 2003). The Orange Grove Project will be consistent with the CEC's fresh water use policy through use of tertiary-treated reclaim water, as further described in Section 6.5.1.4.

The CEC's integrated energy policy also requires the use of zero liquid discharge technologies to reduce the use of fresh water and to avoid discharges. The Project includes a reverse osmosis (RO) water treatment system to reclaim and recycle cooling tower blowdown and other non-oily wastewater streams. Even reject water from the RO system will be recycled to the power plant water supply, so that the water treatment system will essentially function as zero discharge technology. A water balance demonstrating the essentially zero discharge performance is provided in Appendix 2-D.

6.5.1.3.4 County of San Diego Storm Water Plans and Policies

The Project will comply with the County Standard Urban Stormwater Mitigation Plan (SUSMP) and the County Stormwater Ordinance (San Diego County Code of Regulatory Ordinances Title

6, Division 7, Chapter 8). The County Stormwater Ordinance requires the Applicant to submit a detailed design-level plan and report that includes a combination of source control and structural treatment BMPs that will, at a minimum:

- Control the post-development peak storm water runoff discharge rates and velocities to maintain or reduce pre-development downstream erosion;
- Conserve natural areas;
- Control pollutants of concern from runoff through implementation of site design, source control, and structural treatment BMPs;
- Minimize directly connected impervious areas;
- Protect slopes and channels from eroding;
- Include storm drain stenciling or signage;
- Include properly designed outdoor material and trash storage areas;
- Ensure that post-development runoff does not contain pollutant loads that have not been reduced to the maximum extent practicable.

The Project will comply with these requirements. County of San Diego Department of Planning and Land USE (DPLU) will assure compliance through review of the Project for issuance of a grading permit. Grading plans, storm water control design measures, the final SWMP, employee training programs, and other requirements of the Stormwater Ordinance will be integrated in the Project's storm water quality protection measures. Appendix 6.5-C provides a copy of the Stormwater Ordinance. The hydrology and hydraulics calculations report in Appendix 6.5-A, in combination with the SWMP and the water quality protection measures described in this section, detail how the Project will comply with these requirements. A draft SWMP is provided in Appendix 6.5-D.

6.5.1.4 Water Supply

The Applicant has carefully evaluated available water reducing measures and water supply alternatives as described in Section 5.0, Alternatives Analysis. The Site is located in the northwestern portion of the Rainbow Municipal Water District (RMWD) as shown in Figure 6.5-6. As described in Section 5.0, RMWD is currently not capable of providing a feasible water supply to the Project. Therefore, the Project water supply will be obtained from Fallbrook Public Utility District (FPUD) and will include both reclaimed water and fresh water.

The FPUD operates as a public agency under the Public Utility District Act of the State of California, treating and serving water, recycled water and wastewater within a 28,000-acre service area in northwestern San Diego County and by contract outside the service area. FPUD will build, own and operate the water pickup locations where the water will be obtained.

6.5.1.4.1 Reclaim Water

As described in Section 2.6.2.1, the Applicant has secured a source of recycled water for power plant cooling through an option agreement with the FPUD. Under the option agreement, the Applicant has rights to up to 45 acre-feet per year (AFY) of tertiary-treated reclaim water for 25 years, to accommodate the 25-year operation of the Project. The Project will obtain water from FPUD in an annual amount that meets or exceeds the Project's water demand for the air inlet chiller cooling system. The optioned water quantity is more than adequate to supply these needs considering the maximum permitted hours of plant operation for any given year. The water will be picked up from the FPUD Wastewater Treatment Plant No. 1 located in Fallbrook and trucked to the Site (see Section 2.6.2.1).

Use of the reclaimed water from FPUD will have no adverse impact on water resources and no impact on other water users. The reclaimed water that will be provided to the Project is currently being discharged to the Pacific Ocean via a pipeline connecting the FPUD water reclamation plant and other regional water treatment plants with a submarine outfall located offshore of Oceanside. The reclaimed water quality chemistry profile for 2006 and 2007 is provided in Table 6.5-1.

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Table 6.5-1– FPUD Reclaimed Water Quality Chemistry Profile For 2006 And 2007

Month	TDS (mg/L)	G&O (mg/L)	Boron (mg/L)	Iron (mg/L)	Manganese (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Nitrate (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Nitrite (mg/L)	Fluoride (mg/L)	Ammonia (mg/L)	TKN (mg/L)	Total Phosphorus (mg/L)	MBAS (MG/l)	Sodium Adsorption Ratio
Jan	768	<5.0	0.261	0.027	0.021	79.2	33.9	14.3	132	24.8	154	237	5.7	0.23	6.8	8.2	0.82	0.07	
Feb	830	<5.0	0.346	0.114	0.062	82.3	32.1	15	144	13.4	166	227	1.7	0.25	13.9	14.6	0.49	0.06	
Mar	822	<5.0	0.288	0.102	0.032	70.1	31.9	13.5	135	18.5	172	252	2.9	0.2	8.68	9.24	0.45	0.15	
Apr	786	<5.0	0.365	0.277	0.038	62.1	32	14.2	132	18.4	178	223	2.6	0.26	9.7	9.8	1.2	0.1	
May	980	<5.0	0.42	0.048	0.053	73.8	32	13.6	145	10.7	177	233	1.3	0.35	12.4	17.5	1.04	0.17	
Jun	610	<5.0	0.334	0.071	0.037	66.2	28.9	13.5	136	17.3	160	232	6.9	0.3	9.3	11.5	<.02	0.08	
Jul	850	<5.0	0.415	0.033	0.046	76.5	32	16.9	156	9.5	179	255	3.5	0.3	13.7	13.8	1.58	0.04	
Aug	860	<5.0	0.354	0.049	0.033	83.6	30.9	16.3	142	10.5	194	283	6.1	0.31	12.1	14.2	1.96	0.04	
Sep	850	<5.0	0.365	0.058	0.033	60.6	27.7	15.5	134	15.4	165	227	3.8	0.27	9.1	11.8	2.22	0.05	
Oct	840	<5.0	0.377	0.037	0.04	66.2	28.5	15.3	138	11.8	181	240	2.9	0.27	11.5	13.6	2.07	0.05	
Nov	830	8	0.44	0.063	0.03	71.2	31.9	16.6	142	9.0	161	241	2.4	0.26	11.2	18.8	2.09	0.06	
Dec	490	<5.0	0.323	0.091	0.028	79.6	30.7	18.3	154	1.9	97	229	<.04	0.28	14.9	18.5		<.02	
Avg.	**793**	**<5.0**	**0.357**	**0.081**	**0.038**	**72.6**	**31.0**	**15.3**	**141**	**13.4**	**165**	**240**	**3.6**	**0.27**	**11.1**	**13.5**	**1.39**	**0.08**	
Jan	860	<5.0	0.330	0.279	0.043	69.6	32.5	15.8	147	20.9	172	251	1.7	0.41	8.5	9.6	2.17	0.08	
Feb	780	<5.0	0.340	0.180	0.038	72.9	30.7	16.8	155	9.3	162	222	1.5	0.23	17.2	18.2	0.02	0.1	
Mar	720	<5.0	0.294	0.056	0.037	68.4	28.7	15.6	138	2.1	157	224	0.56	0.35	15.9	16	0.83	0.07	
Apr	710	<5.0	0.344	0.060	0.017	57.7	24.1	13.1	123	35.8	145	207	2.8	0.16	10.9	15.4	1.2	0.05	
May	740	<5.0	0.335	0.045	0.027	65.8	29.8	16.2	135	54	159	208	1.3	0.25	4.5	8.5	3.45	0.09	
Jun	960	<5.0	0.365	0.065	0.028	65.1	24.3	15.1	136	26.1	151	204	5.9	0.2	8.9	11.9	0.92	0.07	
Jul	720	<5.0	0.360	0.023	0.04	66	26	18	130	5.6	150	210	2.2	0.49	7.2	11	3.6	0.11	
Aug	720	<5.0	0.340	0.030	0.029	59	24	16	120	3.2	140	230	2.0	0.39	9.7	15	3.5	0.11	3.4
Sep	730	<0.9	0.360	0.039	0.037	55	23	16	120	2.3	160	220	1.1	0.48	12	20	1.4	0.25	
Oct	670	<0.95	0.410	0.066	0.033	68	27	19	140	4.7	150	190	1.0	0.43	9.5	14	1.3	0.09	

Month	TDS (mg/L)	G&O (mg/L)	Boron (mg/L)	Iron (mg/L)	Manganese (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Nitrate (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Nitrite (mg/L)	Fluoride (mg/L)	Ammonia (mg/L)	TKN (mg/L)	Total Phosphorus (mg/L)	MBAS (MG/l)	Sodium Adsorption Ratio
Nov	680	<1.1	0.350	0.047	0.031	60	25	17	120	7.9	140	180	1.4	0.29	10	12	3.2	0.11	
Dec	680	<1.1	0.350	0.040	0.035	63	25	16	130	6.5	150	200	1.8	0.26	8.6	11	2.8	0.07	
Avg.	**746**	**<5.0**	**0.348**	**0.078**	**0.033**	**64.2**	**26.7**	**16.2**	**133**	**14.9**	**153**	**212**	**1.9**	**0.33**	**10.2**	**13.6**	**2.03**	**0.1**	
Jan	670	<1.2	0.400	0.035	0.018	60	25	17	130	8.8	160	180	0.99	0.35	8.1	3.4	2.3	0.13	
Feb	760	1.2	0.400	0.075	0.029	65	27	16	130	4.3	160	220	1.0	0.60	14	17	2.2	0.21	
Mar	810	<1.2	0.380	0.047	0.023	70	30	18	140	3.9	160	240	<1.8	0.36	9.7	17	2.9	0.1	
Apr	690	<1.2	0.430	0.026	0.025	60	25	17	140	5.4	170	200	1.3	0.3	10	12	1.3	0.19	
May	780	<1.2	0.440	0.034	0.019	69	27	19	140	5.1	160	230	3.1	0.35	10	11	0.64	0.09	
Jun	760	1.3	0.350	0.054	0.016	68	26	15	110	7.4	150	240	<.15	0.62	3.6	3.9	3	0.09	
Jul	830	<1.1	0.360	0.031	0.012	68	26	17	130	9.2	150	200	0.64	0.45	5.2	7.8	4.6	0.14	
Aug	810	<1.2	0.410	0.041	0.025	64	26	17	140	12	150	170	<.15	0.29	3.1	4.5	4.1	0.13	
Sep	820	1.2	0.370	0.028	0.03	65	26	17	130	13	150	220	0.81	0.43	0.77	3.1	4.8	0.13	
Oct	830	19	0.380	0.041	0.028	63	25	17	120	15	160	180	<.15	0.45	0.34	2.2	5.3	0.11	
Avg.	**776**	**<5.0**	**0.392**	**0.041**	**0.023**	**65.2**	**26.3**	**17.0**	**131**	**8.4**	**157**	**208**	**1.3**	**0.42**	**6.5**	**8.2**	**3.11**	**0.13**	

6.5.1.4.2 Fresh Water

The Applicant will execute an option agreement with FPUD to provide fresh water for the 25-year operation of the Project. Appendix 6.5-E provides a water chemistry profile for the FPUD fresh water supply. The FPUD does not use ground water. FPUD depends entirely on imported water purchased wholesale through the San Diego County Water Authority (SDCWA). The SDCWA, in turn, is a member of the Metropolitan Water District of Southern California (MWD), which obtains most of its water from the California and Colorado rivers' aqueduct systems (SDCWA, 2008).

6.5.1.4.3 Sanitary Sewer

The Site area is rural and there is no available sanitary sewer system.

6.5.2 Impacts

Significance criteria were determined based on California Environmental Quality Act (CEQA) Guidelines, Appendix G, Environmental Checklist Form and on performance standards or thresholds adopted by responsible agencies. An impact may be considered significant if the project results in:

- Violation of water quality standards or RWQCB Waste Discharge Requirements.
- Substantial alteration of existing drainage patterns, including alterations that would result in substantial flooding, erosion or siltation on site or off site.
- Creation of or contribution to runoff water which would exceed the capacity of existing or planned storm water drainage systems, or provide substantial additional polluted runoff.
- Otherwise substantial degradation of water quality.
- Substantial depletion of ground water supplies or substantial interference with ground water recharge, such that there would be a net deficit in aquifer volume or lowering of the local ground water table.
- Placement of housing or structures within the 100-year flood zone, or exposure of people or structures to significant loss or injury involving flooding.

6.5.2.1 Construction Impacts

6.5.2.1.1 Water Use and Wastewater Management

The construction contractor will be responsible for water supply during construction. Water will be trucked to the Site. The primary construction water needs include water for dust control, moisture conditioning for compaction, and hydraulic testing of fire and other water systems. The peak and average water use during construction are estimated at approximately 5,000 gallons per day (gpd) and 500 gpd, respectively. The contractor will be required to obtain the construction water supply from an existing permitted source such as purchased from RMWD and loaded at an

existing hydrant as is customary practice for construction projects. Therefore, there will be no new pumping, diversion, or other potential depletion of ground water supplies. Furthermore, this use will be short term and will occur only for the term of Project construction. Considering these factors, the construction water use impact will be less than significant.

There will be no wastewater discharges. During construction, wastewater generated will include sanitary wastewater and hydrotesting wastewater. Management of these wastewater streams is addressed in Section 6.14, Waste Management. Sanitary waste will be approximately 40 gpd and will be collected in portable chemical toilets and removed from the Site by a licensed hauler on a weekly basis. Hydrotesting will produce batches of water up to 25,000 gallons. This water will be sampled and used on site provided that the water quality is acceptable, or shipped to a licensed wastewater treatment facility if needed.

6.5.2.1.2 Surface Water

Existing and proposed flood control facilities in the Site area are described in Appendix 6.5-A. The Site is situated on a gentle, relatively featureless slope that has a small upgradient watershed and dispersing sheet flow. Because of these conditions and Project storm water controls, the Project will not substantially alter existing drainage patterns. Furthermore, Site grading and drainage control systems are designed to release runoff to the same areas where runoff would flow under existing conditions, so there will be minimal impact on flow volumes downstream. A detention basin designed for the 100-year storm is provided in the Site design to control peak flow from the Site. Site grading and drainage plans and related hydrology parameters are provided in the design drawings in Appendix 2-A, with details provided in the hydrology and hydraulics calculations report in Appendix 6.5-A. The Project will be constructed in compliance with County SUSMP requirements for controlling peak storm water runoff rates and velocities to maintain or reduce pre-development downstream erosion (see Appendix 6.5-A). These factors, and other County storm water performance criteria identified in Section 6.5.1.3.4 and in the Stormwater Ordinance (Appendix 6.5-C), will limit impacts to existing drainage patterns to a level that is less than significant.

The Project will not have structures located in the 100-year flood zone and will not result in personal or property flood risk. All Project facilities are located outside the 100-year flood zone, with the exception of the western portion of the gas pipeline. Construction for this portion of the gas pipeline is not expected to be affected by flooding because pipeline construction will occur on ground that is elevated compared to the river channel. The extreme flood conditions required to inundate the construction area occur infrequently. Construction within the 100-year flood zone will not occur if flooding is present or imminent. When construction is complete, the pipeline will be underground and will not be affected by flooding or affect flood flows. The portion of the pipeline that is proximal to the river channel is protected by a continuous engineered riprap channel bank. Considering these factors, the Project impacts related to construction within the 100-year flood zone will be less than significant.

Prior to construction, a Notice of Intent (NOI) will be submitted to the SWRCB to comply with the State General Permit for storm water discharges from construction activities (WQO 99-08-DWQ). Construction will occur under a Storm Water Pollution Prevention Plan (SWPPP)

implementing BMPs that will be protective to water quality. A copy of the NOI is provided in Appendix 6.5-F.

General Site and finish grading will establish a working surface for construction and plant operating areas, providing positive drainage from buildings and structures. The area inside the security fence will be surfaced with gravel that will minimize the impervious area, thereby reducing storm water runoff and promoting infiltration. Hazardous material storage and use areas will be constructed with drainage contained as required by the SWPPP and the Stormwater Ordinance.

The sound walls will be designed so that stormwater runoff is directed underneath the sound walls through the pervious crushed rock which is utilized as the Site's top of grade surface layer. The runoff will pass through a 6 inch porous layer of Class II Aggregate rock with a surface elevation of approx. 420.25 feet. The bottom face of the sound walls will rest on the top of the structural pier foundations at an elevation of 420.75 feet. The pier foundations will be spanned approximately every 20 feet apart and approximately 3 to 6 inches above the top of grade. The crushed rock surface is graded to provide slope towards the Site's six grate inlets. Thus, stormwater will be routed underneath the sound wall structure to the inlets and therefore, will have no impact to the sites stormwater management system.

There will be no discharges to water during construction except as authorized under the State General NPDES permit. During construction, temporary berms, surface grading, silt fences, sandbags, surface stabilizers (e.g., jute netting), and other BMPs will be implemented as needed to control erosion and reduce or prevent pollutants from entering the storm water system. The BMPs will include an erosion control plan and other measures that will be implemented in accordance with the Stormwater Ordinance and the State General NPDES permit for construction activity on the Site and Project linear corridors. These measures will address soil moving, equipment laydown, material handling and other relevant activities that occur during the construction period. Conformance with the State General NPDES permit and Stormwater Ordinance and SUSMP requirements will assure that runoff during construction does not substantially alter erosion or siltation or violate water quality standards. These regulatory programs are established for this purpose. Because construction will comply with the State General NPDES Permit and County requirements to not degrade water or violate water quality standards, the impact to surface water quality will be less than significant.

The State General NPDES Permit for storm water discharges from construction sites is provided in Appendix 6.5-F. Project construction will occur in compliance with this permit. The permit (Appendix 6.5-F) specifies the discharge prohibitions, receiving water limitations, special provisions, SWPPP requirements, standard provisions, monitoring and other controls required under the permit to assure that water quality is protected. The SWPPP is not required as part of the application for the State General NPDES Permit and is not required to be submitted to any jurisdictional agency unless requested, but it is required to be (1) in place prior to construction; (2) implemented during construction; and (3) available for inspection at the construction site. The final SWPPP will be provided to the CEC through the Chief Building Officer (CBO) and the CEC compliance officer prior to construction. The hydrology and hydraulics calculations in

Appendix 6.5-A, the Stormwater Ordinance in Appendix 6.5-C, the Draft SWMP in Appendix 6.5-D, the State General Permit in Appendix 6.5-F, and the Project design drawings in Appendix 2-A form the roadmap for the SWPPP and related water quality protection measures.

Construction of the transmission line interconnection and the gas pipeline will include HDD to avoid disturbance to a total of 6 normally dry drainages so there will be no disturbance to Waters of the United States (see Appendix 6.5-B). Construction at these locations will include excavation of bore and receiving pits at each run, boring and casing installation beneath the drainages, and construction of pull-boxes at the ends of each run. BMPs for storm water quality protection will be in place. Considering these factors, the impact to surface water will be less than significant. The linear facility construction will not require a permit from the ACOE.

Access driveways to the Site have been designed to avoid impact to surface waters. The southern driveway will not cross any concentrated surface water flow path. The access driveway from Pala Del Norte Road will be designed with a free-spanning bridge so as not to impact the channel of the drainage west of the Site. The bridge will be designed so that footings are outside of the bank limits. There will be no excavation, grading or structures within the channel banks. Therefore, the bridge will not require permits from ACOE or CDFG.

Project construction will not affect any wetlands. Wetlands occur adjacent to the gas pipeline where the pipeline will be constructed in an unpaved road between two former dairy farms. A silt fence will be installed along the edge of the road during pipeline work in this area, and there will be a full-time monitor in this area during construction to assure that there is no disturbance to the wetlands, as further described in Section 6.6, Biological Resources.

6.5.2.1.3 Ground water

Ground water will not be used for construction and will not be impacted by construction. Hazardous materials used during construction will be managed in accordance with LORS to prevent the potential for impacts to ground water. No adverse impact to ground water is expected.

Where the gas pipeline is located within the San Luis Rey River flood plain, the trenching depth will be on the order of 4 feet. Ground water is not expected to be encountered at this shallow depth. If ground water pumping is required, the water will be managed by infiltration locally with BMPs under the SWMP. Geotechnical investigations will be completed prior to construction to determine the actual depth to ground water along this portion of the route. No adverse impact to ground water resources is expected.

6.5.2.2 Operations Impacts

6.5.2.2.1 Water Use and Wastewater Management

A water mass balance diagram is provided in Appendix 2-D. Project operations water use is described in Section 2.6.1, including a breakdown of expected average and maximum daily and annual water demand. As described in that section, the Expected Use Case for water is 21.1

AFY for fresh water and 12.1 AFY for reclaim water. The maximum design fresh and reclaim water use rates are 62 AFY and 38.7 AFY, respectively.

A copy of the water option agreement for the FPUD reclaim water supply is provided in Appendix 6.5-G, and the option for the fresh water will be executed in upcoming weeks and provided to CEC as soon as it is available. The FPUD water sources were selected as the Project's sources of water for cooling because they are the closest reliable sources of water that will fully meet CEC policy for power plant cooling water described in Section 6.5.1.3.3.

FPUD obtains 100 percent of its water from the SDCWA. The use of FPUD fresh water will not result in new pumping or diversion or other potential depletion of ground water supplies. The FPUD has indicated that they have the excess capacity within existing infrastructure to supply the Project. No impact to other water users is expected. The option agreement for fresh water will included a provision for FPUD to replace fresh water delivery to the Project with reclaim water delivery, if needed due to potential future curtailments of FPUD water deliveries. Therefore, no impact on other users will occur.

The water supply proposed for the Project will not affect the physical or chemical conditions of any existing water supply. With the exception of sanitary waste managed in an on site septic tank and leach field, there will be no wastewater discharges. The sanitary system design basis is provided in Appendix 6.5-H. The Project includes a RO water treatment system to reclaim and recycle cooling tower blowdown and other non-oily wastewater streams. Even reject water from the RO system will be recycled to the power plant water supply, so that the water treatment system will essentially function as zero discharge technology. Oily wastewater not directed to the RO will be a very limited stream estimated to be on the order of a few hundred gallons per month. This water will be shipped to a licensed wastewater treatment facility as described in Section 6.14, Waste Management.

There is no public or private entity accepting a wastewater discharge from the Orange Grove Project. Therefore 20 California Code of Regulations (CCR) Chapter 5, Appendix B, Section (g)(14)(c)(viii) is not applicable to this Project.

6.5.2.2.2 Surface Water

As described in Section 6.5.2.1.2, the Project will not substantially alter existing drainage patterns. The drainage area contributing run-on to the Site is small. The sheet flow from this small area will be diverted to minimize run-on to the Site. Final Site grades are designed to direct drainage away from equipment and buildings. Areas inside the security fence not covered with structures, equipment or paving will be surfaced with gravel to reduce peak runoff and increase infiltration. Site driveways and the plant area are designed with the minimum practical paved areas to minimize impervious surfaces. Site driveways will be gravel-surfaced except for concrete aprons to transition to paved surfaces. Storm water runoff detention is provided for runoff from the Site. These design features are included in the design drawings in Appendix 2-A and reflect the "Low Impact Development" BMPs required by the Stormwater Ordinance. Construction storm water BMPs will be maintained at other surfaces disturbed during construction until the surface is stabilized.

The Project will operate under the County Municipal Separate Storm Sewer System (MS4) permit for storm water discharges. Site drainage will be conveyed to an onsite detention basin sized to detain runoff from the 100-year storm event. The detention basin will be unlined and planted with grass to allow storm water infiltration and evapotranspiration to the extent dictated by Site soil permeability. BMPs will be implemented during operations to minimize storm water contact with potential pollutants and to reduce or prevent pollutants from affecting retained storm water. The BMPs will include an erosion control plan and other measures that will be implemented in accordance with the MS4 permit through adherence to the Stormwater Ordinance. Areas around lubricated equipment and hazardous material storage and use areas will be constructed with contained drainage. Hazardous materials will be managed in accordance with LORS, including operating under a CCR Title 19 hazardous materials business plan and a 40 Code of Federal Regulations (CFR) Part 112 Spill Prevention, Control and Countermeasures (SPCC) Plan. The Project is designed with zero discharge of process water. Water treatment waste streams including cooling tower blow-down and other non-oily process wastewater will be recycled via the RO system. Oily wastewater streams will be negligible, estimated at a few hundred gallons per month, and will be trucked offsite to a licensed water treatment facility (see Section 6.14, Waste Management). The Stormwater Ordinance is designed to implement the County's MS4 permit which, in turn, is designed to reduce the discharge of potential pollutants to the Maximum Extent Practical and to ensure compliance with applicable water quality standards (RWQCB, 2007). The Stormwater Ordinance is incorporated by reference and provided in Appendix 6.5-C. Considering these factors, storm water runoff during operations will not substantially alter erosion, siltation or violate water quality standards. Therefore, Project operations impacts to surface water drainage patterns and surface water quality will be less than significant.

The gas pipeline and transmission line interconnection will be underground and will not have the potential to affect surface water once construction is complete and disturbances are stabilized under the construction SWPPP and SWMP. Where the gas pipeline occurs within the 100-year flood zone, it will be below the ground surface and isolation valves and the meter station exposed on the ground surface will be designed such that they would not be adversely impacted in the event that they are inundated by flooding. The exposed features of the gas pipeline will not measurably affect flood hydrology.

6.5.2.2.3 Ground Water

Ground water will not be impacted by Project operations and maintenance. Ground water will not be used. Depth to ground water beneath the Site is estimated at 50 to 100 feet, with depth varying in relation to ground surface elevation. Hazardous materials used during operations will be managed in accordance with LORS to prevent the potential for impacts to ground water. No adverse impact to ground water is expected.

6.5.2.3 Cumulative Impacts

6.5.2.3.1 Water Supply

The Project's use of reclaim water will not have cumulative impacts. As described in Section 6.5.2.2.1, the reclaim water that will be used is currently being discharged to the ocean.

Other projects with the potential for cumulative impacts are identified in Section 6.1. Water supply for these projects and the related potential for cumulative impacts is described in the following paragraphs.

Pala Casino Expansion Project
The Pala Band of Mission Indians currently obtains their water supply from ground water (Volturno, 2007). Pursuant to the San Luis Rey Indian Water Settlement Act, future water supply for the Reservation will also be obtained from an allocation of water saved from lining portions of canals in the Imperial Valley in southeastern California. Because the Orange Grove Project will not use water from either of these sources, there is no potential for the Orange Grove Project to have cumulative water supply impacts with the Pala casino expansion project.

Pauma Casino Expansion Project
The Pauma Band of Mission Indians obtains their water supply from ground water. Pursuant to the San Luis Rey Indian Water Settlement Act, future water supply for the Reservation will also be obtained from an allocation of water saved from lining portions of canals in the Imperial Valley in southeastern California. Because the Project will not use water from either of these sources, there is no potential for it to have cumulative water supply impacts with the Pauma casino expansion project.

Gregory Canyon Landfill Expansion
The Gregory Canyon Landfill water supply will be reclaimed water obtained from the Olivenhain Municipal Water District, and ground water obtained from the landfill site (GeoLogic Associates, 2007). The reclaimed water will be trucked approximately 28 miles from the source to the landfill site. The Orange Grove Project does not have the potential for cumulative water supply impacts with either of these water sources.

Rosemary's Mountain Quarry
The Rosemary's Mountain Quarry will obtain its water supply from ground water (Brian F. Mooney Associates, 1997). Because the Orange Grove Project will not use ground water, there is no potential for the Orange Grove Project to have cumulative water supply impacts with the quarry.

Warner Ranch Multiple Use Development Project
The Warner Ranch Development Draft Environmental Impact Report (DEIR) is not yet available. The project does not have a committed source of water (Powers, 2008)Therefore. the Orange Grove Project does not have a foreseeable potential for cumulative water supply impacts with the Warner Ranch Development.

Pala Band of Mission Indians Cell Tower Generator
The Cell Tower project is not a water consuming project and, therefore, does not have the potential for cumulative water supply impacts.

Meadowood Residential Development
The Meadowood development DEIR is not yet available. The water supply for this project is undetermined (Stevenson, 2008). The Orange Grove Project does not have a foreseeable potential for cumulative water supply impacts with the Meadowwood Development.

Campus Park West Multiple Use Development
The Campus Park West Multiple Use Development is in the early planning stages and an Environmental Impact Report (EIR) has not been started. No water supply has been identified (Stevenson, 2008). The Orange Grove Project does not have a foreseeable potential for cumulative water supply impacts with Campus Park West.

Campus Park (Passerelle) Multiple Use Development
The Campus Park (Passerelle) Multiple Use Development DEIR is not yet available. Campus Park does not have a committed water source (Stevenson, 2008)The Orange Grove Project does not have a foreseeable potential for cumulative water supply impacts with Campus Park (Passerelle).

Fallbrook Renewable Energy Facility
The Fallbrook Renewable Energy Facility, if constructed as proposed, would fall within the jurisdiction of the CEC. To date, no application has been filed with CEC. Considering the early planning stage of this Project, and the absence of a CEC filing, there is no evidence that the Orange Grove Project could have a cumulative water supply impact with Fallbrook Renewable Energy Facility.

Palomar Community College – North Education Center
The Palomar Community College- North Education Center will obtain its water supply from RMWD. The Orange Grove Project does not have a foreseeable potential for cumulative water supply impacts with Palomar Community College.

Future FPUD Users
Over time, there may be projects placing additional demands on FPUD water supply, or periods of water delivery curtailments. However, the Expected Use Case water demand rates for the project are low and no impact to other water users is expected. The option agreement for fresh water will include a provision for FPUD to replace fresh water delivery to the Project with reclaim water delivery, if needed due to potential future curtailments of FPUD water deliveries.

6.5.2.3.2 Surface Water

The Project will have minimal impact on surface water runoff. Construction water quality protection measures and the short-term nature of construction activities ensure that cumulative surface water impacts during construction are less than significant.

Pursuant to County storm water performance requirements, the Project will control the post-development peak storm water runoff discharge rates and velocities to maintain or reduce pre-development downstream erosion. In addition, runoff from the Site will be diverted to a detention basin designed to detain the 100-year storm. Compliance with LORS for hazardous materials handling and storm water management during operations will prevent violation of water standards in runoff from the Site. Considering these factors, Project impacts will be limited to the Site and immediate watershed. The Project will not change downstream erosion, and there are no other foreseeable actions that include changes to surface water drainage or the introduction of potential pollutants within the immediate Site watershed (i.e., contributing to the same San Luis Rey River tributaries that the Site contributes to). Other projects identified in Section 6.1 are all outside the immediate Site watershed area. Other projects with the potential for surface water quality impacts will also be required to comply with the Stormwater Ordinance and other applicable LORS. Considering these factors, there will be no significant cumulative impact on surface water resources.

6.5.2.3.3 Ground Water

The Project will not impact ground water. Therefore, there will be no cumulative impacts to ground water.

6.5.2.4 Design Features that Limit Impacts

The following design and operational features of the Project avoid potentially significant environmental impacts:

- The Project has been designed to avoid disturbance to surface water drainages.
- The Site driveway from Pala Del Norte Road will be constructed as a free-span bridge across the small drainage path that occurs just west of the Site.
- Construction work will not occur where the gas pipeline is located within the 100-year flood zone if flooding is occurring or imminent.
- The Project is designed to locate facilities in previously disturbed areas to the maximum extent practical, to minimize new ground disturbance. No natural ground surface will be disturbed, except for along the gas pipeline between the existing Pala substation and SR 76, where new ground disturbance cannot be avoided.
- The Project is designed with no process water discharge. Cooling tower blow-down, water treatment waste water, and other non-oily process wastewater will be recycled via an RO system to minimize Project water consumption.

- BMPs for protection of water quality will be implemented in accordance with the State General NPDES Permit for storm water discharges from construction sites, and in accordance with County SUSMP and Stormwater Ordinance requirements for construction and operations.
- Site drainage features will be designed for the 50-year storm with runoff control for the 100-year storm in accordance with County requirements.
- Runoff from the Site will be routed to a detention basin sized to detain the 100-year storm.
- Areas in the security fence that are not occupied by buildings or paving will be surfaced with gravel to reduce peak runoff and increase infiltration. Other surfaces disturbed by construction will also be stabilized. BMPs for erosion and sediment control during construction will be maintained in disturbed areas until the surface is stabilized.
- The Project will comply with applicable LORS related to water resources.

6.5.3 Mitigation Measures

Based on the above analysis of impacts and the design and operational features that have been incorporated into the Project, no mitigation measures are required.

6.5.4 Significant Unavoidable Adverse Impacts

There are no significant unavoidable adverse impacts to water resources from construction or operation of the Project.

6.5.5 Laws, Ordinances, Regulations and Standards

LORS related to water resources that are relevant to the Project are listed in Table 6.5-2, along with the names of the administering agencies and the Project approach to compliance. The Project will comply with applicable LORS during construction and operation.

A schedule for permits required for water resources is provided in Section 2.15.

Project construction will require an NPDES permit for storm water discharges. The Applicant will submit an NOI to be covered under the State General NPDES permit for storm water discharges from construction sites. To date, no interaction has occurred with the RWQCB related to this permit. The NOI will be submitted prior to construction startup. A copy of the NOI is included in Appendix 6.5-F. In addition, storm water discharges during construction will be required to comply with the Stormwater Ordinance, which implements requirements of the County's MS4 permit from the RWQCB (Order No. R9-2007-0001). The County will enforce compliance with the requirements of their MS4 permit through their review of the Site grading and drainage plan (Appendix 2-A) and SWMP (Appendix 6.5-D) and the Storm Water Ordinance (Appendix 6.5-C).

Construction of the transmission line interconnection and gas pipeline using HDD beneath drainage paths will likely require a Streambed Alteration Agreement from CDFG. An application for this permit is being prepared and will be submitted in upcoming weeks. The Applicant's consultants have been coordinating with CDFG in preparation for filing.

No other permits are required for the Project that are directly related to water resources. The FPUD Board of Directors approved FPUD's execution of the water option in Appendix 6.5-G, allowing reclaim water to be sold to Orange Grove Energy, L.P., and the Board of Directors will need to approve the option agreement for fresh water as well. No other permit or approval is required for water supply.

The gas line construction will cross an SDCWA right-of-way that contains two aqueduct pipes. Construction through this area will require an encroachment permit from SDCWA. The Applicant is coordinating with SDCWA in preparation for submittal of an application. Approval of the application can occur promptly following CEC's completion of a CEQA record.

If not for the exclusive authority of the CEC to certify power plant sites and related facilities, a permit from County Department of Health would be required for the sanitary septic system. The septic system will be required to comply with the County Plumbing Code and County septic tank ordinance. The preliminary plan for the septic system is provided in Drawing C200 in Appendix 2-A. A design report is provided in Appendix 6.5-H.

The Project will not require an NPDES permit for operations. Storm water discharges during operations will be compliant with the County's MS4 permit. Therefore, no storm water discharge permit is required.

Agency contacts related to water resource are provided in Table 6.5-3.

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Table 6.5-2 – Summary of Water Resources LORS and Compliance

JURIS-DICTION	AUTHORITY	AGENCY[1]	REQUIREMENTS	COMPLIANCE	AFC SECTIONS AND PAGES
Federal	CWA §404, 33 USC §1344; 33 CFR Parts 320-330.	ACOE	Institutes programs and requirements for dredge or fill in Waters of the US	The Project is designed to use HDD to install piping, transmission and gas lines beneath drainages to avoid dredging or filling Waters of the US.	6.5.1.1.2, 6.5.2.1.2, 6.5.5 Pages 6.5-3, 6.5-11 to 6.5-13, 6.5-19 to 6..5-25
	CWA §402, 33 USC §1342; 40 CFR Parts 122-136.	RWQCB with oversight by SWRCB and EPA Region IX.	NPDES permit for storm water discharge.	The Project will file an NOI to comply with the State General NPDES permit for storm water discharges from construction sites, and will prepare a SWPPP. During operations, the power plant will discharge storm water under the County MS4 permit identified below.	6.5.1.3.1, 6.5.2.1.2, 6.5.2.2.2, 6.5.5 Pages 6.5-4 to 6.5-5, 6.5-11 to 6.5-13, 6.5-14 to 6.5-15, 6.5-19 to 6.5-25
	CWA §401, 33 USC §1341	RWQCB with oversight by SWRCB and EPA Region IX.	Requires Certification that dredge of fill to Waters of the US will comply with water quality standards.	The Project is designed to use HDD to install piping, transmission and gas lines beneath drainages to avoid dredging or filling Waters of the US.	6.5.1.1.2, 6.5.5 Pages 6.5-3, 6.5-19 to 6.5-25
	CWA § 311; 33 USC §1321; 40 CFR Parts 110, 112, 116, 117.	RWQCB with EPA Region IX oversight.	SPCC Plan for prevention, control and countermeasures, and reporting of oil or hazardous substance discharges.	The Project is designed to have no discharge of oil or hazardous substances. In the event of an accidental release, reporting will occur in accordance with applicable federal and state requirements and corrective measures will be implemented, as appropriate. An SPCC and Hazardous Materials Business Plan will be developed for the Project that will address these requirements.	6.5.2.1.3, 6.5.2.2.2, 6.5.2.2.3, 6.5.5 Pages 6.5-13 to 6.5-14, 6.5-14 to 6.5-15, 6.5-19 to 6.5-25

[1] Pursuant to 20 CCR Chapter 5 Appendix B Section (i)(1)(B): Each agency with jurisdiction to issue applicable permits and approvals or to enforce identified LORS and adopted local, regional and federal land use plans, and agencies which would have permit approval or enforcement authority, but for the exclusive authority of the CEC to certify sites and related facilities.

JURIS-DICTION	AUTHORITY	AGENCY[1]	REQUIREMENTS	COMPLIANCE	AFC SECTIONS AND PAGES
State	California Porter-Cologne Water Quality Control Act of 1972; California Water Code, §13000-14957, 23 CCR.	RWQCB.	Authorizes the state to develop and implement a statewide program for water quality control.	The Project will be constructed and operated with BMPs to protect water quality in conformance with the Act and implementing regulations. The Project is designed for no process water discharge.	6.5.2.1.2, 6.5.2.2.2, 6.5.2.4 Pages 6.5-11 to 6.5-13, 6.5-14 to 6.5-15, 6.5-18 to 6.5-19
	California Water Code §13269; 23 CCR Chapter 9.	RWQCB.	Waste discharge requirements for waste that can affect the quality of waters of the state.	With the Project design, there will no discharge that would require Waste Discharge Requirements other than the State General NPDES permit for storm water discharges during construction. During operations, Site storm water discharges will occur under the County MS4 permit.	6.5.1.3.4, 6.5.2 Pages 6.5-5 to 6.5-6, 6.5-10 to 6.5-19
	California Constitution, Article 10 §2.	SWRCB	Avoid wasting or unreasonable uses of water. Regulates methods of water diversion and use.	The Project has been designed to minimize water use to the extent practical.	2.6.2, 2.7.1, 6.5.1.3 Pages 2-15 to 2-22, 6.5-4 to 6.5-10
	Fish and Game Code Section 1600-1616	CDFG	Establishes requirements to notify CDFG prior to undertaking construction that will affect the bed channel or bank of any river, stream or lake, and requires a Streambed Alteration Agreement for any such project determined by CDFG to have the potential to substantially affect fish or wildlife resources.	The Project will file an application for a Streambed Alteration Agreement with CDFG.	6.5.1.1.2, 6.5.2.1.2, 6.5.5 Pages 6.5-3, 6.5-11 to 6.5-13, 6.5-19 to 6.5-25

JURIS-DICTION	AUTHORITY	AGENCY[1]	REQUIREMENTS	COMPLIANCE	AFC SECTIONS AND PAGES
Local (Cont'd)	San Diego County Code of Regulatory Ordinances Title 6, Division 7, Chapter 8: Watershed Protection, Stormwater Management and Discharge Control	San Diego Department of Public Works.	Requires a storm water management plan and BMPs.	Project will submit final grading plans and storm water management plan to the CBO documenting measures that will implement compliance with this ordinance.	6.5.1.3.4, 6.5.2.1.2, 6.5.2.2.2 6.5.2.4, 6.5.5 Pages 6.5-5 to 6.5-6, 6.5-11 to 6.5-13, 6.5-14 to 6.5-15, 6.5-18to 6.5-19, 6.5-19 to 6.5-25
	County MS4 Permit	San Diego Department of Public Works.	Requires the County to implement ordinances or other programs to achieve compliance with the permit	Project will discharge under the County NPDES permit during operations.	6.5.2.1.2, 6.5.2.2.2, 6.5.2.4, 6.5.5 Pages 6.5-11 to 6.5-13, 6.5-14 to 6.5-15, 6.5-18 to 6.5-25
	FPUD Administrative Code Article 19 – Water Service Connections and Rules for Deliveries of Water	FPUD	Establishes operating rules for FPUDs water sales and deliveries.	Project water supply will be provided consistent with FPUD's administrative code.	6.5.1.4.1 Pages 6.5-7 to 6.5-9
	Water Quality Control Plan for the San Diego Basin	RWQCB	Designates beneficial uses of surface and ground water and establishes water quality objectives.	The Project will be in compliance with the Basin Plan with implementation of the water quality protection measures described in AFC Section 6.5.2 including BMPs for storm water management and prevention of discharges of hazardous materials.	6.5.1.3.1, 6.5.2 Pages 6.5-4 to 6.5-5, 6.5-10 to 6.5-19
Industry	None applicable.	None applicable.	None applicable.	None applicable.	None applicable

Table 6.5-3 – Agency Contacts for Water Resources

AGENCY	AUTHORITY
State Water Resources Control Board Division of Water Quality Storm Water Section, 15th Floor 1001 I Street Sacramento, California 95812-1977 Staff (916) 657-1146	NOI Submittal.
County of San Diego Department of Public Works 5201 Ruffin Road, Suite D San Diego, California 92123 S. Hoang (858) 505-6327	Compliance with County MS4 storm water requirements.
County of San Diego Department of Planning and Land Use 5201 Ruffin Road, Suite B San Diego, California 92123 J. Ramaiya (858) 694-2960	Compliance with County MS4 storm water requirements.
County of San Diego Department of Environmental Health Land and Water Quality Division 5201 Ruffin Road, Suite C San Diego, California 92123 E. Klein (858) 694-3105	Onsite sanitary system compliance with County Ordinances
California Department of Fish and Game 4949 Viewridge Avenue San Diego, California 92123 T. Spear (858) 467-4223	Section 1602 Streambed Alteration Agreement
District Engineer Rainbow Municipal Water District 3707 Old Highway 395 Fallbrook, California 92028 B. Lee (760) 728-1178	RMWD
General Manager Fallbrook Public Utility District 990 East Mission Road Fallbrook, California 92028 K. Lewinger (760) 728-1125	FPUD water supply
Sr. Office Assistant, ROW Department San Diego County Water Authority 4677 Overland Avenue San Diego, California 92123 J. Flees (858) 522-6912	Encroachment permit for construction across aqueduct right-of-way

6.5.6 References

Brian F Mooney Associates, 1997, Palomar Aggregates Quarry Environmental Impact Report.

California Department of Water Resources (CDWR), Bulletin 118, California's Groundwater, Updated February 27, 2004.

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Moreland, J.A. Hydrologic- and salt balance investigations utilizing digital models, Lower San Luis Rey River area, San Diego County, California: USGS Water Resources Bulletin 24-74. 1974.

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Powers, Terry. DPLU Planner. Personal communication with TRC. May 2008.

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RMWD, www.rainbowmwd.com. Site visited May 10, 2008.

RWQCB, 2006 CWA Section 303(d) List of Water Quality Limited Segments Requiring TMDLs (approved by USEPA on June 28, 2007). 2006.

RWQCB, Water Quality Control Plan for the San Diego Basin (9), 1994.

San Diego County Department of Public Works, San Diego County 85th Percentile Isopluvials. Draft 8/7/2003.

San Diego County Water Authority, www.sdcwa.org. Site visited May 10, 2008.

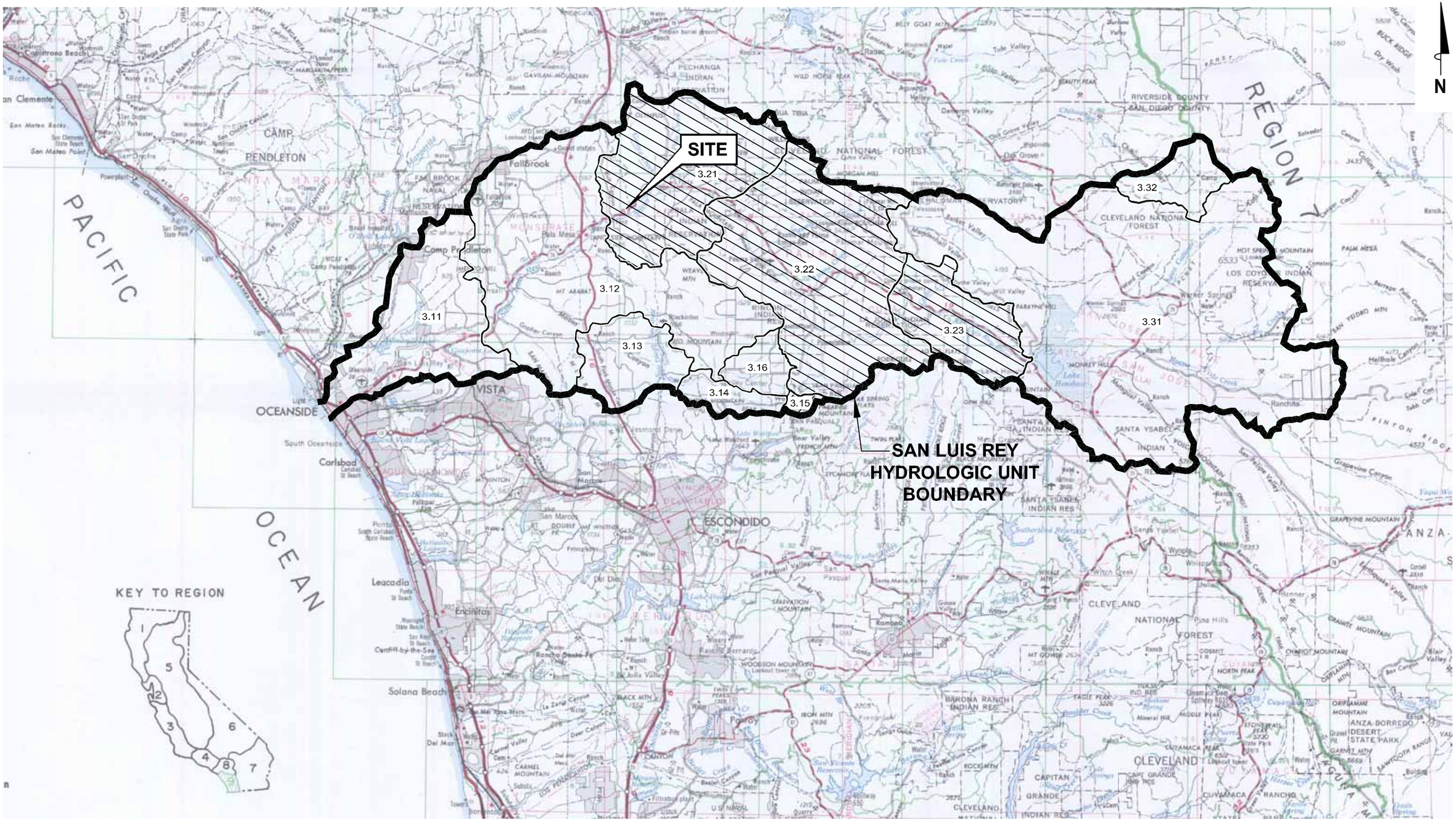
San Diego Historical Society, University of San Diego. *The Journal of San Diego History*, Winter 2002, Volume 48, Number 1.

San Luis Rey Municipal Water District (SLRMWD), Master Plan for Water and Wastewater Services, Municipal Review Study Area, August 2005.

SLRMWD, Groundwater Resource Assessment, San Diego County, California, November 9, 2006.

Stevenson, Christine San Diego County Department of Planning and Land Use, personal communication with TRC, September 2007 and May 2008.

Volturno, Lenore, Director of Environmental Services, Pala Band of Mission Indians, personal communication with TRC, October 2, 2007.



Hydrologic Area

= 3.20 Monserate - Hydrologic Area

3.21 = Pala Hydrologic Sub Area

0 5 10 MILES

APROX. SCALE

TRC

PROJECT: 125158

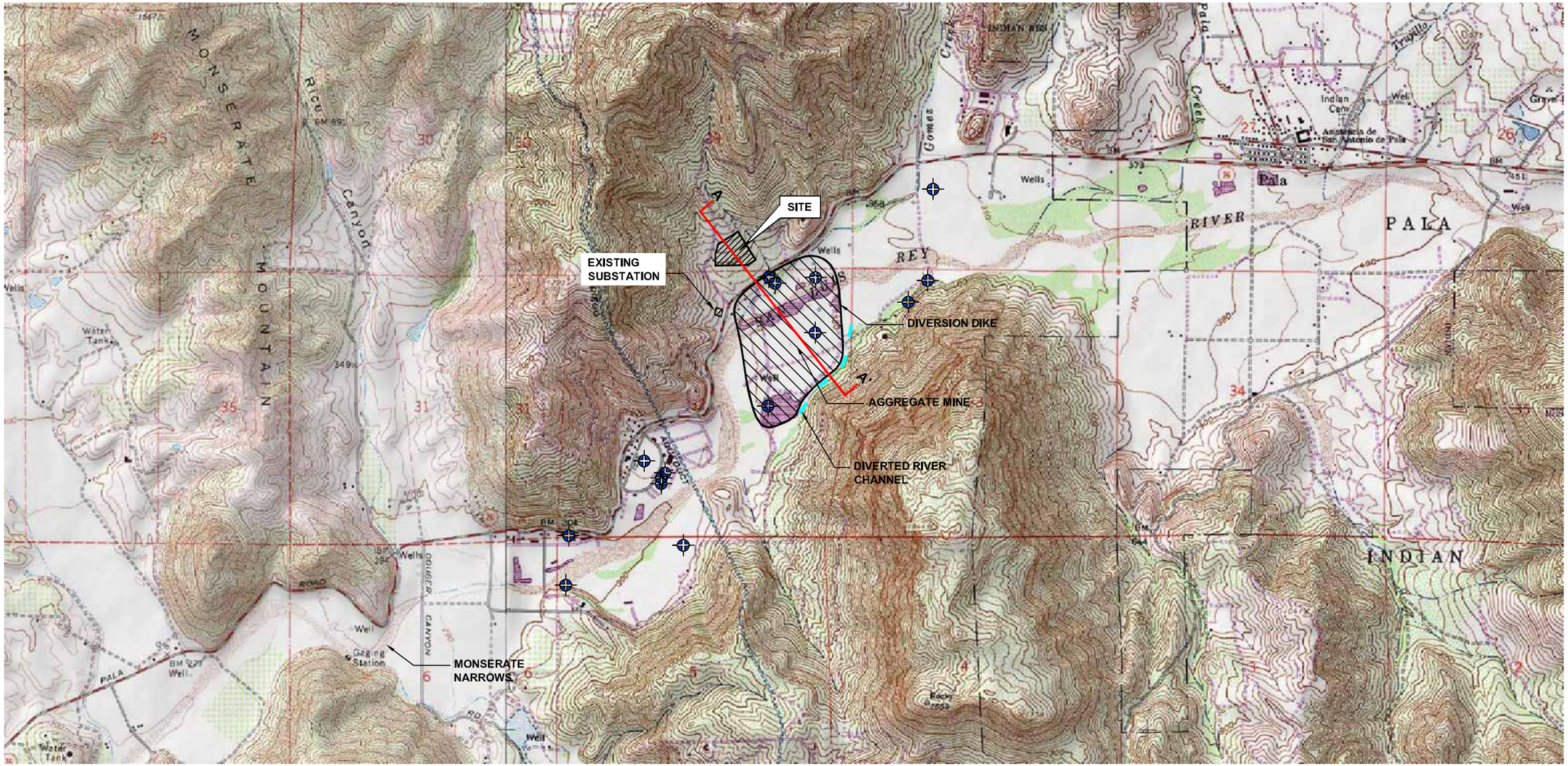
FACILITY:

ORANGE GROVE PROJECT
SAN DIEGO COUNTY, CALIFORNIA

SAN LUIS REY HYDROLOGIC UNIT

FIGURE 6.5-1

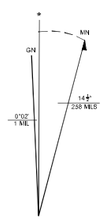
MS=1:1 L:\Graphics\ProjectsByNumber\29-xxxx\29-0319\Hydrologic Units.dwg Jun 04, 2008 - 2:23pm aakers



N

SOURCE:

United States Geological Survey
7.5 Minute Topographic Map:
Pala Quadrangle



UTM GRID AND 1968 MAGNETIC NORTH DECLINATION AT CENTER OF STREET

LEGEND

A A' Geologic Cross Section (See Figure 6.5-5)

Groundwater Well Location

0 1/4 1/2 3/4 1 MILE

TRC

PROJECT: 125158

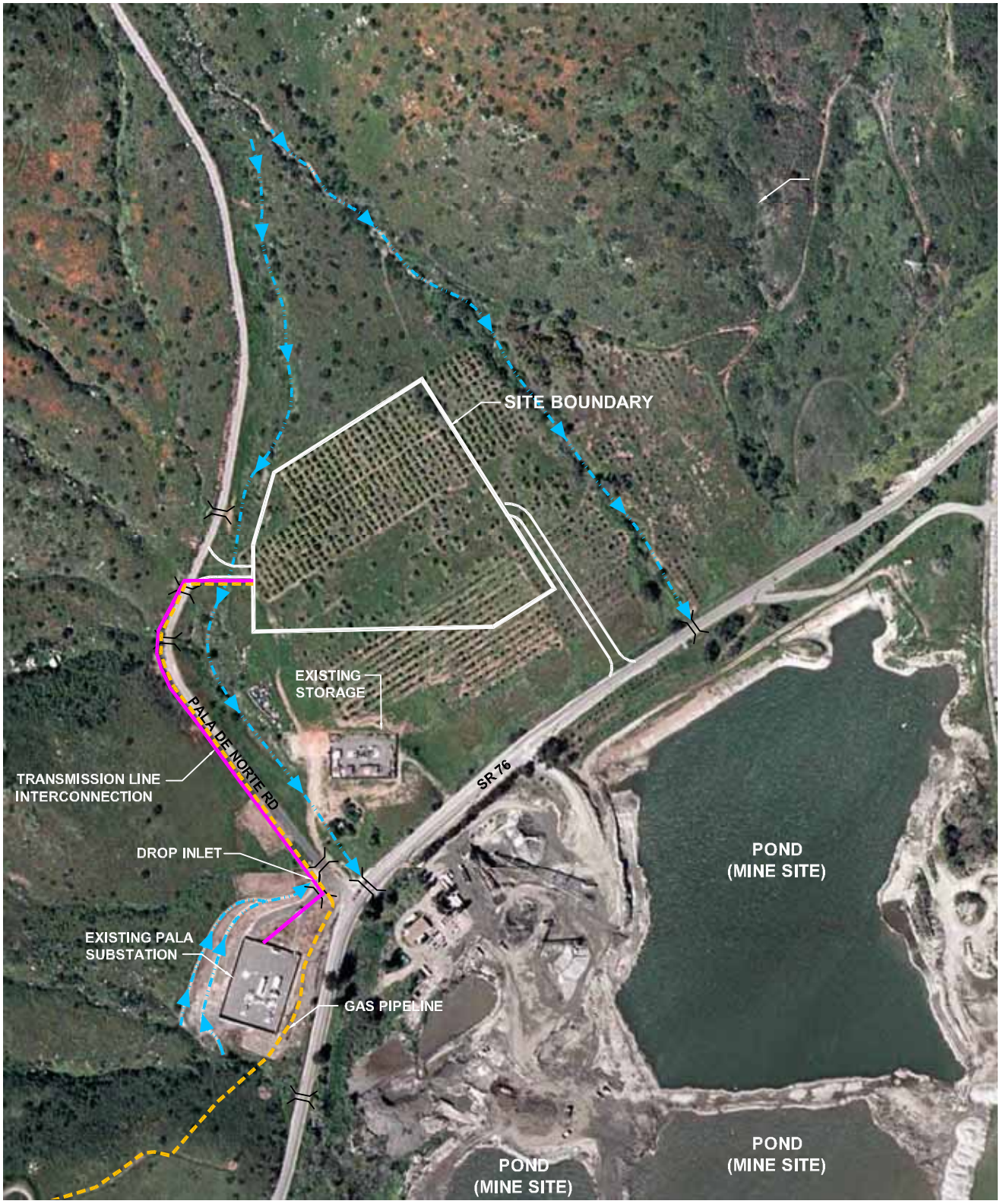
FACILITY:

ORANGE GROVE PROJECT
SAN DIEGO COUNTY, CALIFORNIA

EXISTING REGIONAL SURFACE DRAINAGE AND TOPOGRAPHY

FIGURE 6.5-2

MS=1:1 L:□Graphics□ProjectsBy Number□29-xxxx□29-0319□Existing Surface Drainage USGS Topo.dwg Jun 04, 2008 - 2:55pm aakers



SOURCE:

Google Earth Professional, 2005.

LEGEND

Culvert

Drainage Path

APPROXIMATE SCALE (FEET)

0 400 800

TRC

PROJECT: 125158

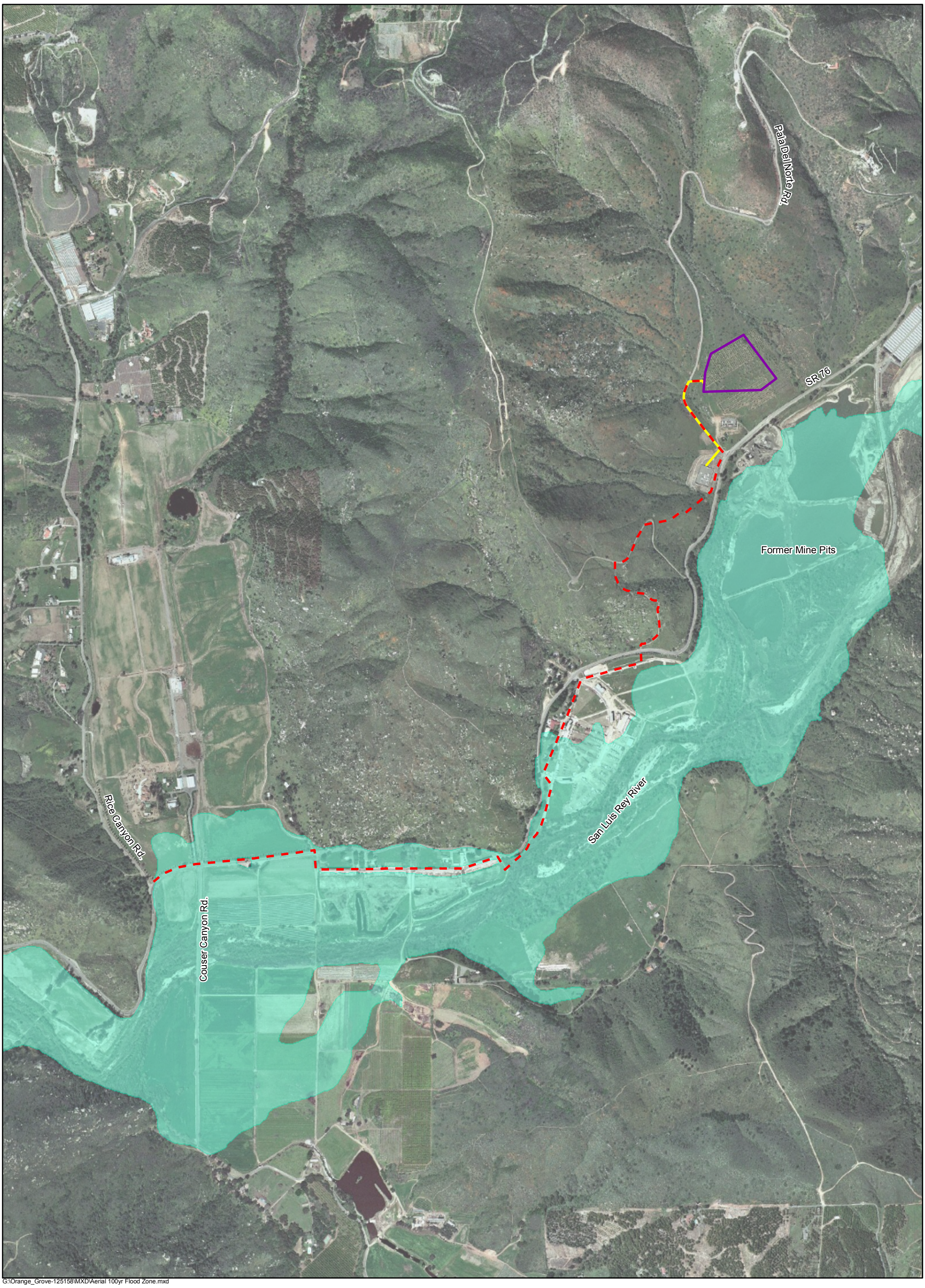
FACILITY:

ORANGE GROVE PROJECT
SAN DIEGO COUNTY, CALIFORNIA

EXISTING SITE DRAINAGE

FIGURE 6.5-3

PS=1:1 L:□Graphics□ProjectsByNumber□29-xxxx□29-0319□290319 Aerial.dwg Jun 03, 2008 - 1:47pm aakers



G:\Orange_Grove-125158\MXD\Aerial 100yr Flood Zone.mxd

Gas Pipeline
Transmission Line Interconnection
Site Boundary
Area Innundated by 100-Year Floodplain

N
W E
S

Figure 6.5-4

100-Year Flood Zone
Orange Grove Project
San Diego County, CA

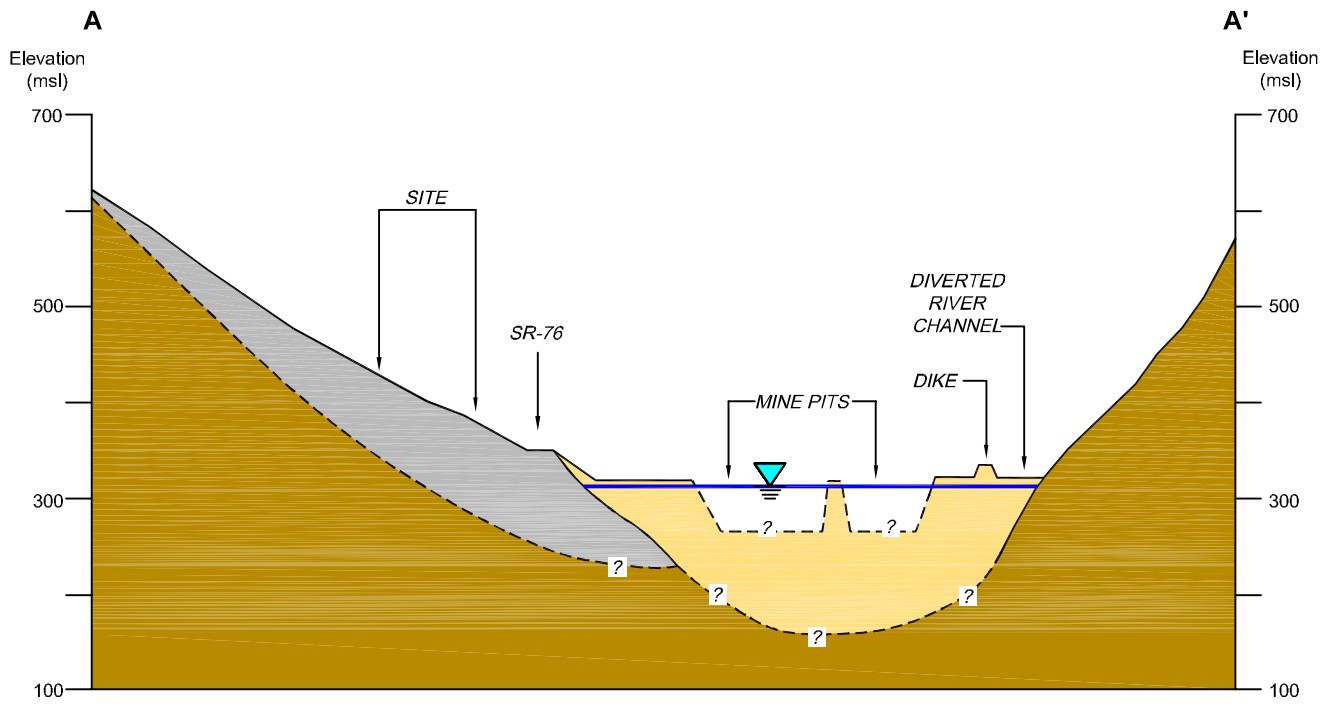
1" = 1,000'

1,000 500 0 1,000 2,000 Feet

Source:
Flood Plain Data: FEMA
Aerial Photographs from ESRI_Imagery_World_2D

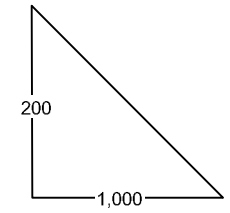
TRC

L:□Graphics□ProjectsByNumber□29-xxxx□29-0319□290319 Section A-A.DWG Jun 04, 2008 - 2:25pm aakers



LEGEND

- Plutonic Basement Rock
- Very Old Alluvium (Not Water-Bearing)
- Holocene Alluvium (Water-Bearing)
- Ground Water Table



SCALE (feet)
Vertical Exaggeration = 5x

NOTES:

1) Hydrogeologic units based on:
California Division of Mines and Geology, 2000
and San Luis Rey Municipal Water District, 2006.

2) Vertical Exaggeration 5X
Horizontal Scale 1:12,000 (1-inch = 1,000 feet)
Vertical Scale 1:2,400 (1-inch = 200 feet)

TRC

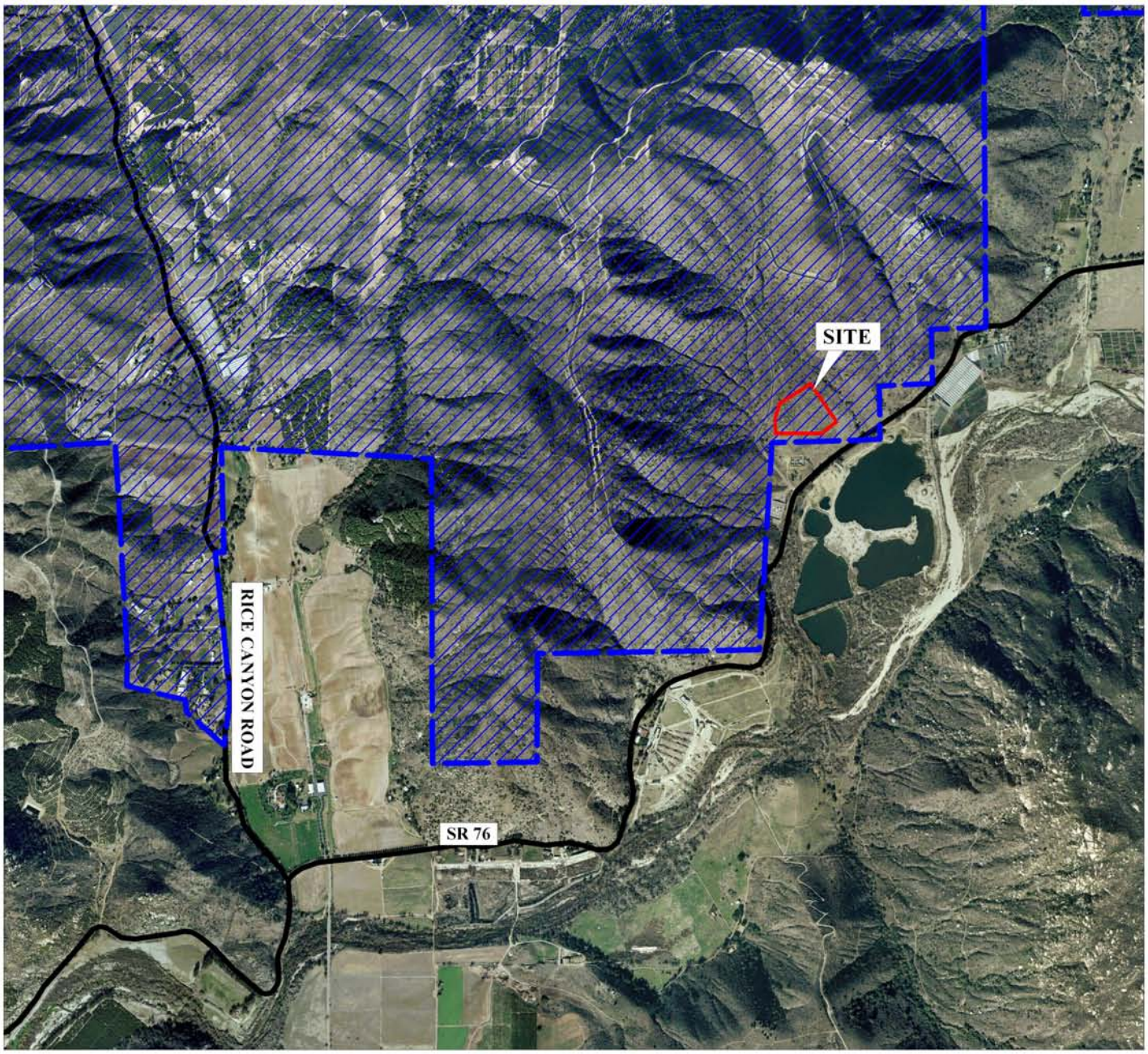
PROJECT: 125158

FACILITY:

ORANGE GROVE PROJECT
SAN DIEGO COUNTY, CALIFORNIA

HYDROGEOLOGIC CROSS SECTION A-A'

FIGURE 6.5-5



0 0.5 1

Miles

SCALE 1:24,000

N

- Rainbow Municipal Water District Boundary

SOURCE:

Water District Boundary Data
Obtained from:San Diego County GIS
http://files.sangis.org/fileList_categorized.aspx
Aerial : AirPhoto USA 2006

TRC

PROJECT: 125158

FACILITY: ORANGE GROVE PROJECT
SAN DIEGO COUNTY, CALIFORNIA

RAINBOW MUNICIPAL WATER DISTRICT

FIGURE 6.5-6

TRC_Irvine\San Diego County\Water Resources\Water District Map.wor

APPENDIX 6.5-A – HYDROLOGY AND HYDRAULICS CALCULATIONS

HYDROLOGY & HYDRAULIC CALCULATIONS

FOR

ORANGE GROVE ENERGY, L.P.

ORANGE GROVE POWER PLANT

MUP 07 - 009

JUNE 2, 2008

PREPARED BY:

16041 Foster P.O. BOX 1000
Stilwell, Kansas 66085-1000
(913) 681-2881

Sega Project No. 07-0098

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Existing West Drainage Channel…….……..	8
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References:	11

- Site Location & Project Vicinity Map
- USDA/NRCS National Cooperative Soil Survey
- FEMA FIRM Map
- USGS Topographic Quadrangle – Pre and Post-Development
- Grading and Drainage Plan Drawing - C300
- Drainage Area Map Drawing - C400
- Flood Control Facilities Map (Scale - 1:24,000)
- San Diego Region RWQCB Map and
- San Luis Rey River Region Watershed Map
- Site Layout Plan Drawing - C100 and Impervious Areas Calculations
- FlowMaster 2005 Drainage Worksheets
    - North Drainage Channel
    - Secondary Access Road Drainage Ditches
    - Proposed Concrete Bridge (100-year W.S.)
    - Site Storm Drains Circular Pipes
    - Detention Basin Outlet Circular Orifice
- WinTR-55 Storm Data Spreadsheet (50-year & 100-year Storm)
    - Site Pre- and Post-Development Discharge
    - TR-20 Pre- and Post-Development Runoff Volumes
- Backwater Analysis Excel Spreadsheet and FlowMaster
    - Hydraulic & Energy Grade Lines (Graph)
- County of San Diego Hydrology Manual – Rainfall Isopluvial Maps

Introduction and Pre-Development Condition

Orange Grove Energy, L.P.'s proposed Orange Grove Power Plant (OGPP) is located in Unincorporated San Diego County (SDC) west of Pala, California 92059 about 0.1 miles north of the intersection of State Road 76 (Pala Road or SR-76) and a private road called Pala Del Norte Road. The 8.5 acre proposed project site is located on approximately 202 acres of property owned by San Diego Gas & Electric (SDG&E) in San Diego County, California in Section 29, Township 9 South, Range 2 West (Please refer to the Site Location and Project Vicinity Map in the Reference section for details). The site will utilize two leased areas during the construction of the project. The 8.5 acre northern leased area (APN 110-072-26) will be the location of the proposed site. The southern leased area (APN 110-370-01) is 8.0 acres, and will be the staging, pre-assembly, construction parking, and storage area during construction and after construction will be returned to its existing condition. An existing storage yard is included on the southern leased area and will be utilized for construction trailers.

The online USDA, NRCS, National Cooperative Soil Survey for this area of San Diego County, CA reports that this site has Las Posas stony fine sandy loam, 9 to 30 percent slopes (See Reference Soil Survey Map symbol LrE). The seasonal high groundwater table was not encountered during the geotechnical investigation. The maximum explored depth for the fourteen site borings was approximately 40.0 feet below grade (see the signed and sealed PSI Geotechnical Exploration Report for details). The parcel is designated as zone "X", which are areas determined to be outside the 500-year floodplain (and outside the 100-year floodplain), as shown on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) dated June 19, 1997, for community panel number 501 of 2375 and map number 06073C0501 F (See the FEMA FIRM Map). There are no geological hazards such as landslides or rockslides identified according to the geotechnical exploration report (See signed and sealed PSI Geotechnical Exploration Report).
The San Luis Rey River is located on the opposite side of SR-76, directly south of the proposed site. The river is the receiving watershed of the stormwater runoff from both the pre-development and post-development site.

Existing Development

This area of existing SDG&E property was previously developed into a citrus orchard that is no longer in use. A majority of the proposed site and staging areas are still covered with abandoned orchard trees. The rest of the site is covered with a mixture of grass and vegetation. The 8.5 acre leased area has few existing impervious areas located on-site.

The pre-development area drains from the north to the south at approximately a ten percent (10%) slope (See the USGS Topographic Quadrangle). The existing site drains to a portion of SR-76 that does not have a ditch or culvert to channlize or route the stormwater under the road. Two existing drainage channels located on the east and west sides of the site route neighboring stormwater runoff under SR-76. Except for negligible temporary disturbance for trenching and backfilling associated with the transmission and gas pipeline installation, both drainage channels will remain undisturbed throughout construction.

The first of the two channels; the West Channel is located between the proposed development and Pala Del Norte Road. The West Channel is fed by existing culvert pipes of various sizes (14”- 24”) which route drainage from the northern mountains across Pala Del Norte Road. Once the drainage reaches SR-76 the runoff is routed underneath by an 18” corrugated metal culvert pipe. No existing stormwater calculations were available for review.

The second channel; the East Channel, is located on the east side of the proposed development approximately 250 linear feet east of the proposed east property line. The East Channel also routes stormwater runoff under SR-76 through a 24” corrugated plastic culvert pipe. The pipes outlet into an existing former sand and gravel quarry located on the Pala Band of Mission Indians property on the south side of SR-76.

The quarry is located within Flood Zones A and X which are “special flood hazard areas inundated by the 100-year flood” and “Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood” (See References for FEMA FIRM Map). Ultimately, the quarry outlets into the San Luis Rey River (See References for the Drainage Area Map). Two existing earth ridges, one located on the south side of the existing SDG&E maintenance/storage yard and the other located 300 feet west of the existing East Drainage Channel route the proposed existing site drainage between the earth ridges. These earth ridges collect pre-development stormwater runoff between them and route over SR-76. The stormwater then travels through the former quarry to the San Luis Rey River.

Proposed Development

The proposed Orange Grove Power Plant will be located on an 8.5 acre leased area. The plant area (the area located inside the fence) will include a switchyard area and the power plant turbine area including service building and various structures. Inside the proposed turbine plant area six (6) inches of crushed rock surface will be utilized instead of topsoil. The plant area loose rock is installed for reasons concerning electrical safety but it also improves the drainage characteristics of the property by slowing the runoff flow velocity. The surrounding site will be landscaped and constructed at 3:1 maximum slope. The proposed Stormwater Detention Basin is located on the south and down stream side of the proposed development. The basin will be utilized as an extended dry detention basin. The basin will be grass lined and discharge at less than the pre-development discharge rate. These hydrology and hydraulic calculations are to show that the proposed Stormwater Management System will be adequate for the proposed site.

The site has two proposed access drives, one from Pala Del Norte Road and the other from State Road 76 (Pala Road or SR-76). The Pala Del Norte Road access drive will be the main entrance and includes a bridge spanning the existing West Drainage Channel. Existing stormwater culvert pipes located under Pala Del Norte Road will remain undisturbed. These pipes route runoff from the northern mountains into the West Channel. The bridge will allow for the 100-year storm event to flow under the deck with a minimum of one foot of freeboard (see the FlowMaster 2005 Worksheets for the Proposed Concrete Bridge). A concrete approach apron will be constructed

between the bridge and the existing asphalted Pala Del Norte Road. Similarly, the SR-76 access drive will be located approximately 930 feet east of the existing intersection of Pala Del Norte Road and SR-76. This access drive entrance will be constructed of concrete pavement approximately 50 feet in length. All additional roads will be constructed of 18 inches of crushed rock surface including inside and out of the plant area. The two access drives will connect inside the plant area. All road widths, radii, and other requirements will be in accordance with California Fire Code, the San Diego - North County Fire Protection District, and the Orange Grove Power Plant Fire Protection Plan.

To adequately control water quality on-site, a combination of Site Design, Source Control, and Treatment Control Best Management Practices (BMPs) will be utilized for the Orange Grove Power Plant project based on the Caltran's BMP Handbook and SDG&E's BMP Handbook. The Orange Grove Power Plant project will implement stormwater treatment BMPs that will remove anticipated pollutants of concern from off-site discharge by routing the 50-year stormwater through the proposed storm drains and into the Stormwater Detention Basin located in the southeast side on the northern leased area (Please refer to the Grading and Drainage Plan Drawing).

The proposed drainage area for the detention basin is 5.2 acres, which includes the switchyard area, the power plant turbine block and supporting equipment, service building, and the detention basin area. When the planned construction is complete, the plant area will have approximately 43,500 SF of impervious foundation additions for various structures. In addition, there will be 7,500 SF of impervious area for access drive entrances which will not be located inside of the detention basin drainage area. Thus, the proposed drainage area of 5.2 acres will have a total impervious area of 43,500 SF (1.0 acres, 11.76 % of the parcel) (See the References for the Impervious Area Map and Calculations).

Stormwater Detention Basin Requirements

The proposed Stormwater Detention Basin will detain the stormwater runoff for a 5.2 acre drainage area. This area includes all areas inside the plant area fence yard, the detention basin area, and the north berm area (See the Drainage Area Map in the References). Stormwater runoff will be captured in the plant area by six stormwater grate area inlets. Both the grate inlets and storm drains are designed for 100-year storm event. The stormwater runoff will be routed into the detention basin for treatment. The inlets will be double San Diego Regional Standard No. D-15 grate inlets. The detention basin will detain the 100-year stormwater runoff and outlet at less than the pre-development discharge rate. The pre-development discharge rate will be controlled with a 12" diameter outlet pipe.

The San Diego Regional Water Quality Control Board (RWQCB) has jurisdiction within San Diego County. The Regional Boards issue the municipal Stormwater permits in California. These boards have water and stormwater jurisdiction on construction and development sites in California. The Orange Grove Power Plant is located in region 9, the San Diego RWQCB (See References for San Diego RWQCB Map). The site stormwater indirectly discharges into the San Luis Rey River located south of the proposed site (See the San Luis Rey River Watershed Map). The County of

San Diego – Stormwater Standards Manual requires that Priority Projects meet stormwater management system design criteria. The stormwater management system will meet both the quality and quantity requirements defined in the County of San Diego Stormwater Standards Manual, the 2003 San Diego County Hydrology Manual, and the 2005 San Diego County Drainage Design Manual. Accordingly, the proposed Detention Basin will detain both the quality and quantity volumes for the 100-year design storm event.

Required Quality Volume

The Design Treatment Control BMP standards for stormwater runoff is the primary control variable for designing Treatment Control BMPs. This design volume is for small, more frequent storm events. The runoff volume quality requirement ($V_{quality}$) is produced from the 24-hour 85th percentile storm event, as determined from the local historical rainfall (See County of San Diego Stormwater Standards Manual - *Appendix A to the Watershed Protection, Stormwater Management and Discharge Control Ordinance*, Amended August 2003). The Runoff Coefficient "C" was determined from the various proposed land modifications including impervious area, vegetation, and rock surface additions (See Table 3-1 Runoff Coefficients for Urban Areas from the County of San Diego Hydrology Manual Dated June 2003 page 3-6). The depth of rainfall "I" was determined to be 0.83 inches (San Diego County Hydrology Manual *Department of Public Works Flood Control Section* - Appendix E 85th Percentile Precipitation Isopluvial Map, Revised June, 2003). The Treatment Control BMP design volume is:

- $V_{quality}$ = C*I*A
- Runoff Coefficient Impervious Areas = 0.85 acres, C = .95
  Crushed Rock Surface Areas = 2.55 acres, C = 0.35
  Grassy Areas = 1.8 acres, C = 0.51

$$C = \frac{(0.80\text{ acres})(0.95) + (1.8\text{ acres})(0.51) + (2.60\text{ acres})(0.35)}{5.2\text{ acres}} = 0.50$$

- $V_{quality}$ = (0.50)*(0.83 inches)*(5.2 acres)*(1 ft/12 in)*(43,560 ft^2/ 1 acre)
  - **$V_{quality}$ = 7,833 cubic feet**

The required stormwater quality volume will be retained in the proposed detention basin. Below the inlet and outlet stormwater pipes will be a one foot sediment storage depth for anticipated erosion and sediment control. The depth will be maintained by riprap lining the bottom on the detention basin according to the San Diego County Drainage Design Manual and the Water Quality Management Plan (WQMP) Requirements.

Required Quantity Volume

The required quantity for the Orange Grove Power Plant Stormwater Detention Basin will be the stormwater runoff from the 24-hour, 100-year storm event with an outlet control structure

which will release stormwater at the pre-development discharge rate. The discharge values were calculated using the computer program Technical Release 55 (TR-55) and the Rational Method. TR-55 utilizes the U.S. Soil Conservation Service (SCS) runoff equation method to calculate the peak rate of discharge. The input requirements for calculating the peak discharge is the time of concentration, the drainage area, the rainfall distribution, the runoff curve number, and the 24-hour rainfall. The storm rainfall data was determined from the San Diego County Hydrology Manual. Runoff curve numbers characterize the properties for a particular soil and ground cover. A calculated runoff curve number of 76 was utilized for the pre-development areas and a curve number of 83 for post-development areas. All impervious area additions to the post-development site were given a 98 runoff curve number. The time of concentration was determined using TR-55 by defining the length and type of flow, the slope, and Manning's number for the pre- and post-development areas. The 24-hour, 100-year storm pre-development discharge is 12.68 cubic feet per second (cfs) and the post-development discharge to the detention basin is 14.66 cfs.

The volume required for detention was calculated by utilizing TR-55. In addition to the discharge output the program also calculates the stormwater runoff volume. The pre and post-development peak inflow for the 24-hour, 50 and 100-year design storm occurs at the 10th hour. The post-development runoff quantity volumes for the 50-year and 100-year storms are 68,445 and 77,165 cubic feet, respectively (See WinTR-20 Pre-and Post Development Stormwater Runoff Amounts). The total required 100-year storage volume for the Stormwater Detention Basin is:

- **$V_{quality}$ + $V_{quantity}$ = 7,833 cubic feet + 77,165 cubic feet = 85,000 cubic feet**
    - **Thus, $V_{req'd}$ = 85,000 cubic feet**

<u>Proposed Stormwater Detention Basin</u>

The detention basin volume will be detained in the proposed Stormwater Detention Basin before discharging at the pre-development discharge. The Stormwater Detention Basin will be a 0.5 acre 11.0 foot deep basin. The bottom elevation of the detention basin is 402.0'. The side slopes of the basin will be 3:1 and the basin will be surrounded with a security fence and a 10' maintenance road. Access to the bottom of the detention basin for maintenance will be on the northwest corner of the basin (See the detailed Grading and Drainage Drawings). The 10' maintenance road will allow for access to the storm drain outlet structure or detention basin inlet structure, detention basin outlet structure, and the stormwater emergency outlet overflow structure. Because the proposed detention basin will be utilized for both water quality and flood control, it would be classified as a "conjunctive use basin" according to the Drainage Design Manual. The total storage volume available for the Stormwater Detention Basin is (not including one foot of freeboard):

- $V_{Available}$ = **85,650 cubic feet > $V_{req'd}$ so OK!**

The basin inlet structure or storm drain outlet pipe will be a 24" RCP with a flared end section. The pipe will discharge stormwater runoff from six grate area inlets located throughout the plant area. The proposed storm drains will have the capacity to drain the 50-year and 100-year storm event. The detention basin outlet control structure will release discharge at less than the pre-development rate of 11.28 cfs. Prior to inletting into the grate structures, stormwater will be treated over 6" of loose crushed rock (Class II Aggregate). The rock will act as the initial treatment BMP before being discharged into the detention basin. During the 100-year storm event, stormwater runoff will pond inside the development fenced area.

Proposed Outlet Control

The detention basin outlet pipe (12") is sized for less than the pre-development discharge rate at 11.28 cfs (See Outlet Circular Orifice Worksheet). The Stormwater Detention Basin 100-year storm water surface elevation is 412.4'. If water rises above the 412.4' elevation, the stormwater is directed outside of the detention basin through the emergency overflow structure. The structure will discharge at the post-development 100-year discharge rate (27.86 cfs) for the 5.2 acre drainage area. The emergency outlet control structure maximum discharge is 32.63 cfs. The outlet control pipe will channel the stormwater runoff through the emergency overflow structure. Downstream of the emergency overflow structure, the pipe size will increase to 36" to handle storm events larger than the 100-year storm event if needed. All runoff exiting the detention basin will be routed to the proposed west secondary entrance road drainage ditch. The outlet pipe will discharge at 11.28 cfs for a 100-year storm and 39.51 cfs for storm events greater the 100-year storm. The velocities for the outlet pipe are 7.09 ft/s and 9.83 ft/s, respectively. All inlet and outlet pipes on-site are equipped with riprap as energy dissipaters. Table 7-1 of the 2005 San Diego County Drainage Design Manual was utilized for the riprap design parameters.

The stormwater outlet pipe is located outside the top of bank of the Secondary Access Road drainage ditches. The outlet pipe will discharge into a proposed riprap energy dissipater on the west side of the access road.

Proposed On-site North Drainage Channel

The proposed Orange Grove Power Plant North Drainage Channel will be constructed to direct stormwater drainage, from the north side and upstream areas, around the developed area of the site and into the West Drainage Channel. The North Drainage Channel will add no additional stormwater runoff area to the West Drainage Channel. The West Drainage Channel drainage area will be modified in shape but will have no change to the channel. Post-development will have approximately 1.5 acres from the North Drainage Channel routed into the West Drainage Channel; having no net area increase to the existing ditch. The North Channel drainage from the existing 10% slope and the proposed 3:1 slope will be channeled into a two foot deep, five foot wide drainage channel. The channel will be grass lined with 3:1 side slopes and be located outside of the fence line of the development area. The channel will route stormwater runoff into the existing West Drainage Channel, underneath the proposed bridge, and ultimately beneath SR-76. Pre-

development stormwater runoff is routed into the West Drainage Channel or directly across SR-76. The North Drainage Channel is designed to handle the 100-year storm event, a stormwater discharge of 12.75 cfs allowing one foot of freeboard.

Existing West Drainage Channel

The existing West Drainage Channel collects stormwater runoff from areas upstream (north and northwest) of the proposed site location. Multiple existing stormwater culvert pipes are routed into the existing channel underneath Pala Del Norte Road and range from 14 to 24 inches in diameter. There are no proposed modifications to the existing culvert pipes. A proposed concrete bridge approximately 40 feet wide and 60 feet long will span the West Drainage Channel and will be utilized as the main entrance to the proposed site. The bridge will be constructed outside of the top of bank and intersect with Pala Del Norte Road between two sets of existing culvert pipes. The 100-storm event will pass below the bridge (see the FlowMaster 2005 Worksheets for the Proposed Concrete Bridge).

The proposed development will route the area north of the site into that drainage ditch; having no net area increase to the existing West Drainage Channel (See the USGS Topographic Quadrangle – Pre and Post-Development Maps). An outlet culvert pipe for the West Drainage Channel, located at the intersection of Pala Del Norte Road and SR-76, drains stormwater from north to south underneath SR-76. The outlet culvert pipe is an 18" Corrugated Metal Pipe. It drains into the existing former quarry and ultimately into the San Luis Rey River.

Secondary Access Road Drainage Ditches

The Orange Grove Power Plant access drive located off SR-76 will have drainage ditches located on either side. This secondary/emergency road will be utilized during construction as an alternate entrance until the bridge construction is complete for the Pala Del Norte Road access drive. This road will be 30 feet wide and will be constructed of 18 inches of crushed loose rock (Class II Aggregate). The entrance of the secondary road will be constructed of concrete. The secondary road will have ditch channels on both sides. The ditches are designed for the 100-year storm event with a 3 foot bottom and 3:1 side slopes. The west and east ditches discharge at 6.72 cfs and 12.56 cfs, respectively. During the 100-year storm event the water elevation in the channels are 0.31 feet and 0.45 feet in depth (See the FlowMaster Worksheets for the Secondary Access West/East Trapezoidal Channels). The west channel will be two foot deep and at a channel slope of ten percent. Likewise, the east ditch will have similar parameters as the west ditch but will only be one foot in depth. A larger depth was required for the west ditch to provide one foot of freeboard to channel the detention basin stormwater runoff. The detention basin outlet pipe will be 36 inches in diameter and outlet above the top of bank. Riprap will be lined from the outlet location to the secondary road and utilized as the energy dissipation. The two ditches will be connected by an 18" reinforced concrete culvert pipe under the road entrance near State Road 76. All other ditch segments will be grassed lined and maintained with silt fencing and cross barriers located every 50 feet during construction.

The Secondary Access Road Drainage Ditches will route no additional stormwater runoff south toward SR-76. The detention basin will control the stormwater runoff added from the proposed equipment and other impervious area additions. The detention basin will outlet into the west secondary access road ditch at approximately the pre-development discharge rate (11.28 cfs). The velocity for the 100-year storm event will be 14.36 ft/s and will be controlled with 3.0 foot, one ton stone riprap (See Table 7-1 of the County of San Diego Drainage Design Manual).

Maintenance Plan, Erosion, and Siltation BMPs

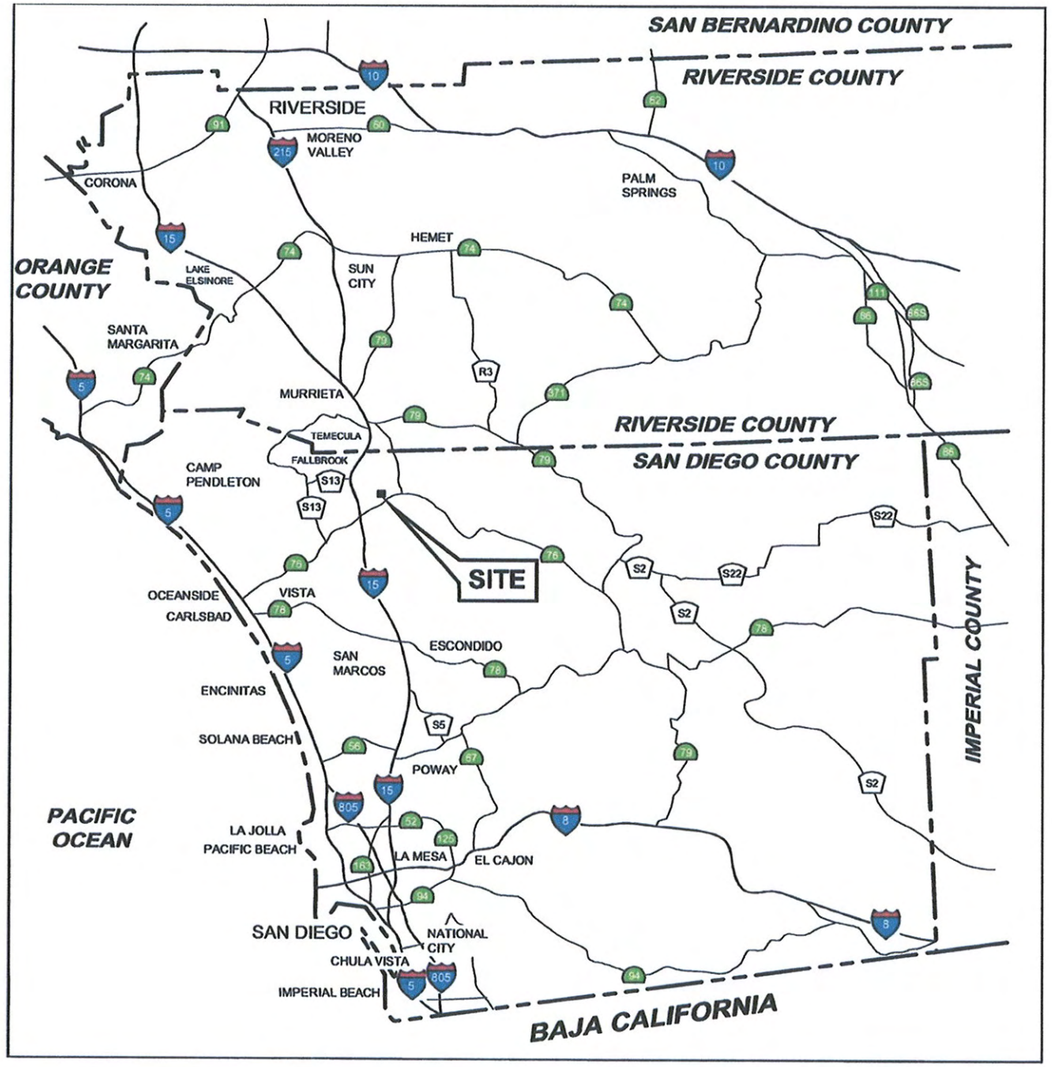
The Orange Grove Power Plant will meet the minimum requirements for construction and permanent BMPs. Construction BMPs will be utilized throughout the scheduled timeframe of the construction project to the maximum extent practicable. Erosion and sediment control will be implemented during construction by silt fences and fiber rolls accompanied with cross barriers (check dams) made from sand bags which will border all sides of the project site. Silt fences will also be implemented around any stockpiling of soil during grading and excavation. Permanent erosion and sediment controls will also be implemented by utilizing drainage channels, soil berms, landscaping, crushed rock surfaces, and ditches. Riprap will be utilized at all inlet and outlet structures for erosion control. These BMP measures were taken to route stormwater runoff around the proposed development and to minimize surrounding site impacts. The Stormwater Detention Basin's outlet control structure and overflow structure will act as the structural BMP's for stormwater drainage and release runoff to the proposed drainage channel on the east side of the site.

The Orange Grove Power Plant will have routine equipment maintenance required to maintain a sufficient operating facility. The Orange Grove Energy, L.P. Design Department will be notified if any problems arise, such as standing water in the power plant area. A Design Department representative will make a field check and then determine the best course of action to correct the problem. The site non-structural and structural BMPs will be routinely inspected, cleaned, and maintained on an annual basis according to San Diego County, the Stormwater Management Plan (SWMP), and the San Diego RWQCB.

Conclusion

The area inlets, pipes, and Stormwater Detention Basin will be adequate as the Orange Grove Power Plant surface water management system. Storm drains will route the 50-year and 100-year storm event to the detention basin. The stormwater will be discharged off-site at the 100-year pre-development discharge rate and will detain the 100-year storm event. Permanent BMPs will be utilized during the life of the project. Thus, the surface water management system meets all requirements for the San Diego RWQCB and the County of San Diego.

REFERENCES

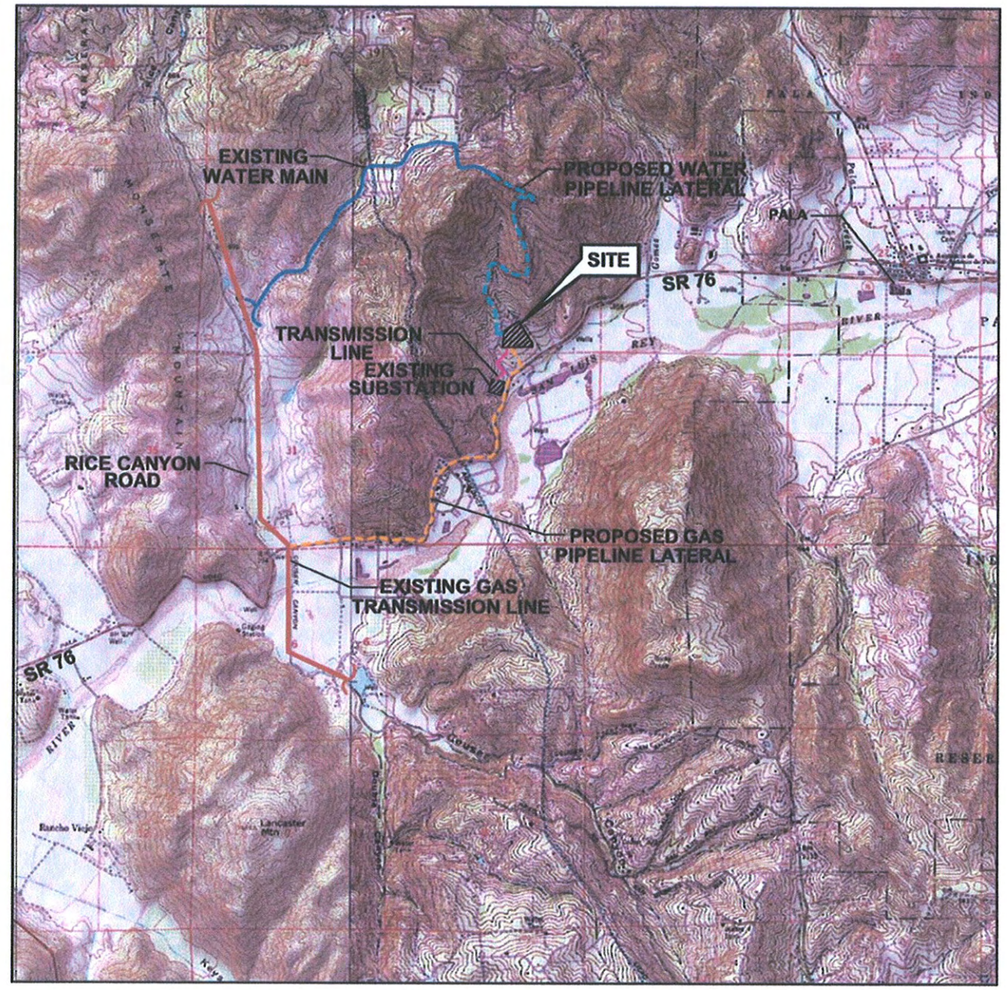


N

0 10 20 30 40 MILES

SCALE IN MILES

SITE LOCATION MAP



N

0 1/2 1 1 1/2 2 MILES

SCALE 1:48,000

SOURCE:

United States Geological Survey
7.5 Minute Topographic Map, 2000:
Pala, Bonsall, Temecula,
and Pechanga Quadrangles

PROJECT VICINITY MAP

Sega

Engineers - Architects - Technicians
Design - Construction - Field Service

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FIGURE 1
ORANGE GROVE POWER PLANT
SITE LOCATION AND PROJECT VICINITY MAP

DESIGN BY: J. LANGEL	CHECKED BY:
DRAWN BY: J. CLAUSSEN	DATE: 11-28-07
CLIENT I.D.	SEGA PROJECT NO. 07-201
FILE NAME: OG_site_vicinity.mxd	
DRAWING NO.	REV.

Soil Map–San Diego County Area, California
(Orange Grove Power Plant)

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Gully

Short Steep Slope

Other

Political Features

Municipalities

Cities

Urban Areas

Water Features

Oceans

Streams and Canals

Transportation

Rails

Roads

Interstate Highways

US Routes

State Highways

Local Roads

Other Roads

MAP INFORMATION

Original soil survey map sheets were prepared at publication scale. Viewing scale and printing scale, however, may vary from the original. Please rely on the bar scale on each map sheet for proper map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 11N

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Diego County Area, California
Survey Area Data: Version 5, Jan 4, 2007

Date(s) aerial images were photographed: 10/2/1995

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

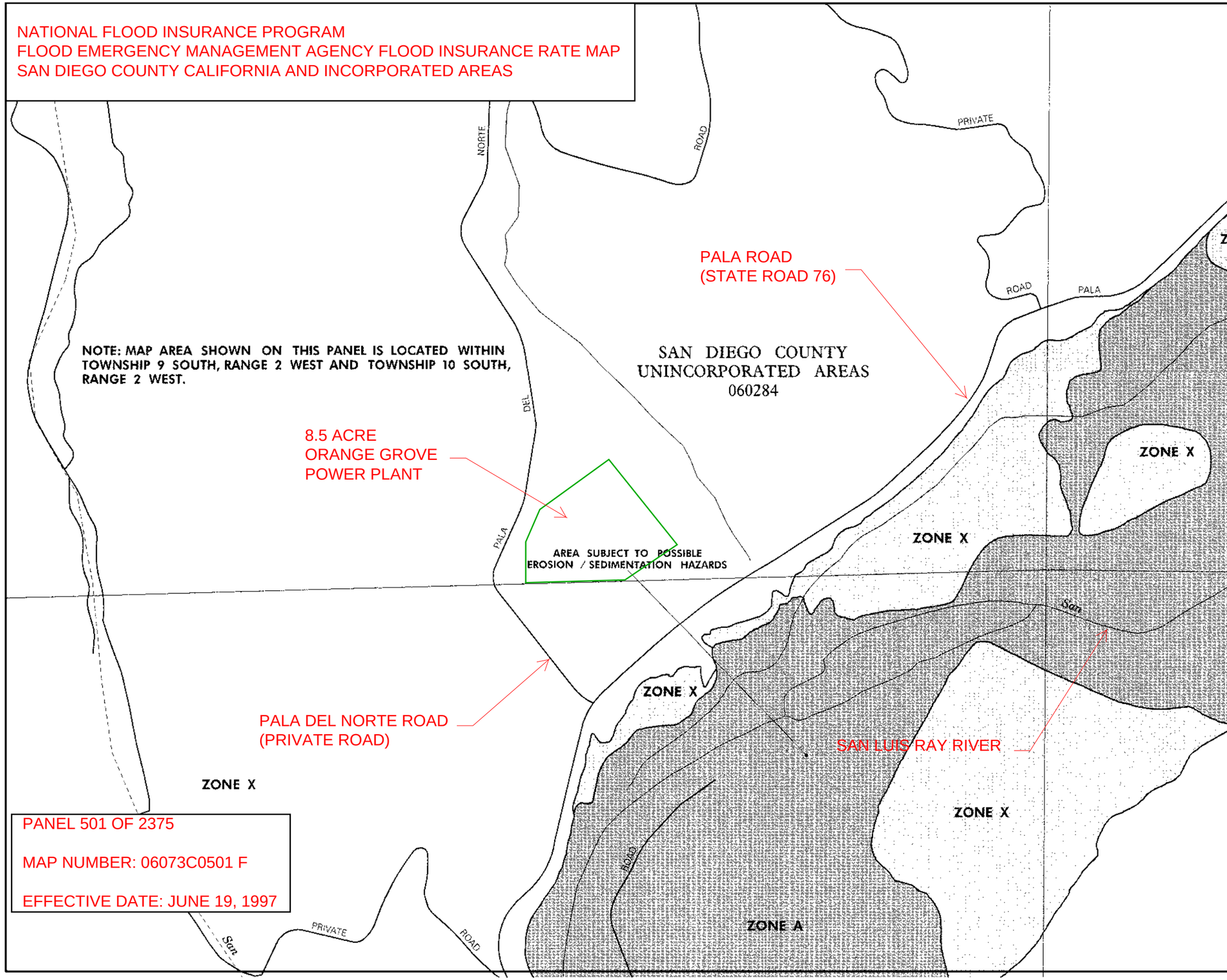
San Diego County Area, California (CA638)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
LrE	Las Posas stony fine sandy loam, 9 to 30 percent slopes	22.1	76.1%
LrG	Las Posas stony fine sandy loam, 30 to 65 percent slope s	0.2	0.8%
StG	Steep gullied land	5.7	19.7%
TuB	Tujunga sand, 0 to 5 percent slopes	1.0	3.5%
Totals for Area of Interest (AOI)		29.0	100.0%

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP
SAN DIEGO COUNTY CALIFORNIA AND INCORPORATED AREAS

MUP 07-009

APPROXIMATE SCALE IN FEET
500 0 500

SITE BOUNDARY



PANEL 501 OF 2375

MAP NUMBER: 06073C0501 F

EFFECTIVE DATE: JUNE 19, 1997

LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

ZONE A No base flood elevations determined.

ZONE AE Base flood elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE A99 To be protected from 100-year flood by Federal flood protection system under construction; no base elevations determined.

ZONE V Coastal flood with velocity hazard (wave action); no base flood elevations determined.

ZONE VE Coastal flood with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

ZONE X Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.

OTHER AREAS

ZONE X Areas determined to be outside 500-year floodplain.

ZONE D Areas in which flood hazards are undetermined.

UNDEVELOPED COASTAL BARRIERS

Identified 1983 | Identified 1990 | Otherwise Protected Areas

Coastal barrier areas are normally located within or adjacent to Special Flood Hazard Areas.

Flood Boundary

Floodway Boundary

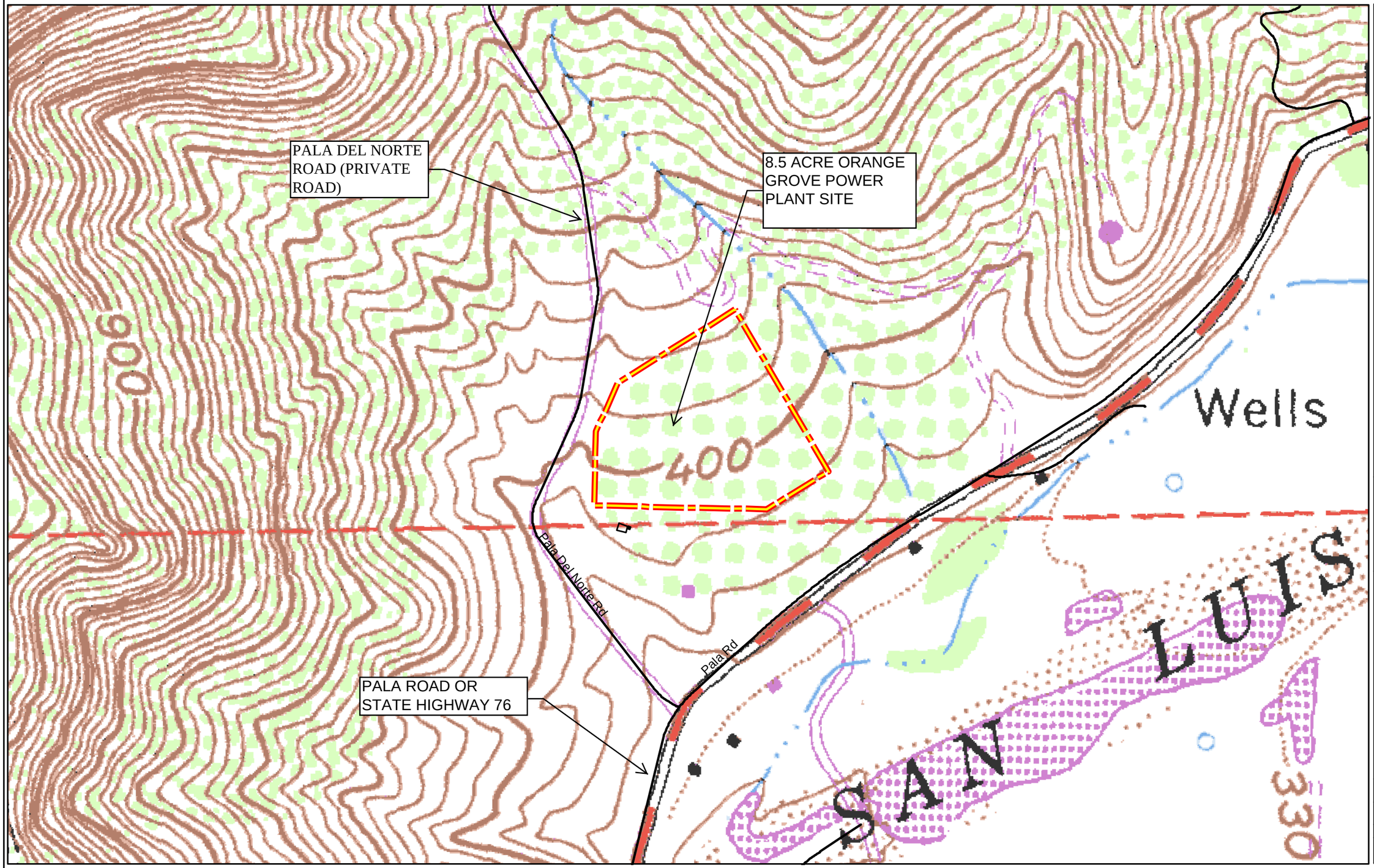
Zone D Boundary

Boundary Dividing Special Flood Hazard Zones, and Boundary Dividing Areas of Different Coastal Base Flood Elevations Within Special Flood Hazard Zones.

513 — Base Flood Elevation Line; Elevation in Feet. See Map Index for Elevation Datum.

D — D Cross Section Line

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



Legend

Site Boundary

Roads

N W E S

0 50 100 150 200 400

Feet

Sega

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Design - Construction - Field Service

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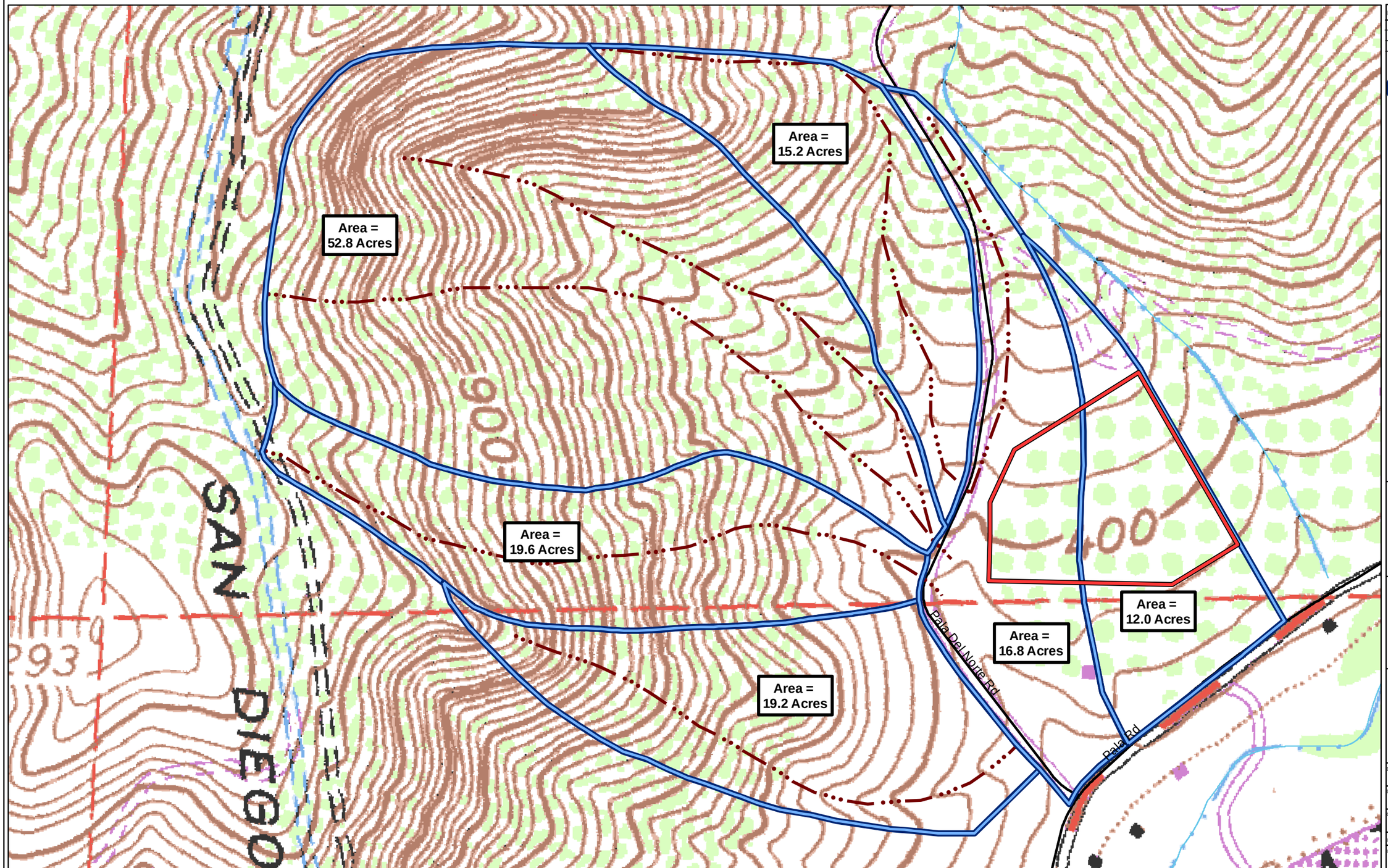
FIGURE 3
ORANGE GROVE POWER PLANT

USGS TOPOGRAPHIC QUADRANGLE

DESIGN BY: J. LANGEL	CHECKED BY:
DRAWN BY: J. CLAUSSEN	DATE: 11-28-07
CLIENT I.D.	SEGA PROJECT NO. 07-201
FILE NAME: OG_topo.mxd	
DRAWING NO.	REV.



REV.	DATE	DESCRIPTION	DWN	CHK
A	6-11-07	ISSUED FOR REVIEW	JAC	WHR
B	6-12-07	ISSUED FOR REVIEW	JMQ	WHR

Legend

- Drainage Areas
- Drainage Path
- Site Boundary
- USGS Drainage (Blue Line)

N W E S

0 50 100 150 200 400
Feet

Sega
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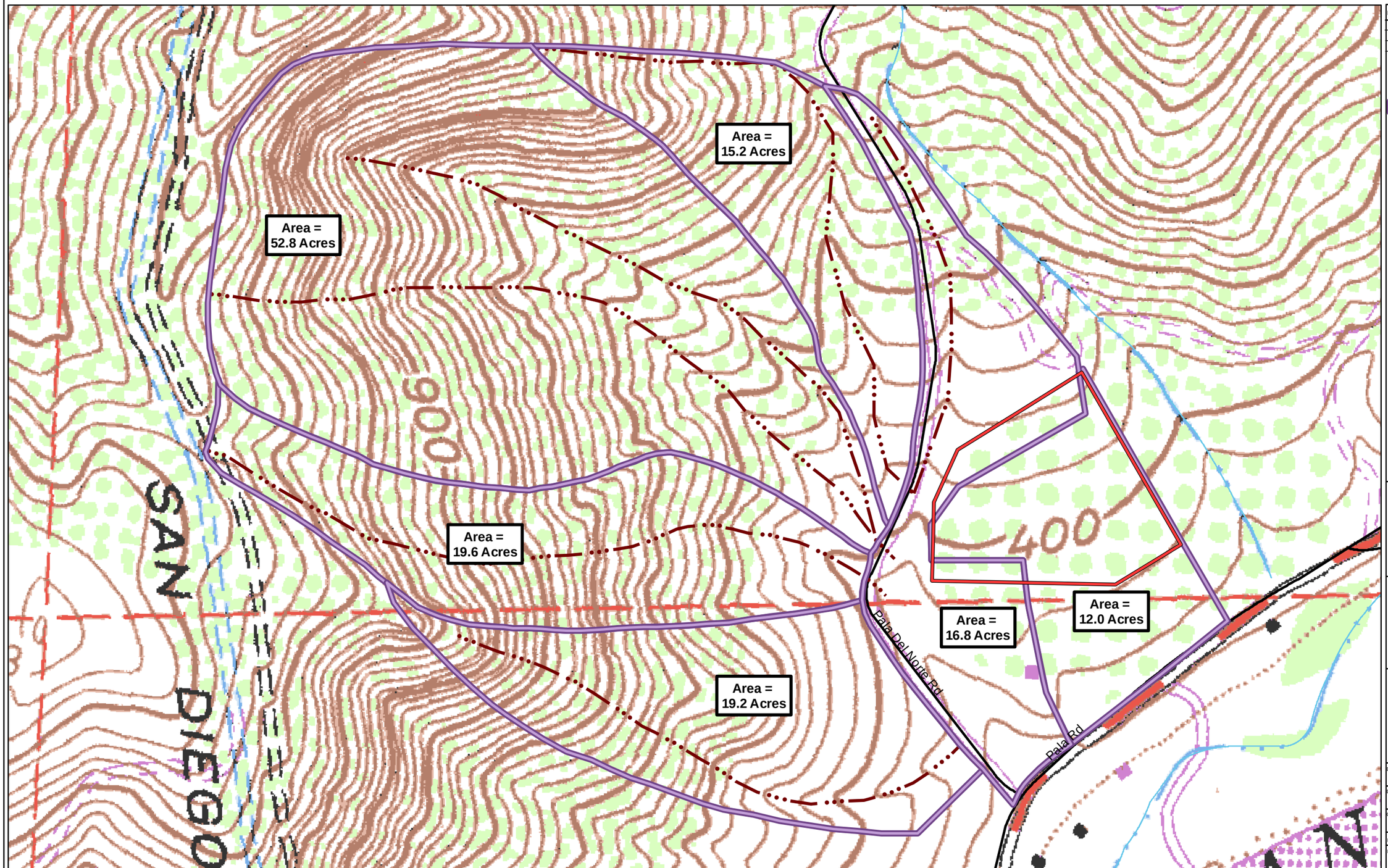
FIGURE 4
ORANGE GROVE PROJECT
PRE-DEVELOPMENT DRAINAGE AREA MAP

DESIGN BY: J. LANGEL	CHECKED BY:
DRAWN BY: J. CLAUSSEN	DATE: 3-05-2008
CLIENT I.D.	SEGA PROJECT NO. 07-098
FILE NAME: pre_drainage.mxd	
DRAWING NO.	REV. D



REV.	DATE	DESCRIPTION	DWN	CHK
A	6-11-07	ISSUED FOR REVIEW	JAC	WHR
B	6-12-07	ISSUED FOR REVIEW	JMQ	WHR

Legend

- Site Boundary
- Drainage Areas
- Drainage Path
- USGS Drainage (Blue Line)

N W E S

0 50 100 150 200 400
Feet

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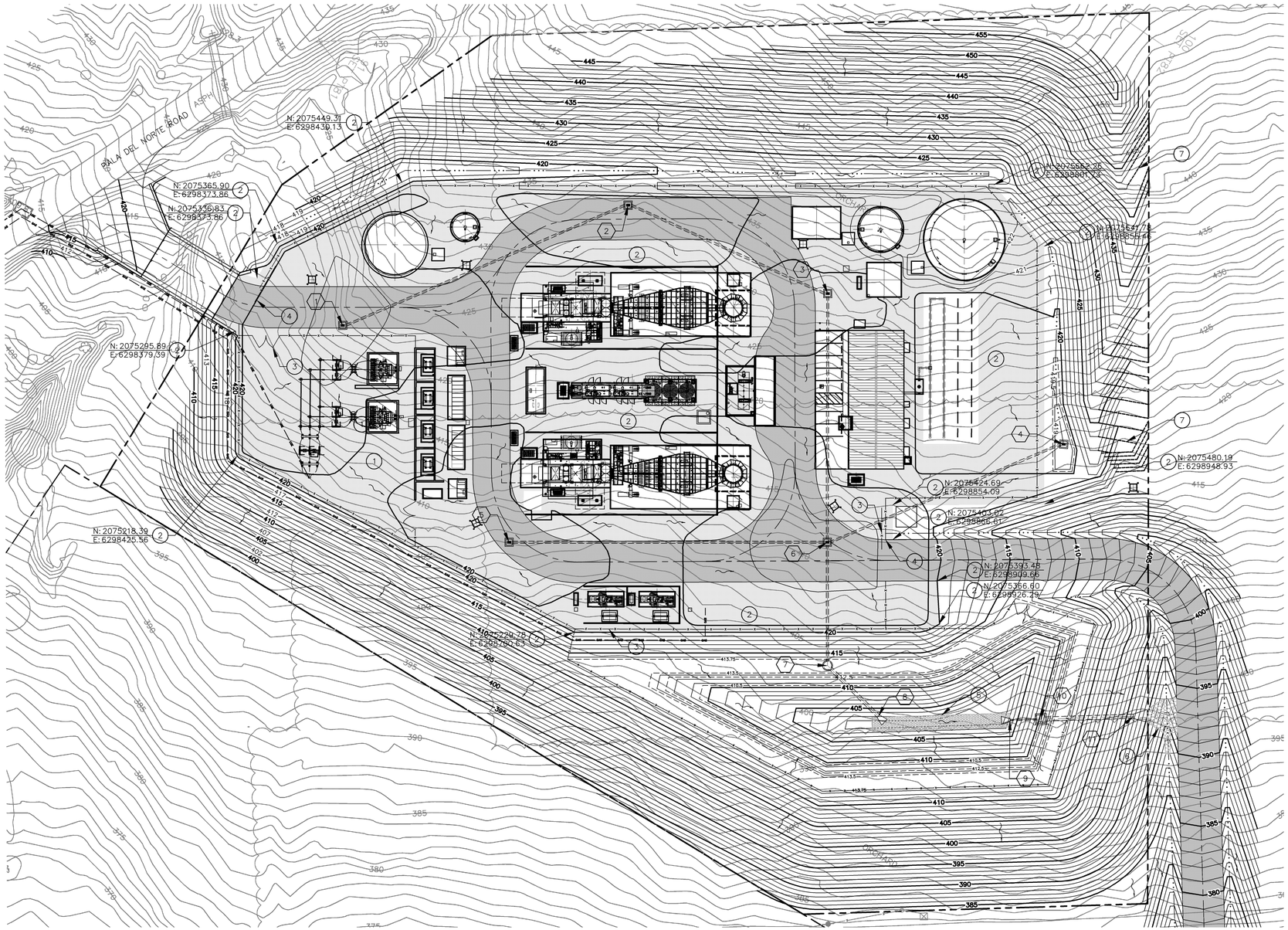
MUP 07-009

FIGURE 5
ORANGE GROVE PROJECT
POST-DEVELOPMENT DRAINAGE AREA MAP

DESIGN BY: J. LANGEL	CHECKED BY:
DRAWN BY: J. CLAUSSEN	DATE: 3-05-2008
CLIENT I.D.	SEGA PROJECT NO. 07-098
FILE NAME: post_drainage.mxd	
DRAWING NO.	REV. D



GRADING AND DRAINAGE PLAN

PLAN NORTH IS 29°55'46" CCW OF TRUE NORTH

40 0 40 80

SCALE IN FEET

CIVIL KEYNOTES:

1. INSTALL 6" CRUSHED ROCK SURFACE INSIDE SUBSTATION FENCE.
2. INSTALL 6" CRUSHED ROCK SURFACE INSIDE COMBUSTION TURBINE AREA FENCE.
3. INSTALL SITE SECURITY CHAINLINK FENCE WITH 30' MANUAL SLIDE GATES, SEE SITE DETAILS DWG. C801.
4. INSTALL 30' SLIDE GATE WITH GATE OPERATOR AND LOOP DETECTOR. COORDINATE WITH OWNER'S SECURITY CONSULTANT.
5. INSTALL MIN. 2.3' 1/2 TON STONE RIPRAP.
6. INSTALL MIN. 3.0' 1 TON STONE RIPRAP.
7. FILL AREA EAST OF LANDSCAPING BERM FOR EXCESS CUT, MIN. 3' FROM PROPERTY LINE.

GRADING NOTES:

1. ALL CONSTRUCTION SHALL MEET THE STANDARDS AND SPECIFICATIONS OF THE COUNTY OF SAN DIEGO, CALIFORNIA, LATEST EDITION.
2. ALL STORM SEWER LINES SHALL BE CLASS III RCP.
3. PIPE LENGTHS EXCLUDE END SECTIONS AND ARE MEASURED ALONG CENTERLINE OF PIPE FROM CENTER OF INSIDE FACE TO CENTER OF INSIDE FACE OF STRUCTURES.
4. MATCH GRADES AT EXISTING IMPROVEMENTS.
5. SLOPES SHALL BE MADE AT 3:1 MAXIMUM GRADE.
6. EROSION CONTROL STRUCTURES (SEE EROSION CONTROL PLAN DWGS. C500 & C502) SHALL BE CONSTRUCTED PRIOR TO GRADING ACTIVITIES.
7. DRAINAGE CHANNELS SHALL BE MINIMUM 3' FLAT BOTTOM AND SHALL HAVE 3:1 SIDE SLOPES.
8. NORTHING AND EASTING COORDINATES FOR MANHOLES, AREA INLETS, FIELD INLETS, AND JUNCTION BOXES ARE MEASURED TO CENTER OF STRUCTURE.
9. NORTHING AND EASTING COORDINATES FOR END SECTIONS ARE MEASURED TO FARTHEST EDGE OF THE END SECTION AT PIPE CENTERLINE.

STORM DRAINAGE NOTES:

(1) N:2075338.34
E:6298444.48
INSTALL 4X4 AREA INLET
TOP EL. = 418.4'
FLOWLINE OUT (N) = 412.4
INSTALL 220 L.F. 15" DIA.
CLASS III RCP @ 0.5% SL.
TO STRUCTURE 2

(2) N:2075516.99
E:6298579.87
INSTALL 4X4 AREA INLET
TOP EL. = 419.0'
FLOWLINE IN (S) = 411.3
FLOWLINE OUT (E) = 410.8
INSTALL 154 L.F. 18" DIA.
CLASS III RCP @ 0.5% SL.
TO STRUCTURE 3

(3) N:2075533.88
E:6298737.01
INSTALL 4X4 AREA INLET
TOP EL. = 419.25'
FLOWLINE IN (W) = 410.0
FLOWLINE OUT (SE) = 409.5
INSTALL 175 L.F. 18" DIA.
CLASS III RCP @ 1.5% SL.
TO STRUCTURE 6

(4) N:2075524.83
E:6298939.55
INSTALL 4X4 AREA INLET
TOP EL. = 418.75'
FLOWLINE OUT (SW) = 412.25
INSTALL 181 L.F. 15" DIA.
CLASS III RCP @ 0.5% SL.
TO STRUCTURE 6

(5) N:2075262.68
E:6298627.25
INSTALL 4X4 AREA INLET
TOP EL. = 419.0'
FLOWLINE OUT (NE) = 412.5'
INSTALL 225 L.F. 15" DIA.
CLASS III RCP @ 0.5% SL.
TO STRUCTURE 6

(6) N:2075377.85
E:6298826.72
INSTALL 4X4 AREA INLET
TOP EL. = 418.25'
FLOWLINE IN (W) = 411.35'
FLOWLINE IN (NE) = 411.35'
FLOWLINE IN (NW) = 406.85'
FLOWLINE OUT (SE) = 406.35'
INSTALL 84 L.F. 24" DIA.
CLASS III RCP @ 2.0% SL.
TO STRUCTURE 7

(7) N:2075300.64
E:6298871.50
INSTALL STD. 6' DIA. MANHOLE TOP
EL. 413.75'
FLOWLINE IN (NW) = 404.6'
FLOWLINE OUT (SE) = 404.0'
INSTALL 49 L.F. 30" DIA
CLASS III RCP @ 2.5% SL.
TO STRUCTURE 8

(8) N:2075287.29
E:6298921.76
INSTALL TO DETENTION BASIN
CLASS III RCP FLARED END SECTION
FLOWLINE OUT (SE) = 403.0'

(9) N:2075332.50
E:6299005.70
INSTALL DETENTION BASIN OUTLET FLARED END SECTION
FLOWLINE IN (E) = 403.0'
INSTALL 20 L.F. 12" DIA
CLASS III RCP @ 1.0% SL.
TO STRUCTURE 10

(10) N:2075344.26
E:6299024.69
INSTALL STORMWATER OUTLET CONTROL STRUCTURE TOP EL. 414.0'
100 YR INLET EL. 412.5'
FLOWLINE IN (E) = 402.80'
FLOWLINE OUT (W) = 400.00'
INSTALL 64 L.F. 36" DIA
CLASS III RCP @ 1.0% SL.
TO STRUCTURE 11

(11) N:2075379.51
E:6299081.66
INSTALL CLASS III RCP FLARED END SECTION
FLOWLINE OUT (W) = 398.35'

LEGEND

- FOUND MONUMENT AS NOTED
- SET 1" IRON PIPE WITH "PSOMAS" PLUG UNLESS NOTED OTHERWISE
- PROPERTY LINE
- 400 EXISTING CONTOUR
- 380 PROPOSED MAJOR CONTOUR
- 383 PROPOSED MINOR CONTOUR
- PROPOSED GAS LINE
- PROPOSED UNDERGROUND ELECTRICAL
- EXISTING ELECTRIC LINE
- EXISTING TELEPHONE (COMMUNICATIONS) LINE
- PROPOSED RCP STORMWATER PIPE
- EXISTING T&D LINE
- EXISTING FENCE
- EXISTING ROAD
- PROPOSED FENCE
- PARCEL LINE
- DRAINAGE PATH (FLOWLINE)
- EXISTING ORCHARD LINE
- PROPOSED RIPRAP
- PROPOSED CRUSHED ROCK SURFACE
- PROPOSED CRUSHED ROCK PAVEMENT
- PROPOSED CONCRETE
- PROPOSED NATIVE GROUND COVER
- PROPOSED LANDSCAPING
- DIRECTION OF FLOW
- EXISTING WINDMILL
- EXISTING OVERHEAD ELECTRICAL LINES

REV.	DATE	DESCRIPTION	DWN	CHK
A	10-11-07	ISSUED PRELIMINARY TO PSWSI	BGG	WHR
B	10-19-07	ISSUED FOR REVIEW	BGG	WHR
C	11-26-07	RE-ISSUED FOR REVIEW	BGG	WHR
D	11-30-07	ISSUED FOR MILESTONE 4	BGG	WHR
E	12-19-07	ISSUED FOR AMENDED SPPE APPLICATION	BGG	WHR
F	12-28-07	RE-ISSUED FOR MILESTONE 4	BGG	WHR
G	02-29-08	FINAL ISSUE FOR APPROVAL	BGG	WHR
H	6-2-08	ISSUED FOR AFC PERMIT	BGG	MJB

Sealed Only When Signed in Blue Ink

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ORANGE GROVE ENERGY L.P.
Schaumburg, IL

ORANGE GROVE POWER PLANT

GRADING AND DRAINAGE PLAN

DESIGN BY: J. LANGEL	CHECKED BY: B. ROMINES
DRAWN BY: B. GASPERS	DATE: 9-12-07
CLIENT I.D. ICC00101	SEGA PROJECT NO. 07-201
CADD FILE NAME: 07201-C300.dwg	
DRAWING NO. C300	REV. H

DRAINAGE AREA MAP

N

100 0 100 200

SCALE IN FEET

KEY:

(EX)	–	EXISTING STRUCTURES
CI	–	CURB INLET
SI	–	CURB INLET IN SUMP
DI	–	SINGLE DROP INLET
DI–2	–	DOUBLE DROP INLET
ES	–	PREFABRICATED END SECTION
JB	–	JUNCTION BOX
YI	–	YARD INLET
AI	–	AREA INLET
MH	–	MANHOLE
R	–	REDUCER
FI	–	FIELD INLET
BEND	–	PREFABRICATED VERTICAL BEND
T.D.	–	TRENCH DRAIN
G.I.	–	GRATE INLET
O.C.	–	DETENTION OUTLET CONTROL STRUCTURE
RCP	–	REINFORCED CONCRETE PIPE
CMP	–	CORREGATED METAL PIPE (STEEL)
CP	–	CULVERT PIPE

DESIGN NOTES:

(a) TIME OF CONCENTRATION
15 MINUTES MAX.
5 MINUTES MIN.

(b) PIPE LENGTHS EXCLUDE END SECTIONS AND ARE MEASURED ALONG CENTERLINE OF PIPE FROM CENTER OF INSIDE FACE TO CENTER OF INSIDE FACE OF STRUCTURES.

(c) MANNING'S ROUGHNESS COEFFICIENT = 0.013 (CONCRETE)

LEGEND

- FOUND MONUMENT AS NOTED
- SET 1" IRON PIPE WITH "PSOMAS" PLUG UNLESS NOTED OTHERWISE
- PROPERTY LINE
- 400 EXISTING CONTOUR
- 380 PROPOSED MAJOR CONTOUR
- 383 PROPOSED MINOR CONTOUR
- PROPOSED GAS LINE
- PROPOSED UNDERGROUND ELECTRICAL
- EXISTING ELECTRIC LINE
- EXISTING TELEPHONE (COMMUNICATIONS) LINE
- PROPOSED RCP STORMWATER PIPE
- EXISTING T&D LINE
- EXISTING FENCE
- EXISTING ROAD
- PROPOSED FENCE
- PARCEL LINE
- DRAINAGE PATH (FLOWLINE)
- EXISTING ORCHARD LINE
- PROPOSED RIPRAP
- PROPOSED CRUSHED ROCK SURFACE
- PROPOSED CRUSHED ROCK PAVEMENT
- PROPOSED CONCRETE
- PROPOSED NATIVE GROUND COVER
- PROPOSED LANDSCAPING
- A = AREA IN ACRES
- B = BASIN DESIGNATION
- C = COMPOSITE RUNOFF COEFFICIENT
- D = DESIGN POINT DESIGNATION
- DRAINAGE AREA LIMITS
- PROPOSED DISTURBED AREA
- EXISTING USGS BLUELINE

DRAINAGE AREA NOTES:

(OS) DRAINAGE WILL BE ROUTED AROUND SITE BY NORTH DITCH DRAINAGE CHANNEL.

OFF–SITE DRAINAGE–NORTH CHANNEL

DEVELOPMENT STAGE	STORM DRAINAGE AREA (ACRES)	PEAK RUNOFF RATE Q (CFS)	RUNOFF COEF. C.	AVERAGE CHANNEL VELOCITY V (FT/S)	AVERAGE DEPTH ELEVATION (FT.)
50 YEAR DESIGN STORM					
PRE–DEV.	3.0	6.75	0.3	2.75	420.77
PRE–DEV.	3.0	11.25	0.5	3.10	420.95±
100 YEAR DESIGN STORM					
PRE–DEV.	3.0	7.65	0.3	2.87	420.16±
POST–DEV.	3.0	12.75	0.5	3.20	421.00±

1. INLET FOR DRAINAGE AREA.
2. INLET FOR DRAINAGE AREA.
3. INLET FOR DRAINAGE AREA.
4. INLET FOR DRAINAGE AREA.
5. INLET FOR DRAINAGE AREA.
6. INLET FOR DRAINAGE AREA. DRAINAGE FROM AREAS 1, 2, 3, 4, AND 5 WILL BE ROUTED VIA STORM DRAIN.
7. STORMWATER MANHOLE.
8. STORM DRAIN OUTLET AND DETENTION BASIN INLET STRUCTURE.
9. DETENTION BASIN OUTLET CONTROL STRUCTURE.
10. DETENTION BASIN EMERGENCY OUTLET STRUCTURE.
11. STORMWATER OUTLET.
12. SECONDARY ACCESS ROAD DITCHES.
13. AREAS SOUTH OF PARCEL LINE AND WITHIN "PROPOSED DISTURBED AREA" LINE ARE AREAS FOR "TEMPORARY CONSTRUCTION PARKING AND LAYDOWN."
14. EXISTING NATURAL WEST DRAINAGE CHANNEL.
15. EXISTING OFF–SITE CULVERT PIPES.
16. EXISTING OFF–SITE CULVERT PIPES.
17. EXISTING OFF–SITE CULVERT PIPES.
18. EXISTING OFF–SITE CULVERT PIPE.
19. EXISTING OFF–SITE CULVERT PIPE.
20. EXISTING OFF–SITE CULVERT PIPE.
21. EXISTING USGS BLUELINE OR NATURAL EAST DRAINAGE CHANNEL.

ON–SITE STORMWATER DETENTION BASIN

DEVELOPMENT STAGE	STORM DRAINAGE AREA (ACRES)	PEAK RUNOFF RATE Q (CFS)	RUNOFF CURVE. C.	DETENTION VOLUME V(FT³)	DESIGNED WATER SURFACE VOLUME (FT³)	WATER SURFACE ELEVATION (FT.)
50 YEAR DESIGN STORM						
PRE–DEV.	5.2	11.00	N/A	N/A	N/A	N/A
POST–DEV.	5.2	24.58	N/A	85,700	76,300	410.5(±)
100 YEAR DESIGN STORM						
PRE–DEV.	5.2	12.68	N/A	N/A	N/A	N/A
POST–DEV.	5.2	27.86	N/A	85,700	85,000	412.4(±)

NOTE: WATER SURFACE VOLUME DOES NOT INCLUDE ONE FOOT OF FREEBOARD.

SUMMARY OF AREAS (ACRES):

1. IMPERVIOUS AREA (INCLUDES CONCRETE ENTRANCE SECTION) – 1.00
2. CRUSHED ROCK SURFACE AREA (INCLUDES VEHICULAR AREA) – 3.22
3. DETENTION BASIN DRAINAGE AREA – 5.20
4. VEHICULAR AREA – 1.47
5. TEMPORARY CONSTRUCTION PARKING AREA AND LAYDOWN – 5.73
6. DISTURBED AREA – 14.83

50 YEAR DESIGN (PROPOSED CONSTRUCTION)

STRUCTURE		DIRECT RUNOFF						TOTAL RUNOFF	PIPE						
STRUCT NO. (Area No.)	TYPE	AREA (acres) A	RUNOFF COEF. C	C x A	K	i (in/hr)	Q (cfs)	TOTAL Q (CFS)	PIPE NO.	PIPE SIZE DIA. (inches)	PIPE SLOPE %	PIPE LENGTH (LF)	PIPE CAP. (CFS)	VELOCITY (ft/sec)	DEPTH OF FLOW (inches)
1	AI	0.90	0.52	0.47	1.1	7.5	3.86								
								3.86	1	15	0.5	220	4.91	4.17	10.58
2	AI	0.50	0.60	0.30	1.1	7.5	2.48								
								6.34	2	18	0.5	154	7.99	4.72	12.79
3	AI	0.46	0.59	0.27	1.1	7.5	2.24								
								8.58	3	18	1.5	175	13.84	7.79	10.75
4	AI	1.00	0.48	0.48	1.1	7.5	3.96								
								3.96	4	15	0.5	160	4.91	4.19	10.79
5	AI	0.52	0.61	0.32	1.1	7.5	2.62								
								2.62	5	15	0.5	225	4.91	3.85	8.14
6	AI	0.90	0.55	0.50	1.1	7.5	4.08								
								19.24	6	24	2	84	34.41	10.65	13.42
7	MH	NA	NA	NA	NA	NA	NA								
								19.24	7	30	2.5	49	69.76	11.52	11.20
8	OC	0.90	0.72	0.65	1.1	7.5	5.35								
								24.58							
9	OC	NA	NA	NA	NA	NA	NA								
								12.68 MAX	10	12	0.5	52	11.65	14.83	FULL
10	MH	NA	NA	NA	NA	NA	NA								
								SEE D.C.	10	36	1.0	240	71.74	7.09	10.19
11	MH	NA	NA	NA	NA	NA	NA								
								SEE D.C.	12	36	1.0	280	71.74	7.09	10.19

REV.	DATE	DESCRIPTION	DWN	CHK
A	11–30–07	ISSUED FOR MILESTONE 4	BGG	WHR
B	12–28–07	RE–ISSUED FOR MILESTONE 4	BGG	WHR
C	02–29–08	FINAL ISSUE FOR APPROVAL	BGG	WHR
D	6–2–08	ISSUED FOR AFC PERMIT	BGG	MJB

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Schaumburg, IL

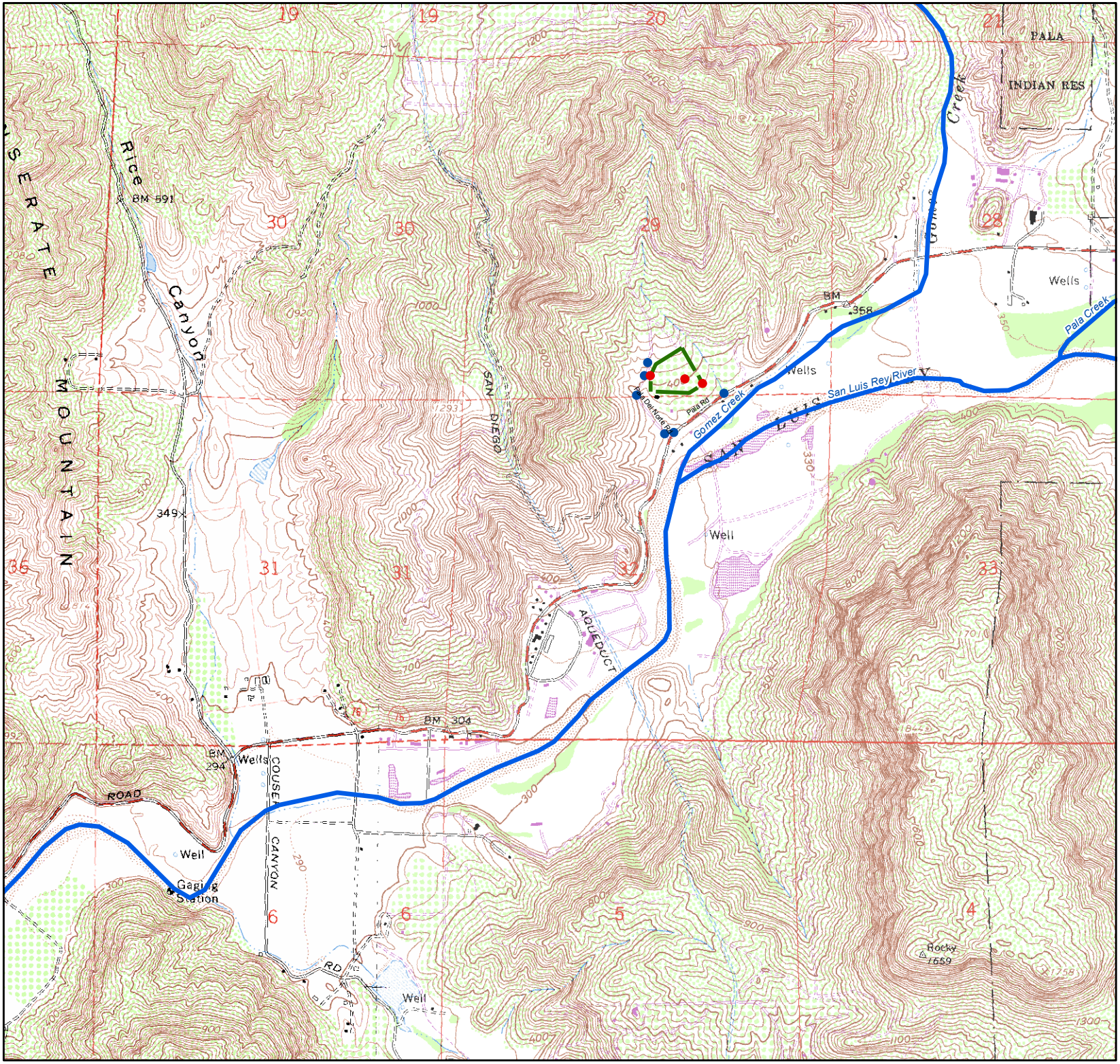
ORANGE GROVE POWER PLANT

DRAINAGE AREA MAP

DESIGN BY: J. LANGEL	CHECKED BY: B. ROMINES
DRAWN BY: B. GASPERS	DATE: 9–12–07
CLIENT I.D. ICC00101	SEGA PROJECT NO. 07–201

CADD FILE NAME: 07201–C400.dwg

DRAWING NO. C400 | REV. D



N
W E
S

0 0.125 0.25 0.5

Miles

(1:24,000)

Legend

- Site Boundary
- Rivers
- Pro. Flood Control Fac.
- Exist. Flood Control Fac.

* See Sega drawing C300 for additional site flood facilities.

ORANGE GROVE POWER PLANT FLOOD CONTROL FACILITIES

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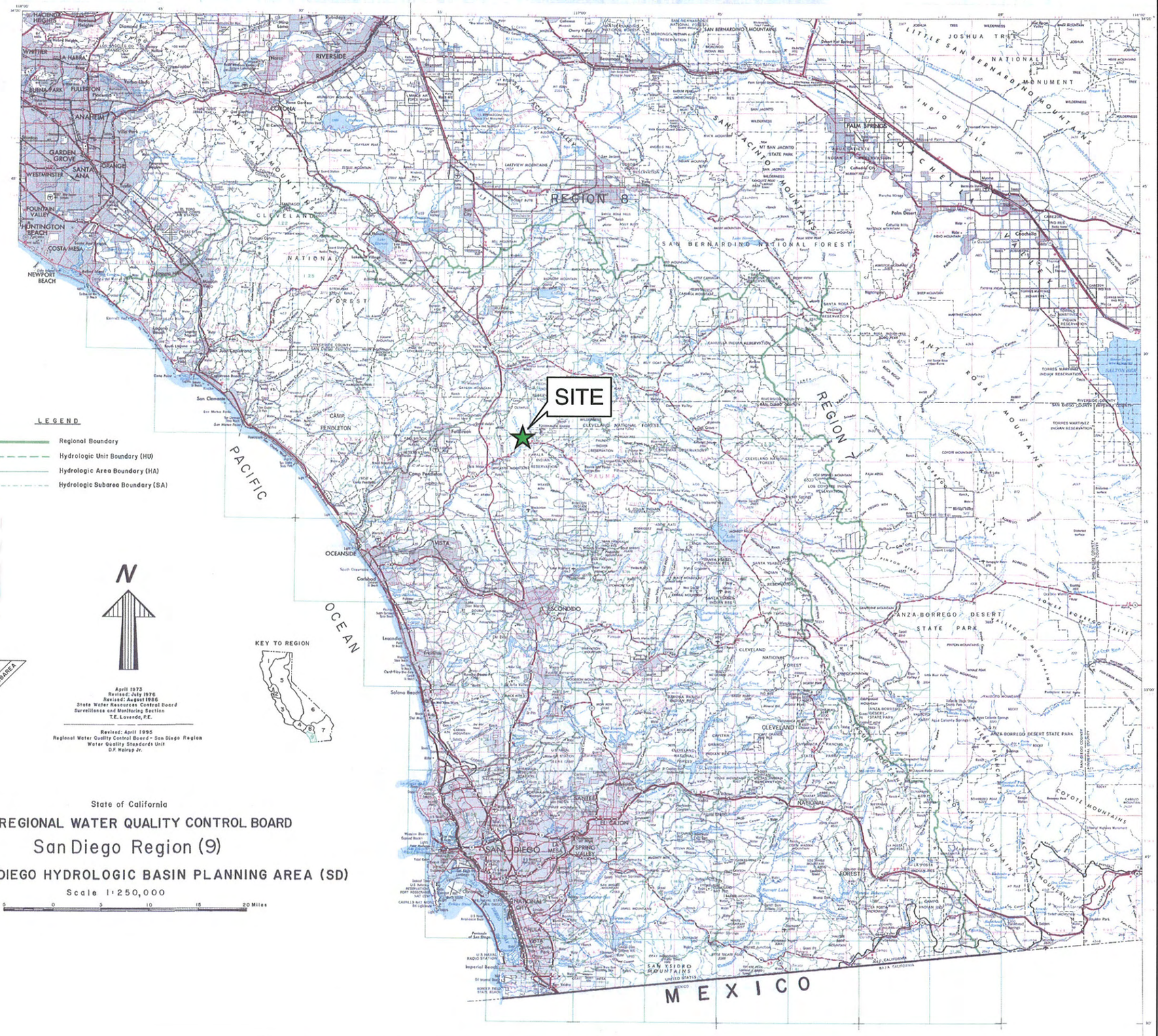
DESIGN BY: J. LANGEL	CHECKED BY: W. ROMINES
DRAWN BY: J. CLAUSSEN	DATE: 5-27-08
CLIENT I.D.	SEGA PROJECT NO. 07-098
FILE NAME: flood_control.mxd	
DRAWING NO.	REV.

REGION 9 INDEX

901.00	SAN JUAN HYDROLOGIC UNIT	908.00	PUEBLO SAN DIEGO HYDROLOGIC UNIT
901.10	Laguna HA	908.10	Point Loma HA
1.11	San Joaquin Hills HSA	908.20	San Diego Mesa HA
1.12	Laguna Beach HSA	8.21	Lindbergh HSA
1.13	Aliso HSA	8.22	Chollas HSA
1.14	Dana Point HSA	908.30	National City HA
901.20	Mission Viejo HA	8.31	El Tayan HSA
1.21	Oso HSA	8.32	Paradise HSA
1.22	Upper Trabuco HSA		
1.23	Middle Trabuco HSA	909.00	SWEETWATER HYDROLOGIC UNIT
1.24	Gobernadora HSA	909.10	Lower Sweetwater HA
1.25	Upper San Juan HSA	9.11	Telegraph HSA
1.26	Middle San Juan HSA	9.12	La Nacion HSA
1.27	Lower San Juan HSA	909.20	Middle Sweetwater HA
1.28	Ortega HSA	9.21	Jamacha HSA
901.30	San Clemente HA	9.22	Hillside HSA
1.31	Prima Deshecha HSA	9.23	Dehesa HSA
1.32	Segunda Deshecha HSA	9.24	Galloway HSA
901.40	San Mateo Canyon HA	9.25	Sequan HSA
901.50	San Onofre HA	9.26	Alpine Heights HSA
1.51	San Onofre Valley HSA	909.30	Upper Sweetwater HA
1.52	Las Pulgas HSA	9.31	Loveland HSA
1.53	Stuart HSA	9.32	Japatul HSA
		9.33	Viejas HSA
902.00	SANTA MARGARITA HYDROLOGIC UNIT	9.34	Descanso HSA
902.10	Ysidora HA	9.35	Garnet HSA
2.11	Lower Ysidora HSA		
2.12	Chappo HSA	910.00	OTAY HYDROLOGIC UNIT
2.13	Upper Ysidora HSA	910.10	Coronado HA
902.20	DeLuz HA	910.20	Otay Valley HA
2.21	DeLuz Creek HSA	910.30	Dulzura HA
2.22	Gavilan HSA	10.31	Savage HSA
2.23	Vallecitos HSA	10.32	Proctor HSA
902.30	Murrieta HA	10.33	Jamul HSA
2.31	Wildomar HSA	10.34	Lee HSA
2.32	Murrieta HSA	10.35	Lyon HSA
2.33	French HSA	10.36	Hollenbeck HSA
2.34	Lower Domenigoni HSA	10.37	Engineer Springs HSA
2.35	Domenigoni HSA		
2.36	Diamond HSA	911.00	TIJUANA HYDROLOGIC UNIT
902.40	Auld HA	911.10	Tijuana Valley HA
2.41	Bachelor Mountain HSA	11.11	San Ysidro HSA
2.42	Gerrudda HSA	11.12	Water Tanks HSA
2.43	Lower Tucalota HSA	911.20	Potrero HA
2.44	Tucalota HSA	11.21	Marron HSA
902.50	Pechanga HA	11.22	Bee Canyon HSA
2.51	Pauba HSA	11.23	Barrett HSA
2.52	Wolf HSA	11.24	Round Preserve HSA
902.60	Wilson HA	11.26	Long Potrero HSA
2.61	Lancaster Valley HSA	911.30	Barrett Lake HA
2.62	Lewis HSA	911.40	Monument HA
2.63	Reed Valley HSA	11.41	Pine HSA
902.70	Cave Rocks HA	11.42	Mount Laguna HSA
2.71	Lower Coahuila HSA	911.50	Morena HA
2.72	Upper Coahuila HSA	911.60	Cottonwood HA
2.73	Anza HSA	911.70	Cameron HA
2.74	Burnt HSA	911.80	Campo HA
902.80	Aguanga HA	11.81	Tecate HSA
2.81	Vail HSA	11.82	Canyon City HSA
2.82	Devile Hole HSA	11.83	Glover Flat HSA
2.83	Redec HSA	11.84	Hill HSA
2.84	Tule Creek HSA	11.85	Hipass HSA
902.90	Oakgrove HA		
2.91	Lower Cullo HSA		
2.92	Previtt Canyon HSA		
2.93	Dodge HSA		
2.94	Chihuahua HSA		
903.00	SAN LUIS REY HYDROLOGIC UNIT		
903.10	Lower San Luis HA		
3.11	Mission HSA		
3.12	Bonsall HSA		
3.13	Moosa HSA		
3.14	Valley Center HSA		
3.15	Woods HSA		
3.16	Rincon HSA		
903.20	Monserate HA		
3.21	Pala HSA		
3.22	Pauma HSA		
3.23	La Jolla Amago HSA		
903.30	Warner Valley HA		
3.31	Warner HSA		
3.32	Combs HSA		
904.00	CARLSBAD HYDROLOGIC UNIT		
904.10	Loma Alta HA		
904.20	Buena Vista Creek HA		
4.21	El Salto HSA		
4.22	Vista HSA		
904.30	Agua Hedionda HA		
4.31	Las Monas HSA		
4.32	Buena HSA		
904.40	Encinas HA		
904.50	San Marcos HA		
4.51	Batiquitos HSA		
4.52	Richland HSA		
4.53	Twin Oaks HSA		
904.60	Escondido Creek HA		
4.61	San Elijo HSA		
4.62	Escondido HSA		
4.63	Lake Wohlford HSA		
905.00	SAN DIEGUITO HYDROLOGIC UNIT		
905.10	Solana Beach HA		
5.11	Rancho Santa Fe HSA		
5.12	La Jolla HSA		
905.20	Hodges HA		
5.21	Del Dios HSA		
5.22	Green HSA		
5.23	Felicita HSA		
5.24	Bear HSA		
905.30	San Pasqual HA		
5.31	Highland HSA		
5.32	Las Lomas Muertas HSA		
5.33	Read HSA		
5.34	Hidden HSA		
5.35	Guejito HSA		
5.36	Vineyard HSA		
905.40	Santa Maria Valley HA		
5.41	Ramona HSA		
5.42	Lower Hatfield HSA		
5.43	Wash Hollow HSA		
5.44	Upper Hatfield HSA		
5.45	Ballena HSA		
5.46	East Santa Teresa HSA		
5.47	West Santa Teresa HSA		
905.50	Santa Ysabel HA		
5.51	Boden HSA		
5.52	Perris HSA		
5.53	Sutherland HSA		
5.54	Witch Creek HSA		
906.00	PENASQUITOS HYDROLOGIC UNIT		
906.10	Miramar Reservoir HA		
906.20	Poway HA		
906.30	Scripps HA		
906.40	Miramar HA		
906.50	Tecolote HA		
907.00	SAN DIEGO HYDROLOGIC UNIT		
907.10	Lower San Diego HA		
7.11	Mission San Diego HSA		
7.12	Santee HSA		
7.13	El Cajon HSA		
7.14	Coches HSA		
7.15	El Monte HSA		
907.20	San Vicente HA		
7.21	Fernbrook HSA		
7.22	Kimball HSA		
7.23	Grover HSA		
7.24	Barona HSA		
907.30	El Capitan HA		
7.31	Conejos Creek HSA		
7.32	Glen Oaks HSA		
7.33	Alpine HSA		
907.40	Boulder Creek HA		
7.41	Inaja HSA		
7.42	Spencer HSA		
7.43	Cuyamaca HSA		

NOTE:

1. *The names and areas shown on this map are the same as used by the Department of Water Resources (DWR) in their Bulletin 130 Series.*
2. *The numbering system used on this map is an adaption of the numbering system used in the 130 Series.*
3. *The 1986 updated names and boundaries shown on the map are in accordance with an agreement with DWR and US Geological Survey.*
4. *The 1995 revision of this map includes newly recognized hydrologic subareas within the Mission Viejo HA (901.20). Notes 1 & 3 do not apply to these subareas.*



LEGEND

- Regional Boundary
- Hydrologic Unit Boundary (HU)
- Hydrologic Area Boundary (HA)
- Hydrologic Subarea Boundary (SA)

N

REGION NO. — HYDROLOGIC UNIT — HYDROLOGIC AREA — HYDROLOGIC SUBAREA
9 07 4 1

KEY TO REGION

April 1973
Revised: July 1976
Revised: August 1986
State Water Resources Control Board
Surveillance and Monitoring Section
T.E. Lovende, P.E.

Revised: April 1995
Regional Water Quality Control Board - San Diego Region
Water Quality Standards Unit
D.F. Hulrop Jr.

State of California

REGIONAL WATER QUALITY CONTROL BOARD

San Diego Region (9)

SAN DIEGO HYDROLOGIC BASIN PLANNING AREA (SD)

Scale 1:250,000

5 0 5 10 15 20 Miles

Legend

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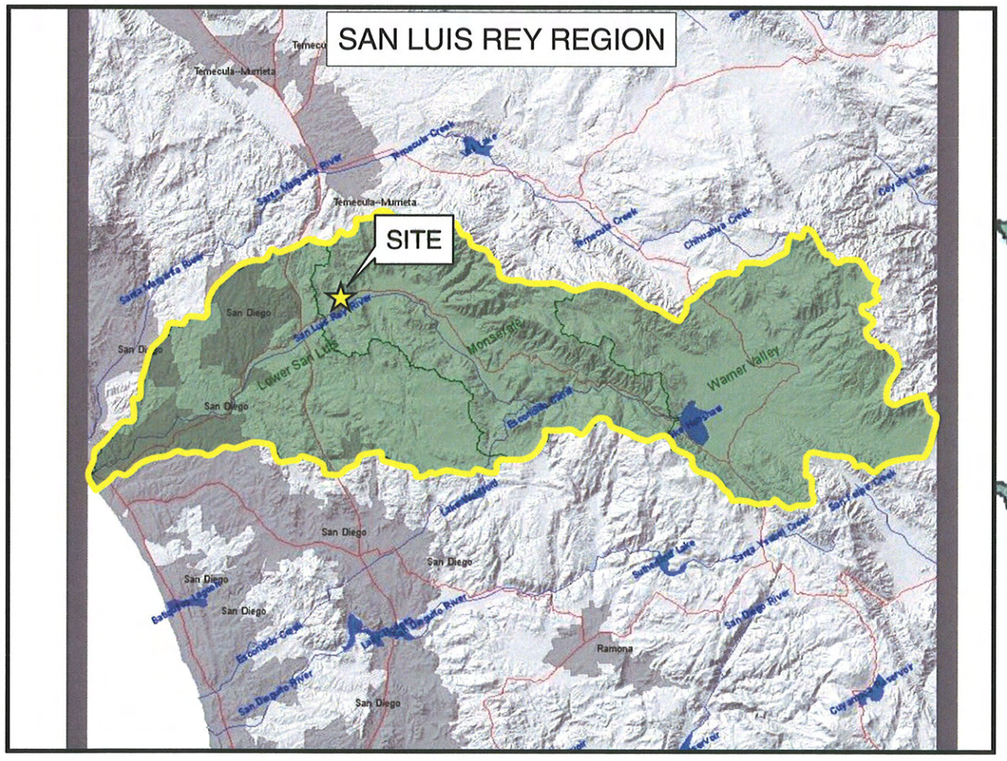
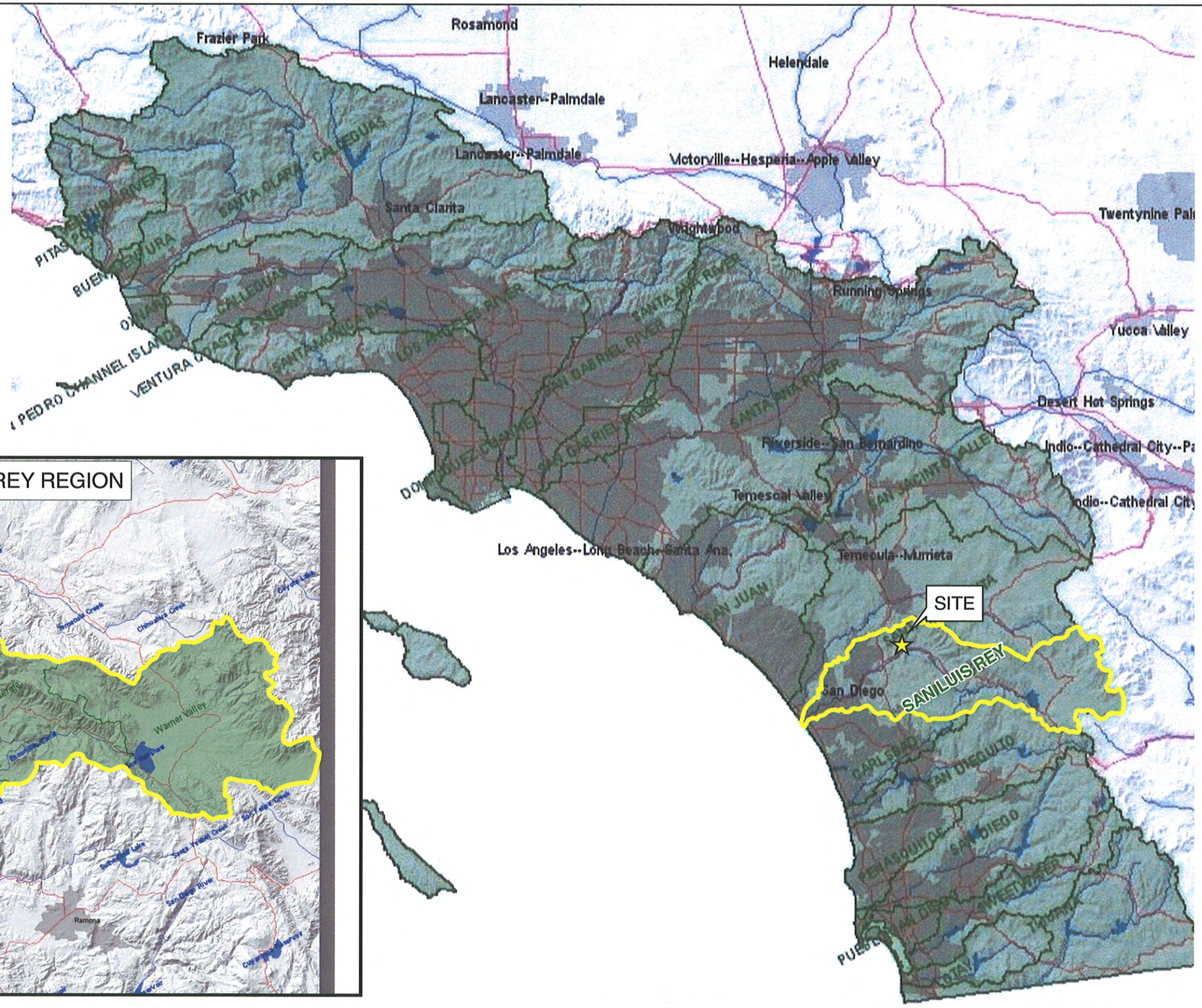
MUP 07-009

FIGURE 6
ORANGE GROVE POWER PLANT

RWQCB MAP

DESIGN BY: J. LANGEL	CHECKED BY:
DRAWN BY: J. CLAUSSEN	DATE: 11-28-07
CLIENT I.D.	SEGA PROJECT NO. 07-201
FILE NAME: OG_RWQCB.mxd	
DRAWING NO.	REV.





Legend

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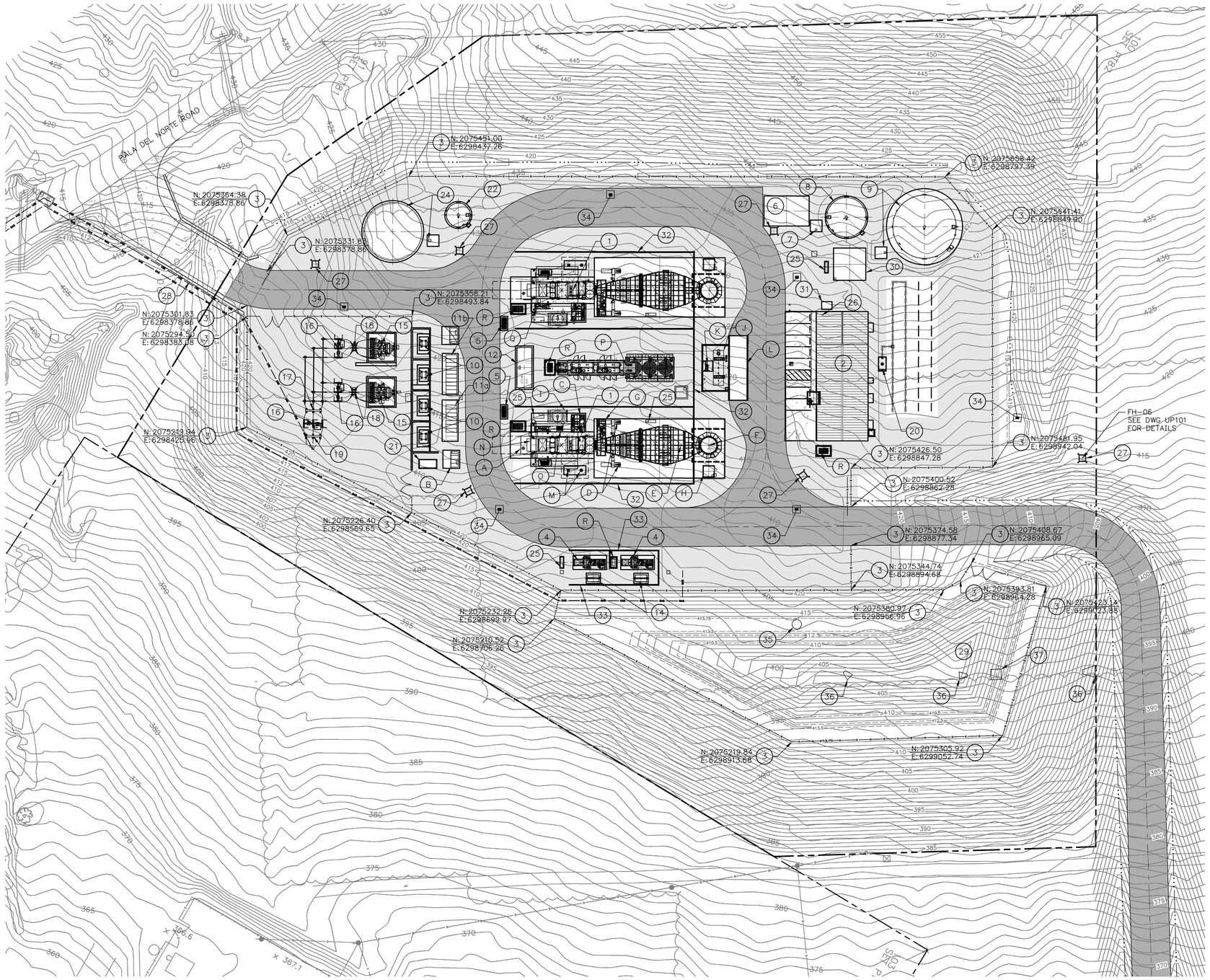
FIGURE 7
ORANGE GROVE
POWER PLANT

WATERSHED MAP

DESIGN BY: J. LANGEL	CHECKED BY:
DRAWN BY: J. CLAUSSEN	DATE: 11-30-07
CLIENT I.D.	SEGA PROJECT NO. 07-201
FILE NAME: OG_Watershed.mxd	
DRAWING NO.	REV.



SITE LAYOUT PLAN

PLAN NORTH IS 29°55'46" CCW OF TRUE NORTH

40 0 40 80

SCALE IN FEET

EMISSION COORDINATES SYMBOL		
DESCRIPTION	NORTHING	EASTING
COMBUSTION TURBINE #1 (NORTH)	2075491	6298683
COMBUSTION TURBINE #2 (SOUTH)	2075387	6298743
DIESEL FIRE PUMP (±2')	2075517	6298766
BLACK START GENERATOR (±2')	2075379	6298582

KEYNOTES:

1. COMBUSTION TURBINE (CT), GENERATOR, AND AUXILIARY EQUIPMENT. (FOR EACH UNIT): (HEIGHT = 43' AT THE TOP OF VBV DUCT).
   - A MAIN TURBINE GENERATOR SKID ENCLOSURE.
   - B 13.8KV ELECTRICAL SWITCHGEAR.
   - C CT AUXILIARY EQUIPMENT SKID.
   - D TEMPERING AIR FANS (2).
   - E EMISSION CONTROL SYSTEM–SCR (HEIGHT = ±33').
   - F STACK (HEIGHT = 80').
   - G AMMONIA VAPORIZATION SKID.
   - H CEMS ENCLOSURE WITH TRANSFORMER AND CALIBRATION GAS STORAGE.
   - I CT LUBE OIL COOLER.
   - J AMMONIA STORAGE TANK (COMMON TO BOTH CT UNITS).
   - K AMMONIA FORWARDING PUMP SKID (COMMON TO BOTH CT UNITS).
   - L AMMONIA UNLOADING PAD, SPILL CONTAINMENT (COMMON TO BOTH CT UNITS).
   - M TURBINE REMOVAL SUPPORTS.
   - N AIR INLET FILTER (HEIGHT = 34').
   - O SPRINT SKID.
   - P INLET AIR CHILLER AND COOLING TOWER (COMMON TO BOTH CT UNITS) (HEIGHT = 30').
   - Q WATER INJECTION SKID.
   - R OILY DRAIN TANK.
2. SERVICE BUILDING FOR CONTROL ROOM, ELECTRICAL EQUIPMENT, FIRE PUMPS, COMPRESSED AIR. (HEIGHT = 18').
3. SITE SECURITY CHAINLINK FENCE AND GATES.
4. FUEL GAS COMPRESSORS.
5. GAS COALESCING FILTER SKID.
6. CONCRETE PAD FOR TEMPORARY WATER TREATMENT TRAILER.
7. DEMIN. WATER PUMP SKID AND RELATED EQUIPMENT.
8. DEMIN. WATER STORAGE TANK (HEIGHT = 24').
9. RAW WATER/FIREWATER STORAGE TANK & PUMP SKID (HEIGHT = 44').
10. AUXILIARY TRANSFORMERS.
11a. 4160V ELECTRICAL SWITCHGEAR.
11b. 480V ELECTRICAL SWITCHGEAR.
12. BLACKSTART GENERATOR.
13. NOT USED.
14. FUEL GAS COMPRESSOR RECYCLE FIN–FAN COOLER.
15. 13.8KV–69KV GENERATOR STEP–UP TRANSFORMER (GSU).
16. 69KV DISCONNECT SWITCH AND SUPPORTS.
17. 69KV CT/VT METERING UNIT.
18. 69KV CIRCUIT BREAKER.
19. 69KV TRANSITION STRUCTURE & POTHEAD.
20. UNDERGROUND SANITARY SYSTEM.
21. TRANSFORMER DELUGE VALVE ENCLOSURE.
22. WASTEWATER STORAGE TANK (HEIGHT = 24').
23. NOT USED.
24. COOLING TOWER MAKEUP TANK AND PUMP SKID (HEIGHT = 36').
25. 480V MCC.
26. DIESEL FIRE PUMP ROOM.
27. YARD FIRE HYDRANTS WITH HYDRANT MOUNT FIRE MONITORS.
28. BRIDGE.
29. STORMWATER DETENTION BASIN.
30. RO WATER TREATMENT AREA.
31. DIESEL STORAGE TANK – DIESEL FIRE PUMP.
32. GAS TURBINE SOUND WALL (HEIGHT = 48').
33. GAS COMPRESSOR SOUND WALL (HEIGHT = 24').
34. AREA INLET.
35. STORM MANHOLE.

KEYNOTES CONT.:

36. STORM END SECTION.
37. STORMWATER OUTLET CONTROL STRUCTURE.

REV.	DATE	DESCRIPTION	DWN	CHK
A	10–23–07	ISSUED FOR REVIEW	BGG	WHR
B	10–30–07	ISSUED FOR REVIEW	BGG	WHR
C	11–8–07	ISSUED FOR WESTPOWER APPROVAL	BGG	WHR
D	11–19–07	ISSUED FOR AIR MODEL	BGG	WHR
E	11–29–07	RE–ISSUED FOR AIR MODEL	BGG	WHR
F	11–30–07	ISSUED FOR MILESTONE 4	BGG	WHR
G	12–19–07	ISSUED FOR AMENDED SPPE APPLICATION	BGG	WHR
H	12–28–07	RE–ISSUED FOR MILESTONE 4	BGG	WHR
J	1–17–08	ISSUED PER FPP COMMENTS	BGG	MJB
K	02–29–08	FINAL ISSUE FOR APPROVAL	BGG	WHR
L	6–2–08	ISSUED FOR AFC PERMIT	BGG	MJB

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ORANGE GROVE POWER PLANT

SITE LAYOUT PLAN

DESIGN BY: B. ROMINES	CHECKED BY: J. BONDANK
DRAWN BY: B. GASPERS	DATE: 9–12–07
CLIENT I.D. ICC00101	SEGA PROJECT NO. 07–201

CADD FILE NAME: 07201–C100.dwg

DRAWING NO. C100 REV. L

N:\2007\07201\dwgs\ce\07201–C100.dwg 6/2/08 1:25pm bgaspers

PROPOSED FOUNDATIONS 2007

Foundation ID Number	Foundation Descriptions	Quantity	Length (feet)	Width (feet)	Total Surface Area (SF)
1	Turbine Generator (TG)	2	100	46	9200
A	Man TG Skid Enclosure	2	20.5	65	2665
B	15KV Switchgear	2	14	13	364
C	Auxiliary Skid	2	42	14.5	1218
D	Tempering Air Skid	4	On same foundation as 1		0
E	Emissions Control System - SCR	6	On same foundation as 1		0
F	Stack	2	On same foundation as 1		0
G	Ammonia Evaporation Skid	2	On same foundation as 1		0
H	Control Emissions Monitoring System (CEMS)	2	On same foundation as 1		0
I	Fin Fan Cooler Slab	2	18	14	504
J	Ammonia Storage Tank	1	26	14.5	377
K	Ammonia Forwarding Pump Skid	1	On same foundation as J		0
L	Ammonia Unloading Pad, Spill Containment	2	50	15	1500
M	Turbine Removal Supports	2	17	7	238
N	Air Inlet Filter	2	On same foundation as C		0
O	Sprint Skid	2	On same foundation as C		0
P	Inlet Air Chiller and Cooling Towers	1	13.25	5.25	70
Q	Water Injection Skid	2	28	20	1120
R	Oily Drain Tank	5	12	8.5	510
2	Service Building, Electrical Equipment, and Parking	1	100.25	64.25	6441
3	Site Security Fence and Gates	230	3		723
4	Fuel Gas Compressor	2	17	11	374
5	Coalescing Filter Skid	2	11	5.5	121
6	Concrete Pad for Trailor	1	35	24	840
7	Demin. Water Pump Skid	3	9	9	243
8	Demin. Water Storage Tank	1	908		908
9	Demin. Water Firewater Storage Tank	1	2734		2734
10	Auxiliary Transformer & 480V Switchgear	4	24	15	1440
11a	15KV Switchgear	1	32	12.33	395
11b	480KV Switchgear	1	32	12.33	395
12	Blackstart Generator	1	33.67	14	471
13	SDG&E Gas Metering Station	1	63	12	756
14	Fuel Gas Compressor Inter-Stage-Fan Cooler	1	11	8	88
15	13.8KV-69KV Step-up Transformer	2	23.63	22.67	1071
16	69KV Disconnect Switch and Supports	3	4	4	48
17	69KV Circuit Breaker	1	7	7	49
18	69KV Circuit Switcher	2	4	4	32
19	69KV Pothead	1	13	6	78
20	Underground Sanitary System (Septic)	1	11	6	66
21	Fire Valve Enclosure	2	20	20	800
22	Wastewater Storage Tank	1	346		346
23	Not Used	1	0	0	0
24	Cooling Tower Makeup Tank and Pump Skid	1	855		855
25	480KV MCC	4	9	3	108

PROPOSED FOUNDATIONS 2007 - Continued

Foundation ID Number	Foundation Descriptions	Quantity	Length (feet)	Width (feet)	Total Surface Area (SF)
26	Diesel Fire Pump (Included in Service Building)	0	On same foundation as 2		0
27	Yard Fire Hydrant	6	6	6	216
28	Bridge	1	60	40	2400
29	Stormwater Detention Basin and Structures	11	7	7	539
30	RO Water Treatment Area	1	25	25	625
31	Diesel Tank	1	8	6	48
32	Piperack	3	7	4	84
33	Piperack	4	10	4	160
34	Fire Wall	1	1000	1	1000
				SUM =	**42220**
				Approx. =	**43,500**

Note: For Foundation Locations see Project No. 07-201 Plan Drawing C100 - Site Layout Plan.

Total Impervious Area for the Detention Basin Drainage Area = 43,500 square feet (1.0 Acres)

Cross Section for North Trapezoidal Channel

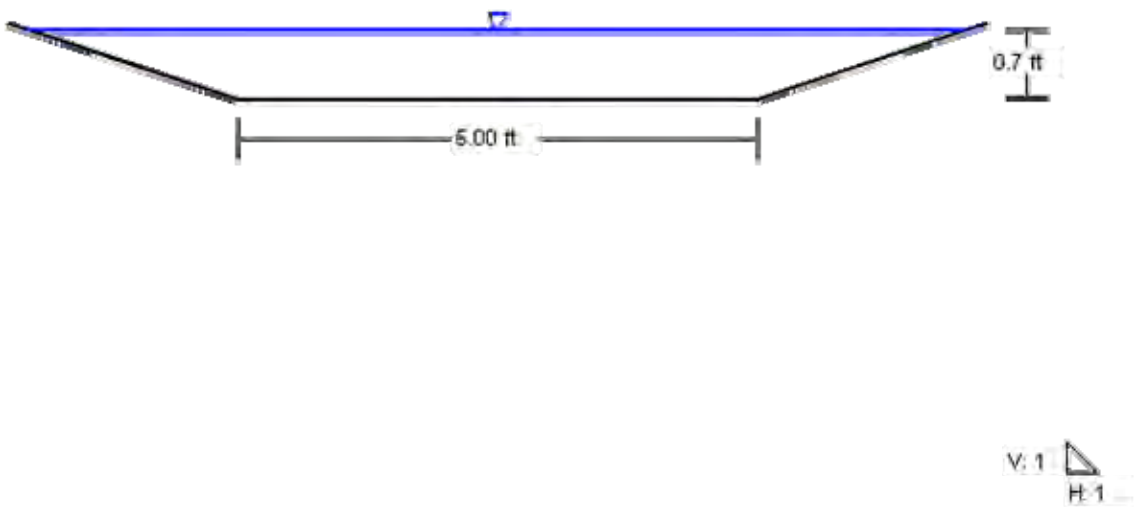
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.01000	ft/ft
Normal Depth	0.7	ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	5.00	ft
Discharge	12.75	ft^3/s

Cross Section Image



Worksheet for North Trapezoidal Channel

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.01000	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	5.00	ft
Discharge	12.75	ft^3/s

Results

Normal Depth	0.7	ft
Flow Area	4.71	ft^2
Wetted Perimeter	9.25	ft
Top Width	9.03	ft
Critical Depth	0.53	ft
Critical Slope	0.02443	ft/ft
Velocity	2.71	ft/s
Velocity Head	0.11	ft
Specific Energy	0.79	ft
Froude Number	0.66	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.0	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.0	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.7	ft
Critical Depth	0.53	ft
Channel Slope	0.01000	ft/ft
Critical Slope	0.02443	ft/ft

Cross Section for Secondary Access East Trapezoidal Channel

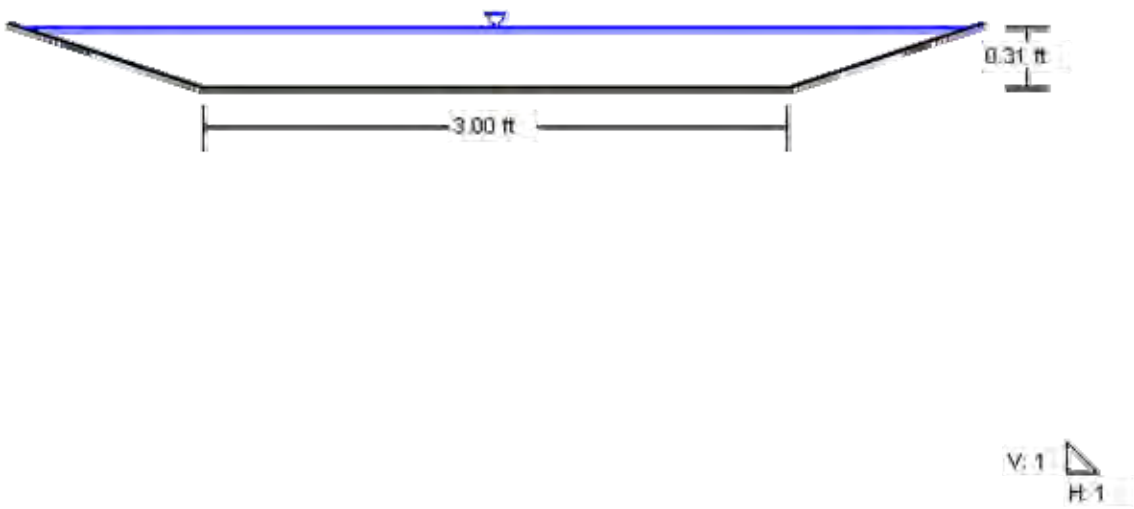
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.10000	ft/ft
Normal Depth	0.31	ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	3.00	ft
Discharge	6.36	ft^3/s

Cross Section Image



Worksheet for Secondary Access East Trapezoidal Channel

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.10000	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	3.00	ft
Discharge	6.36	ft^3/s

Results

Normal Depth	0.31	ft
Flow Area	1.21	ft^2
Wetted Perimeter	4.95	ft
Top Width	4.85	ft
Critical Depth	0.44	ft
Critical Slope	0.02646	ft/ft
Velocity	5.25	ft/s
Velocity Head	0.43	ft
Specific Energy	0.74	ft
Froude Number	1.85	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.31	ft
Critical Depth	0.44	ft
Channel Slope	0.10000	ft/ft
Critical Slope	0.02646	ft/ft

Cross Section for Secondary Access West Trapezoidal Channel

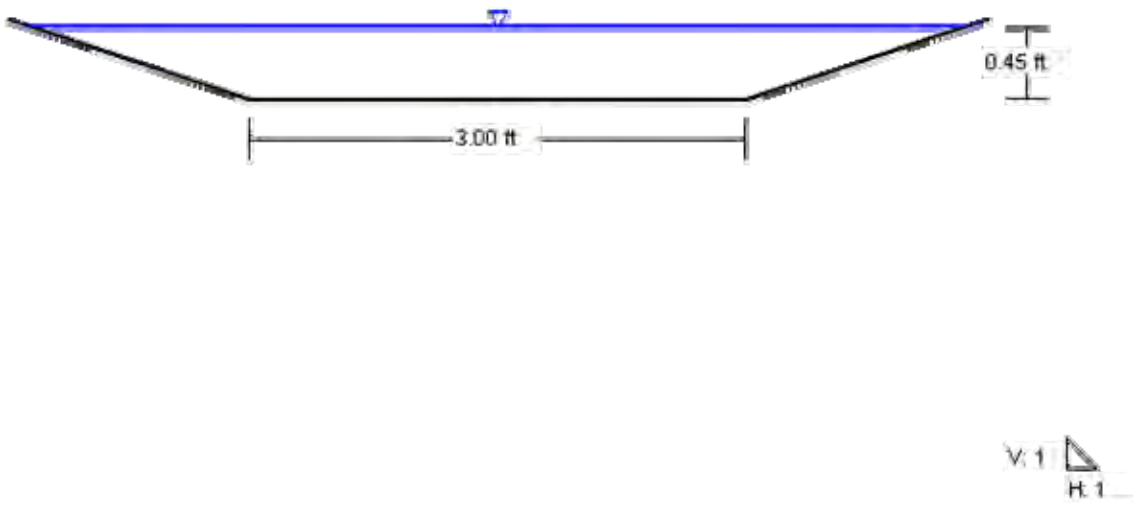
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.10000	ft/ft
Normal Depth	0.45	ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	3.00	ft
Discharge	12.56	ft^3/s

Cross Section Image



Worksheet for Secondary Access West Trapezoidal Channel

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.10000	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	3.00	ft
Discharge	12.56	ft^3/s

Results

Normal Depth	0.45	ft
Flow Area	1.94	ft^2
Wetted Perimeter	5.83	ft
Top Width	5.69	ft
Critical Depth	0.65	ft
Critical Slope	0.02394	ft/ft
Velocity	6.46	ft/s
Velocity Head	0.65	ft
Specific Energy	1.10	ft
Froude Number	1.95	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.45	ft
Critical Depth	0.65	ft
Channel Slope	0.10000	ft/ft
Critical Slope	0.02394	ft/ft

Worksheet for 24" CMP under Pala Del Norte then under Bridge

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Capacity

Input Data

Roughness Coefficient	0.024	
Channel Slope	0.08217	ft/ft
Normal Depth	2.00	ft
Diameter	2.00	ft
Discharge	35.12	ft^3/s

Results

Discharge	35.12	ft^3/s
Normal Depth	2.00	ft
Flow Area	3.14	ft^2
Wetted Perimeter	6.28	ft
Top Width	0.00	ft
Critical Depth	1.92	ft
Percent Full	100.0	%
Critical Slope	0.07162	ft/ft
Velocity	11.18	ft/s
Velocity Head	1.94	ft
Specific Energy	3.94	ft
Froude Number	0.00	
Maximum Discharge	37.78	ft^3/s
Discharge Full	35.12	ft^3/s
Slope Full	0.08217	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%

Worksheet for 24" CMP under Pala Del Norte then under Bridge

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.00	ft
Critical Depth	1.92	ft
Channel Slope	0.08217	ft/ft
Critical Slope	0.07162	ft/ft

Worksheet for 14" (2) Steel under PDN Road then under Bridge

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Capacity

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.06033	ft/ft
Normal Depth	1.17	ft
Diameter	1.17	ft
Discharge	13.20	ft^3/s

Results

Discharge	13.20	ft^3/s
Normal Depth	1.17	ft
Flow Area	1.07	ft^2
Wetted Perimeter	3.67	ft
Top Width	0.00	ft
Critical Depth	1.16	ft
Percent Full	100.0	%
Critical Slope	0.05570	ft/ft
Velocity	12.35	ft/s
Velocity Head	2.37	ft
Specific Energy	3.54	ft
Froude Number	0.00	
Maximum Discharge	14.20	ft^3/s
Discharge Full	13.20	ft^3/s
Slope Full	0.06033	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%

Worksheet for 14" (2) Steel under PDN Road then under Bridge

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.17	ft
Critical Depth	1.16	ft
Channel Slope	0.06033	ft/ft
Critical Slope	0.05570	ft/ft

Cross Section for Proposed North side of Bridge Irregular Section

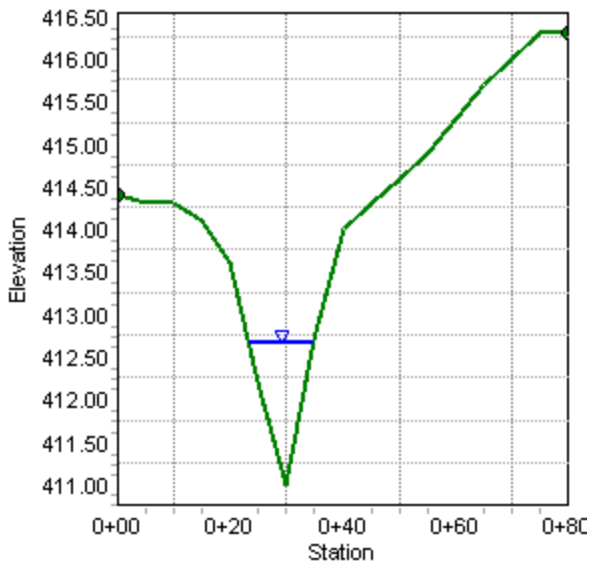
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.11000	ft/ft
Normal Depth	1.67	ft
Discharge	85.00	ft^3/s

Cross Section Image



Worksheet for Proposed North side of Bridge Irregular Section

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.11000	ft/ft
Discharge	85.00	ft^3/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	414.40
0+05	414.30
0+10	414.30
0+15	414.10
0+20	413.60
0+25	412.20
0+30	411.00
0+35	412.70
0+40	414.00
0+45	414.30
0+50	414.60
0+55	414.90
0+60	415.30
0+65	415.70
0+70	416.00
0+75	416.30
0+80	416.30

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 414.40)	(0+80, 416.30)	0.050

Results

Normal Depth	1.67	ft

Worksheet for Proposed North side of Bridge Irregular Section

Results

Elevation Range	411.00 to 416.30 ft		
Flow Area		9.87	ft²
Wetted Perimeter		12.09	ft
Top Width		11.60	ft
Normal Depth		1.67	ft
Critical Depth		2.05	ft
Critical Slope		0.03807	ft/ft
Velocity		8.61	ft/s
Velocity Head		1.15	ft
Specific Energy		2.82	ft
Froude Number		1.65	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.67	ft
Critical Depth	2.05	ft
Channel Slope	0.11000	ft/ft
Critical Slope	0.03807	ft/ft

Messages

Notes

The discharge of 85 cfs is the post-development discharge. Assumptions: Top Bridge El. = 420.00', Bottom Bridge El. = 416.5, 1 foot of freeboard is required. Thus, the max water elevation of 415.5'. If the bridge top elevation is 420 than there is 6.44' available for the bridge deck and beams. The channel roughness coefficient of 0.5 was for a Natural stream, stony notes or Very rough channel, with grass.

Cross Section for Proposed Centerline of Bridge Irregular Section

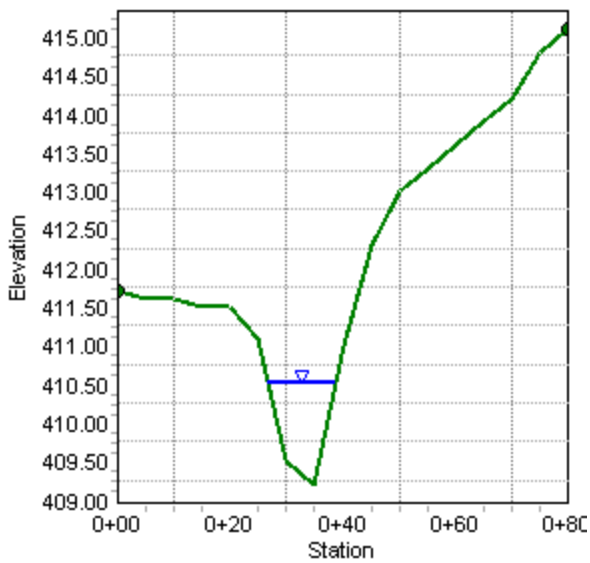
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.11000	ft/ft
Normal Depth	1.32	ft
Discharge	85.00	ft^3/s

Cross Section Image



Worksheet for Proposed Centerline of Bridge Irregular Section

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.11000	ft/ft
Discharge	85.00	ft^3/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	411.70
0+05	411.60
0+10	411.60
0+15	411.50
0+20	411.50
0+25	411.10
0+30	409.50
0+35	409.20
0+40	411.00
0+45	412.30
0+50	413.00
0+55	413.30
0+60	413.60
0+65	413.90
0+70	414.20
0+75	414.80
0+80	415.10

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 411.70)	(0+80, 415.10)	0.050

Results

Normal Depth	1.32	ft

Worksheet for Proposed Centerline of Bridge Irregular Section

Results

Elevation Range	409.20 to 415.10 ft		
Flow Area		9.93	ft²
Wetted Perimeter		12.27	ft
Top Width		11.87	ft
Normal Depth		1.32	ft
Critical Depth		1.69	ft
Critical Slope		0.03768	ft/ft
Velocity		8.56	ft/s
Velocity Head		1.14	ft
Specific Energy		2.46	ft
Froude Number		1.65	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.32	ft
Critical Depth	1.69	ft
Channel Slope	0.11000	ft/ft
Critical Slope	0.03768	ft/ft

Cross Section for Proposed Southside of Bridge Irregular Section

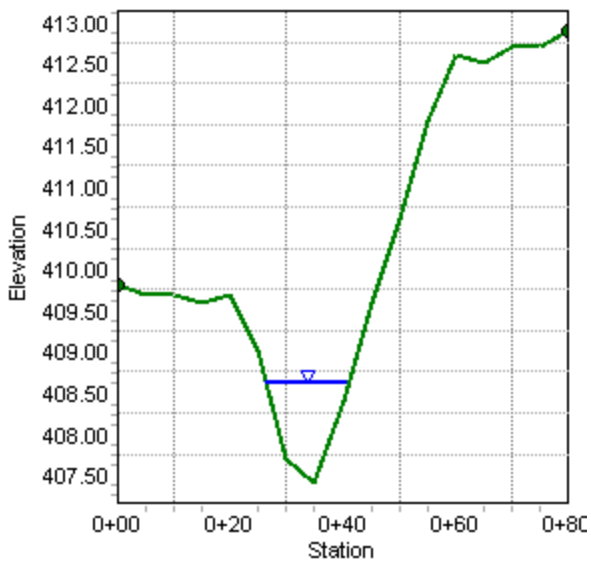
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.11000	ft/ft
Normal Depth	1.22	ft
Discharge	85.00	ft^3/s

Cross Section Image



Worksheet for Proposed Southside of Bridge Irregular Section

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.11000	ft/ft
Discharge	85.00	ft^3/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	409.80
0+05	409.70
0+10	409.70
0+15	409.60
0+20	409.70
0+25	409.00
0+30	407.70
0+35	407.40
0+40	408.40
0+45	409.60
0+50	410.60
0+55	411.80
0+60	412.60
0+65	412.50
0+70	412.70
0+75	412.70
0+80	412.90

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 409.80)	(0+80, 412.90)	0.050

Results

Normal Depth	1.22	ft

Worksheet for Proposed Southside of Bridge Irregular Section

Results

Elevation Range	407.40 to 412.90 ft		
Flow Area		10.68	ft²
Wetted Perimeter		14.71	ft
Top Width		14.45	ft
Normal Depth		1.22	ft
Critical Depth		1.53	ft
Critical Slope		0.03842	ft/ft
Velocity		7.96	ft/s
Velocity Head		0.99	ft
Specific Energy		2.20	ft
Froude Number		1.63	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.22	ft
Critical Depth	1.53	ft
Channel Slope	0.11000	ft/ft
Critical Slope	0.03842	ft/ft

Worksheet for Circular 15" Pipe - 1

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00500	ft/ft
Diameter	15.00	in
Discharge	3.86	ft^3/s

Results

Normal Depth	10.577	in
Flow Area	0.92	ft^2
Wetted Perimeter	2.49	ft
Top Width	1.14	ft
Critical Depth	0.79	ft
Percent Full	70.5	%
Critical Slope	0.00666	ft/ft
Velocity	4.17	ft/s
Velocity Head	0.27	ft
Specific Energy	1.15	ft
Froude Number	0.82	
Maximum Discharge	4.91	ft^3/s
Discharge Full	4.57	ft^3/s
Slope Full	0.00357	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.000	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.000	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	70.51	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s

Worksheet for Circular 15" Pipe - 1

GVF Output Data

Normal Depth	10.577	in
Critical Depth	0.79	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.00666	ft/ft

Cross Section for Circular 15" Pipe - 1

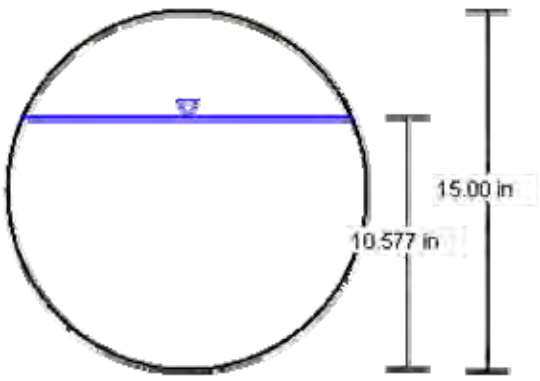
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00500	ft/ft
Normal Depth	10.577	in
Diameter	15.00	in
Discharge	3.86	ft^3/s

Cross Section Image



Worksheet for Circular 18" Pipe - 2

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00500	ft/ft
Diameter	18.00	in
Discharge	6.34	ft^3/s

Results

Normal Depth	12.789	in
Flow Area	1.34	ft^2
Wetted Perimeter	3.01	ft
Top Width	1.36	ft
Critical Depth	0.97	ft
Percent Full	71.1	%
Critical Slope	0.00639	ft/ft
Velocity	4.72	ft/s
Velocity Head	0.35	ft
Specific Energy	1.41	ft
Froude Number	0.84	
Maximum Discharge	7.99	ft^3/s
Discharge Full	7.43	ft^3/s
Slope Full	0.00364	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.000	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.000	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	71.05	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s

Worksheet for Circular 18" Pipe - 2

GVF Output Data

Normal Depth	12.789	in
Critical Depth	0.97	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.00639	ft/ft

Cross Section for Circular 18" Pipe - 2

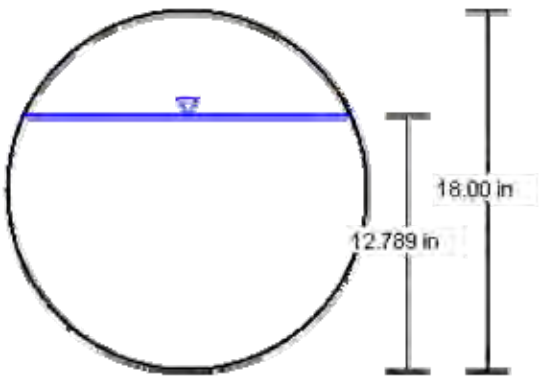
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00500	ft/ft
Normal Depth	12.789	in
Diameter	18.00	in
Discharge	6.34	ft^3/s

Cross Section Image



Worksheet for Circular 18" Pipe - 3

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01500	ft/ft
Diameter	18.00	in
Discharge	8.58	ft^3/s

Results

Normal Depth	10.750	in
Flow Area	1.10	ft^2
Wetted Perimeter	2.65	ft
Top Width	1.47	ft
Critical Depth	1.13	ft
Percent Full	59.7	%
Critical Slope	0.00787	ft/ft
Velocity	7.79	ft/s
Velocity Head	0.94	ft
Specific Energy	1.84	ft
Froude Number	1.59	
Maximum Discharge	13.84	ft^3/s
Discharge Full	12.86	ft^3/s
Slope Full	0.00667	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.000	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.000	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	59.72	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s

Worksheet for Circular 18" Pipe - 3

GVF Output Data

Normal Depth	10.750	in
Critical Depth	1.13	ft
Channel Slope	0.01500	ft/ft
Critical Slope	0.00787	ft/ft

Cross Section for Circular 18" Pipe - 3

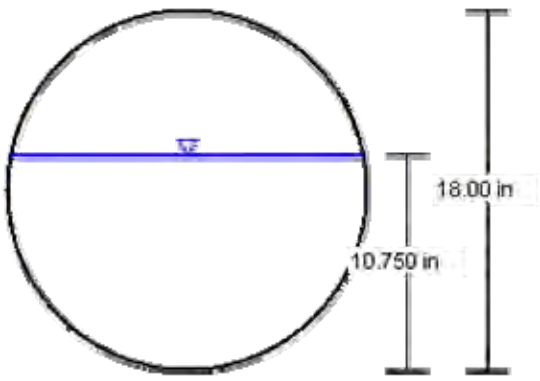
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01500	ft/ft
Normal Depth	10.750	in
Diameter	18.00	in
Discharge	8.58	ft^3/s

Cross Section Image



Worksheet for Circular 15" Pipe - 4

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00500	ft/ft
Diameter	15.00	in
Discharge	3.96	ft^3/s

Results

Normal Depth	10.790	in
Flow Area	0.94	ft^2
Wetted Perimeter	2.53	ft
Top Width	1.12	ft
Critical Depth	0.81	ft
Percent Full	71.9	%
Critical Slope	0.00674	ft/ft
Velocity	4.19	ft/s
Velocity Head	0.27	ft
Specific Energy	1.17	ft
Froude Number	0.81	
Maximum Discharge	4.91	ft^3/s
Discharge Full	4.57	ft^3/s
Slope Full	0.00376	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.000	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.000	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	71.93	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s

Worksheet for Circular 15" Pipe - 4

GVF Output Data

Normal Depth	10.790	in
Critical Depth	0.81	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.00674	ft/ft

Cross Section for Circular 15" Pipe - 4

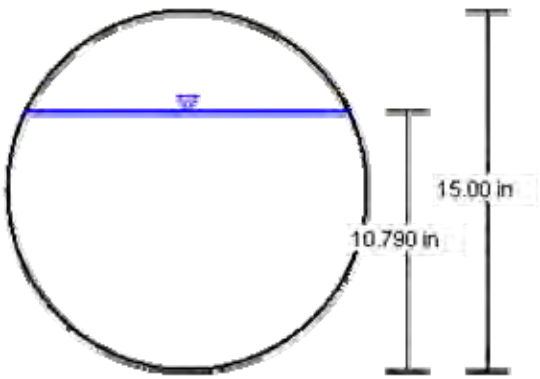
Project Description

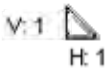
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00500	ft/ft
Normal Depth	10.790	in
Diameter	15.00	in
Discharge	3.96	ft^3/s

Cross Section Image





Worksheet for Circular 15" Pipe - 5

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00500	ft/ft
Diameter	15.00	in
Discharge	2.62	ft^3/s

Results

Normal Depth	8.144	in
Flow Area	0.68	ft^2
Wetted Perimeter	2.07	ft
Top Width	1.25	ft
Critical Depth	0.65	ft
Percent Full	54.3	%
Critical Slope	0.00580	ft/ft
Velocity	3.85	ft/s
Velocity Head	0.23	ft
Specific Energy	0.91	ft
Froude Number	0.92	
Maximum Discharge	4.91	ft^3/s
Discharge Full	4.57	ft^3/s
Slope Full	0.00165	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.000	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.000	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	54.29	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s

Worksheet for Circular 15" Pipe - 5

GVF Output Data

Normal Depth	8.144	in
Critical Depth	0.65	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.00580	ft/ft

Cross Section for Circular 15" Pipe - 5

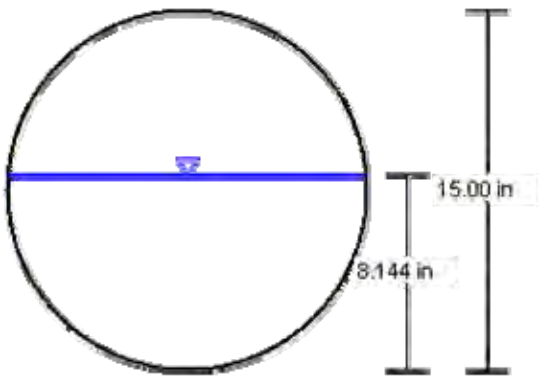
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00500	ft/ft
Normal Depth	8.144	in
Diameter	15.00	in
Discharge	2.62	ft^3/s

Cross Section Image



Worksheet for Circular 24" Pipe - 6

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.02000	ft/ft
Diameter	24.00	in
Discharge	19.24	ft^3/s

Results

Normal Depth	13.418	in
Flow Area	1.81	ft^2
Wetted Perimeter	3.38	ft
Top Width	1.99	ft
Critical Depth	1.58	ft
Percent Full	55.9	%
Critical Slope	0.00779	ft/ft
Velocity	10.65	ft/s
Velocity Head	1.76	ft
Specific Energy	2.88	ft
Froude Number	1.97	
Maximum Discharge	34.41	ft^3/s
Discharge Full	31.99	ft^3/s
Slope Full	0.00723	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.000	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.000	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	55.91	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s

Worksheet for Circular 24" Pipe - 6

GVF Output Data

Normal Depth	13.418	in
Critical Depth	1.58	ft
Channel Slope	0.02000	ft/ft
Critical Slope	0.00779	ft/ft

Cross Section for Circular 24" Pipe - 6

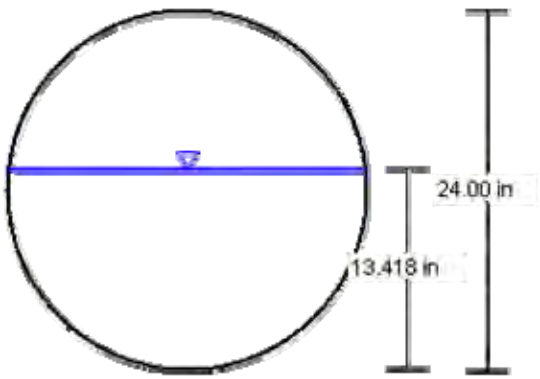
Project Description

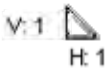
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.02000	ft/ft
Normal Depth	13.418	in
Diameter	24.00	in
Discharge	19.24	ft^3/s

Cross Section Image





Worksheet for Circular 30" Pipe - 7

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.02500	ft/ft
Diameter	30.00	in
Discharge	19.24	ft^3/s

Results

Normal Depth	11.197	in
Flow Area	1.67	ft^2
Wetted Perimeter	3.29	ft
Top Width	2.42	ft
Critical Depth	1.49	ft
Percent Full	37.3	%
Critical Slope	0.00500	ft/ft
Velocity	11.52	ft/s
Velocity Head	2.06	ft
Specific Energy	2.99	ft
Froude Number	2.44	
Maximum Discharge	69.76	ft^3/s
Discharge Full	64.85	ft^3/s
Slope Full	0.00220	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.000	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.000	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	37.32	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s

Worksheet for Circular 30" Pipe - 7

GVF Output Data

Normal Depth	11.197	in
Critical Depth	1.49	ft
Channel Slope	0.02500	ft/ft
Critical Slope	0.00500	ft/ft

Cross Section for Circular 30" Pipe - 7

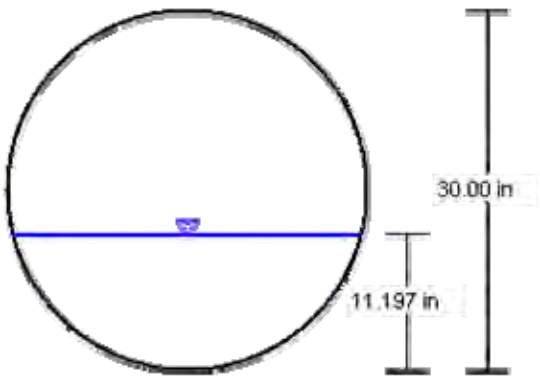
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.02500	ft/ft
Normal Depth	11.197	in
Diameter	30.00	in
Discharge	19.24	ft^3/s

Cross Section Image



Worksheet for 12" Outlet Circular Orifice

Project Description

Solve For	Discharge

Input Data

Headwater Elevation	412.40	ft
Centroid Elevation	403.50	ft
Tailwater Elevation	398.35	ft
Discharge Coefficient	0.60	
Diameter	12.00	in

Results

Discharge	11.28	ft^3/s
Headwater Height Above Centroid	8.90	ft
Tailwater Height Above Centroid	-5.15	ft
Flow Area	0.79	ft^2
Velocity	14.36	ft/s

Worksheet for Outlet Control Struc. Rectangular Weir

Project Description

Solve For	Headwater Elevation

Input Data

Discharge	27.86	ft^3/s
Crest Elevation	412.40	ft
Tailwater Elevation	398.35	ft
Weir Coefficient	3.33	US
Crest Length	18.00	ft
Number Of Contractions	2	

Results

Headwater Elevation	413.00	ft
Headwater Height Above Crest	0.60	ft
Tailwater Height Above Crest	-14.05	ft
Flow Area	10.85	ft^2
Velocity	2.57	ft/s
Wetted Perimeter	19.21	ft
Top Width	18.00	ft

Messages

Notes	The discharge 27.86 is the 100 year storm for the 5.2 acre site entering the Detention Basin

Worksheet for 100-year 36" Pipe - 10

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01000	ft/ft
Diameter	36.00	in
Discharge	39.51	ft^3/s

Results

Normal Depth	19.939	in
Flow Area	4.02	ft^2
Wetted Perimeter	5.04	ft
Top Width	2.98	ft
Critical Depth	2.05	ft
Percent Full	55.4	%
Critical Slope	0.00536	ft/ft
Velocity	9.83	ft/s
Velocity Head	1.50	ft
Specific Energy	3.16	ft
Froude Number	1.49	
Maximum Discharge	71.74	ft^3/s
Discharge Full	66.69	ft^3/s
Slope Full	0.00351	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.000	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.000	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	55.39	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s

Worksheet for 100-year 36" Pipe - 10

GVF Output Data

Normal Depth	19.939	in
Critical Depth	2.05	ft
Channel Slope	0.01000	ft/ft
Critical Slope	0.00536	ft/ft

Cross Section for 100-year 36" Pipe - 10

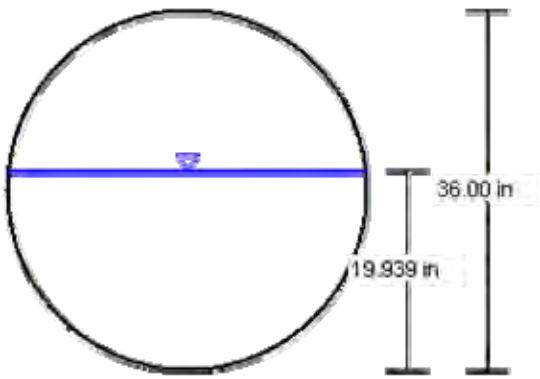
Project Description

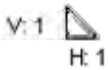
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01000	ft/ft
Normal Depth	19.939	in
Diameter	36.00	in
Discharge	39.51	ft^3/s

Cross Section Image





WinTR-55 Current Data Description

--- Identification Data ---

User: Langel
Project: 07-0201
SubTitle: Orange Grove Power Plant - Detention Basin
State: California
County: San Diego
Filename: N:\2007\07201\engr\ce\Stormwater Design\OG - Pre-Dev. Detention Basin Design.w55

Date: 12/21/2007
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
Pre-Dev	Pre-Development	Outlet	5.2	76	0.140

Total area: 5.20 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
2.5	3.5	4.0	5.0	5.5	6.0	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type I
Dimensionless Unit Hydrograph: <standard>

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
2.5	3.5	4.0	5.0	5.5	6.0	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type I
Dimensionless Unit Hydrograph: <standard>

Langel 07-0201

Orange Grove Power Plant - Detention Basin

San Diego County, California

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 50-Yr (cfs)	100-Yr (cfs)
SUBAREAS		
Pre-Dev	10.97	12.68
REACHES		
OUTLET	10.97	12.68

Langel 07-0201

Orange Grove Power Plant - Detention Basin

San Diego County, California

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 50-Yr (cfs)	(hr)	100-Yr (cfs)	(hr)
SUBAREAS				
Pre-Dev	10.97	9.96	12.68	9.96
REACHES				
OUTLET	10.97		12.68	

Langel 07-0201

Orange Grove Power Plant - Detention Basin

San Diego County, California

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
Pre-Dev	5.20	0.140	76	Outlet	Pre-Development

Total Area: 5.20 (ac)

Langel 07-0201

Orange Grove Power Plant - Detention Basin
San Diego County, California

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
Pre-Dev							
SHEET	100	0.1000	0.170				0.107
SHALLOW	600	0.1000	0.050				0.033
						Time of Concentration	0.140

Orange Grove Power Plant - Detention Basin
San Diego County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Pre-Dev	Woods - grass combination	(poor)	C	3.5	82
	Sagebrush (w/ grass understory)	(fair)	C	1.7	63
	Total Area / Weighted Curve Number			5.2	76
				===	==

WinTR-55 Current Data Description

--- Identification Data ---

User: Langel
Project: 07-0201
SubTitle: Orange Grove Power Plant - Detention Basin
State: California
County: San Diego
Filename: N:\2007\07201\engr\ce\Stormwater Design\OG - Post-Dev. Detention Basin Design.w55

Date: 12/21/2007
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
Post-Dev	Post-Development	Outlet	5.2	83	0.189

Total area: 5.20 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
2.5	3.5	4.0	5.0	5.5	6.0	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type I
Dimensionless Unit Hydrograph: <standard>

Langel 07-0201

Orange Grove Power Plant - Detention Basin
San Diego County, California

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
2.5	3.5	4.0	5.0	5.5	6.0	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type I
Dimensionless Unit Hydrograph: <standard>

Langel 07-0201

Orange Grove Power Plant - Detention Basin

San Diego County, California

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 50-Yr (cfs)	100-Yr (cfs)
SUBAREAS		
Post-Dev	12.98	14.66
REACHES		
OUTLET	12.98	14.66

Langel 07-0201

Orange Grove Power Plant - Detention Basin

San Diego County, California

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 50-Yr (cfs)	(hr)	100-Yr (cfs)	(hr)
SUBAREAS				
Post-Dev	12.98	10.00	14.66	9.99
REACHES				
OUTLET	12.98		14.66	

Langel 07-0201

Orange Grove Power Plant - Detention Basin

San Diego County, California

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
Post-Dev	5.20	0.189	83	Outlet	Post-Development

Total Area: 5.20 (ac)

Langel 07-0201

Orange Grove Power Plant - Detention Basin
San Diego County, California

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
Post-Dev							
SHEET	100	0.0050	0.050				0.134
SHALLOW	100	0.0050	0.050				0.024
CHANNEL	500	0.0100	0.013	1.77	4.71	6.039	0.023
CHANNEL	200	0.0100	0.013	3.14	6.28	6.944	0.008
						Time of Concentration	0.189

Langel 07-0201

Orange Grove Power Plant - Detention Basin
San Diego County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Post-Dev	Paved parking lots, roofs, driveways	C	.8	98
	Gravel (w/ right-of-way)	C	2.7	89
	Brush - brush, weed, grass mix (good)	C	1.7	65
	Total Area / Weighted Curve Number		5.2	83
			===	==

Orange Grove Power Plant
Sega Project No. 07-0098
MUP 07-009
Orange Grove Energy, L.P.
Pre- and Post-Development Drainage Calculations

Name of printed page file:
TR20.out

STORM 50-Year

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
Pre-Dev	0.008		2.949		9.96	10.97	1349.93

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
Post-Dev	0.008		3.626		10.00	12.98	1596.74

STORM 100-Year

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
Pre-Dev	0.008		3.376		9.96	12.68	1559.32

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Elevation (ft)	Peak Flow Time (hr)	Peak Flow Rate (cfs)	Peak Flow Rate (csm)
Post-Dev	0.008		4.088		9.99	14.66	1803.03

Quantity Volume Calculations for the Dry-Detention Basin utilizing TR-20

Drainage Area 5.2 **acres**

Output	24-Hour, 50-Year Storm		Pre vs. Post Differential
	Pre-Development	Post-Development	
Discharge (cfs)	10.97	12.98	2.01
Runoff Volume (inches)	2.95	3.63	0.677
Runoff Volume (acre - feet)	1.28	1.57	0.29
Runoff Volume (ft^3)	55665	68444	12779
Estimated TOTALS (ft^3)	55,700	68,500	12,800

Output	24-Hour, 100-Year Storm		Pre vs. Post Differential
	Pre-Development	Post-Development	
Discharge (cfs)	12.68	14.66	1.98
Runoff Volume (inches)	3.38	4.09	0.712
Runoff Volume (acre - feet)	1.46	1.77	0.31
Runoff Volume (ft^3)	63725	77165	13440
Estimated TOTALS (ft^3)	63,700	77,200	13,500

Max Discharge	77,200
Change Pre vs. Post	13,500

Energy Dissipator Calculations - 100-year Storm Event

Table from the San Diego County Drainage Design Manual - July 2005
Page 7-1 and 7-2

Table 7-1 Rock Size for Riprap Aprons at Storm Drain Outlets

Outlet Velocity (ft/s)	Rock Classification	Size of Stone, d_{50} (ft) [a]
6-10	No. 2 Backing	0.7
10-12	¼ Ton	1.8
12-14	½ Ton	2.3
14-16	1 Ton	2.9
16-18	2 Ton	3.6

7.3.1.1 San Diego Regional Standard Drawing

Apron Length and Width. **Riprap apron length and width are a function of the diameter or vertical dimension of the outlet pipe or culvert. The apron length shall be determined using the following equation, with a minimum length of 10 feet:**

$$L_a = 4D_O \qquad (7\text{-}1)$$

where …
L_a = **minimum riprap apron length (ft); and**
D_o = **diameter or width of culvert or storm drain (ft).**

1 **Proposed Detention Basin Inlet (Storm Drain Pipes Outlet)**

Description	Units	Value
Pipe Diameter (D)	Inches (")	30
Velocity (V)	Feet per Second (ft/s)	11.91
Discharge (Q)	Cubic Feet per Second (ft^3/s)	21.8

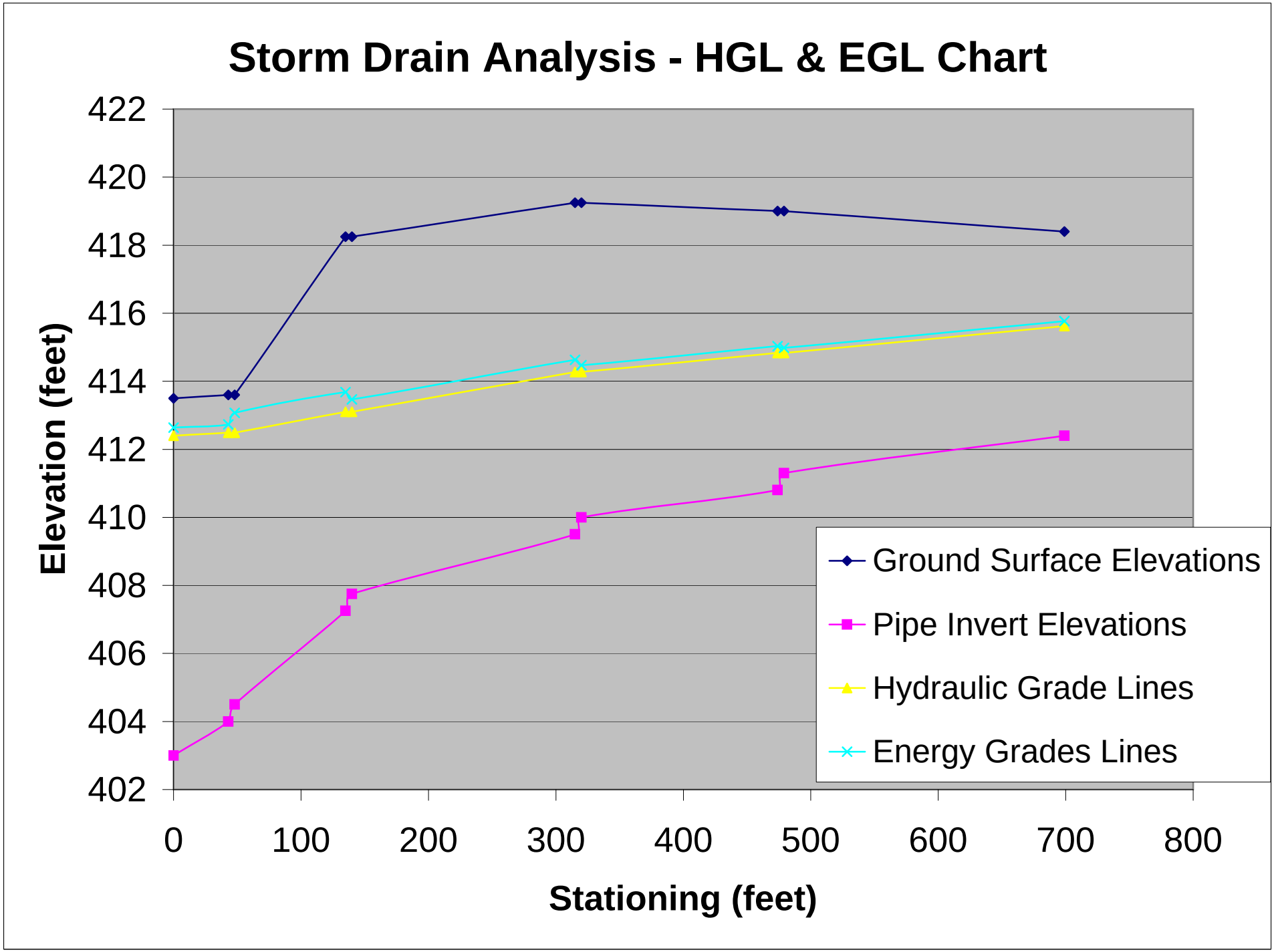
	Rock Classification	Size of Stone d_{50} (ft)	Length (ft)
Riprap Size:	1/2 Ton *	2.3	10 Min.

2 **Proposed Detention Basin Outlet**

Description	Units	Value
Pipe Diameter. (D)	Inches (")	36
Velocity (V)	Feet per Second (ft/s)	14.36
Discharge (Q)	Cubic Feet per Second (ft^3/s)	11.28

	Rock Classification	Size of Stone d_{50} (ft)	Length (ft)
Riprap Size:	1 Ton	2.9	12 Min.

* A conservative rock classification and size was chosen based on the Table 7-1


Storm Drain Analysis - HGL & EGL Chart
Elevation (feet)
422
420
418
416
414
412
410
408
406
404
402
0
100
200
300
400
500
600
700
800
Stationing (feet)
Ground Surface Elevations
Pipe Invert Elevations
Hydraulic Grade Lines
Energy Grades Lines

BACKWATER ANALYSIS STRUCTURE 1 TO DETENTION BASIN: 50-Year Storm

STA.	Ground Surface EL.	INV.	D	W.S.	SECTION	A (SF)	K =(2g)n^2 2.21	V (FPS)	Q (CFS)	V^2/2g (FT)	R$^{4/3}$	S_f	AVG. S_f	L	H_f	H_b	H_j	H_m	H_t	H.G.	E.G.	"n"	TOTAL LOSS	K
0+00	405	403.00	30	412.40	RCP	4.91	0.00492	3.92	19.24	0.24	0.53436748	0.002198								412.40	412.64	0.013		
LINE 7													0.00471291	43	0.20266								0.20265525	
0+43	412.5	404.00	24	412.60	RCP	3.14	0.00492	6.12	19.24	0.58	0.39685026	0.007227								412.60	413.19	0.013		
MH 7													0.00722733	5	0.03614	0.2912							0.32733879	0.5
0+48	418.25	404.50	24	412.93	RCP	3.14	0.00492	6.12	19.24	0.58	0.39685026	0.007227								412.93	413.51	0.013		
LINE 6													0.00722733	87	0.62878								0.62877809	
1+35	418.25	406.35	24	413.56	RCP	3.14	0.00492	6.12	19.24	0.58	0.39685026	0.007227								413.56	414.14	0.013		
BOX 6													0.0069468	5	0.03473	0.2912							0.32593611	0.5
1+40	419.25	406.85	18	413.88	RCP	1.77	0.00492	4.86	8.58	0.37	0.27042179	0.006666								413.88	414.25	0.013		
LINE 3													0.00666626	175	1.1666								1.16659622	
3+15	419.25	409.50	18	415.05	RCP	1.77	0.00492	4.86	8.58	0.37	0.27042179	0.006666								415.05	415.42	0.013		
BOX 3													0.00515307	5	0.02577	0.18303							0.20879182	0.5
3+20	419	410.00	18	415.26	RCP	1.77	0.00492	3.59	6.34	0.20	0.27042179	0.003640								415.26	415.46	0.013		
LINE 2													0.00363987	154	0.56054								0.56054073	
4+74	419	410.80	18	415.82	RCP	1.77	0.00492	3.59	6.34	0.20	0.27042179	0.003640								415.82	416.02	0.013		
BOX 2													0.00360376	5	0.01802	0.09994							0.11795387	0.5
4+79	418.4	411.30	15	415.94	RCP	1.23	0.00492	3.15	3.86	0.15	0.21206388	0.003568								415.94	416.09	0.013		
LINE 1													0.00356765	220	0.78488	0.01536							0.80024627	0.1
6+99	418.4	412.40	15	416.74	RCP	1.23	0.00492	3.15	3.86	0.15	0.21206388	0.003568								416.74	416.89	0.013		
BOX 1																								

Worksheet for Backwater 100YR MH-Detention Basin Inlet

Project Description

Friction Method	Manning Formula
Solve For	Pressure at 1

Input Data

Pressure 2	9.40	feet H2O
Elevation 1	404.00	ft
Elevation 2	403.00	ft
Length	43.00	ft
Roughness Coefficient	0.013	
Diameter	30.00	in
Discharge	19.24	ft^3/s

Results

Pressure 1	8.49	feet H2O
Headloss	0.09	ft
Energy Grade 1	412.73	ft
Energy Grade 2	412.64	ft
Hydraulic Grade 1	412.49	ft
Hydraulic Grade 2	412.40	ft
Flow Area	4.91	ft^2
Wetted Perimeter	7.85	ft
Velocity	3.92	ft/s
Velocity Head	0.24	ft
Friction Slope	0.00220	ft/ft

Worksheet for Baskwater 100YR S.6.-MH

Project Description

Friction Method	Manning Formula
Solve For	Pressure at 1

Input Data

Pressure 2	7.99	feet H2O
Elevation 1	406.35	ft
Elevation 2	404.50	ft
Length	84.00	ft
Roughness Coefficient	0.013	
Diameter	24.00	in
Discharge	19.24	ft^3/s

Results

Pressure 1	6.75	feet H2O
Headloss	0.61	ft
Energy Grade 1	413.68	ft
Energy Grade 2	413.07	ft
Hydraulic Grade 1	413.10	ft
Hydraulic Grade 2	412.49	ft
Flow Area	3.14	ft^2
Wetted Perimeter	6.28	ft
Velocity	6.12	ft/s
Velocity Head	0.58	ft
Friction Slope	0.00723	ft/ft

Worksheet for Backwater 100YR S.3.-S.6.

Project Description

Friction Method	Manning Formula
Solve For	Pressure at 1

Input Data

Pressure 2	6.25	feet H2O
Elevation 1	409.50	ft
Elevation 2	406.85	ft
Length	175.00	ft
Roughness Coefficient	0.013	
Diameter	18.00	in
Discharge	8.58	ft^3/s

Results

Pressure 1	4.77	feet H2O
Headloss	1.17	ft
Energy Grade 1	414.63	ft
Energy Grade 2	413.47	ft
Hydraulic Grade 1	414.27	ft
Hydraulic Grade 2	413.10	ft
Flow Area	1.77	ft^2
Wetted Perimeter	4.71	ft
Velocity	4.86	ft/s
Velocity Head	0.37	ft
Friction Slope	0.00667	ft/ft

Worksheet for Backwater 100YR S.2.-S.3.

Project Description

Friction Method	Manning Formula
Solve For	Pressure at 1

Input Data

Pressure 2	4.27	feet H2O
Elevation 1	410.80	ft
Elevation 2	410.00	ft
Length	154.00	ft
Roughness Coefficient	0.013	
Diameter	18.00	in
Discharge	6.34	ft^3/s

Results

Pressure 1	4.03	feet H2O
Headloss	0.56	ft
Energy Grade 1	415.03	ft
Energy Grade 2	414.47	ft
Hydraulic Grade 1	414.83	ft
Hydraulic Grade 2	414.27	ft
Flow Area	1.77	ft^2
Wetted Perimeter	4.71	ft
Velocity	3.59	ft/s
Velocity Head	0.20	ft
Friction Slope	0.00364	ft/ft

Worksheet for Backwater 100YR S.1.-S.2.

Project Description

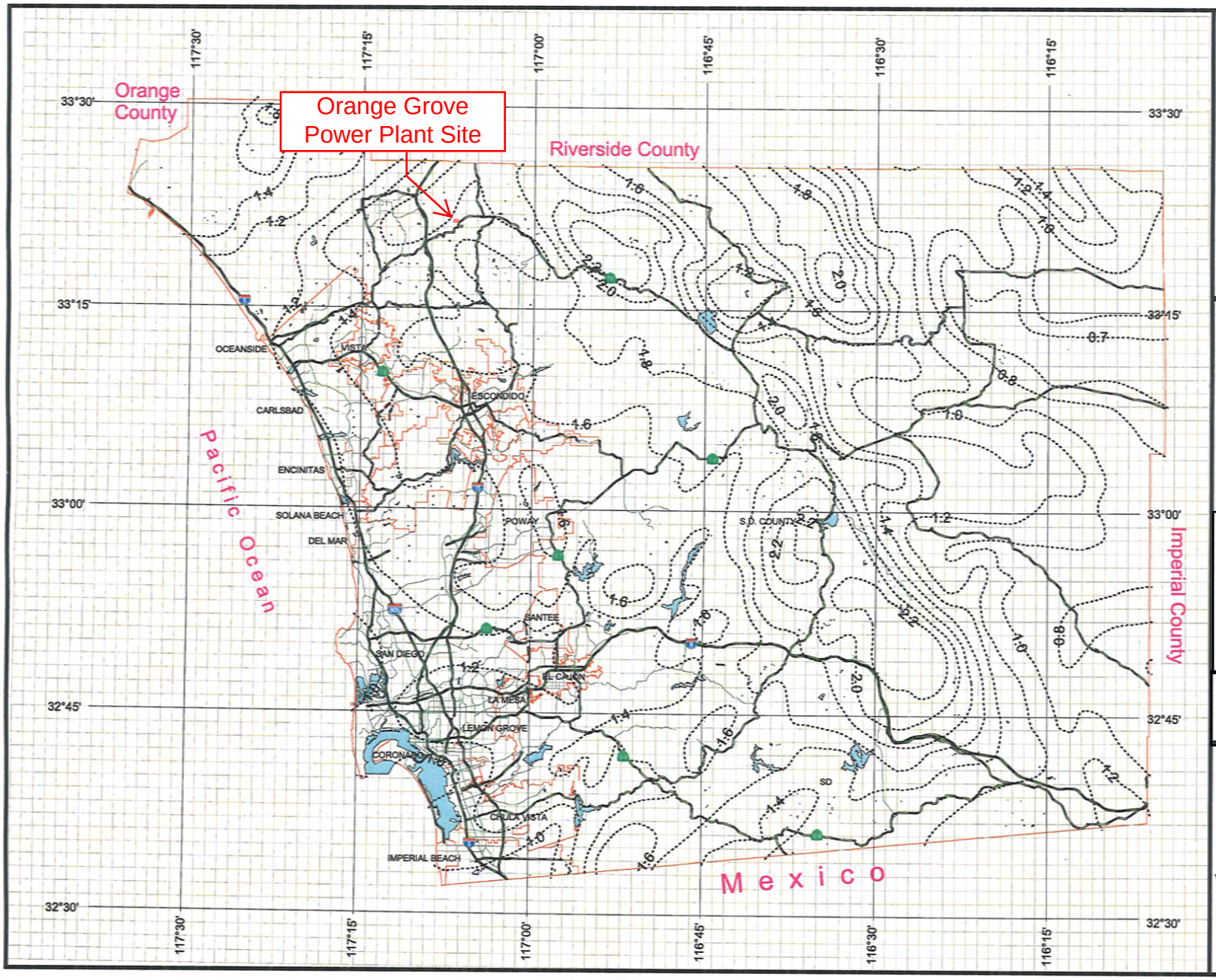
Friction Method	Manning Formula
Solve For	Pressure at 1

Input Data

Pressure 2	3.53	feet H2O
Elevation 1	412.40	ft
Elevation 2	411.30	ft
Length	220.00	ft
Roughness Coefficient	0.013	
Diameter	15.00	in
Discharge	3.86	ft^3/s

Results

Pressure 1	3.22	feet H2O
Headloss	0.79	ft
Energy Grade 1	415.77	ft
Energy Grade 2	414.98	ft
Hydraulic Grade 1	415.62	ft
Hydraulic Grade 2	414.83	ft
Flow Area	1.23	ft^2
Wetted Perimeter	3.93	ft
Velocity	3.15	ft/s
Velocity Head	0.15	ft
Friction Slope	0.00357	ft/ft



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Rainfall Isopluvials

2 Year Rainfall Event - 6 Hours

Isopluvial (inches)

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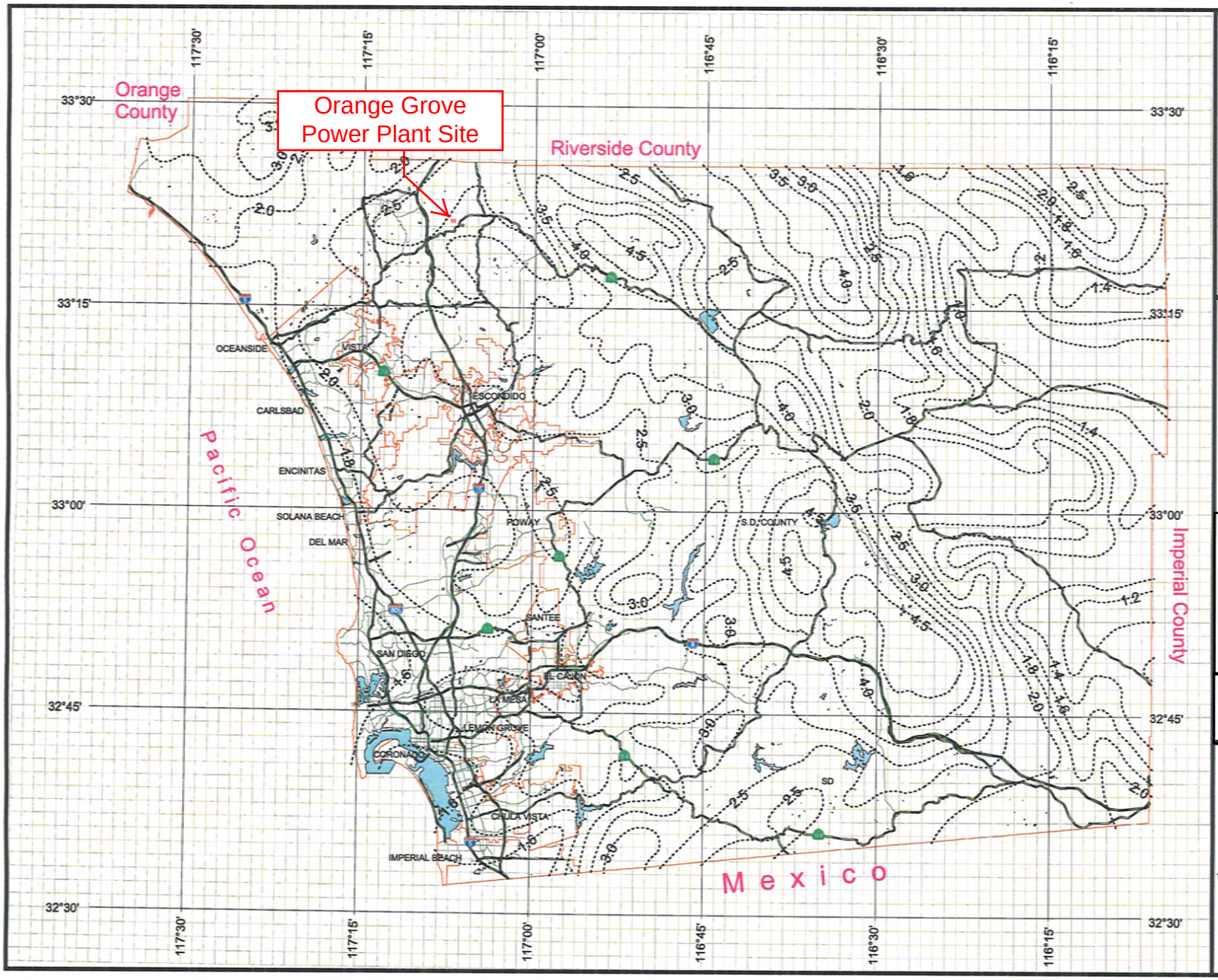

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2 Year Rainfall Event - 24 Hours

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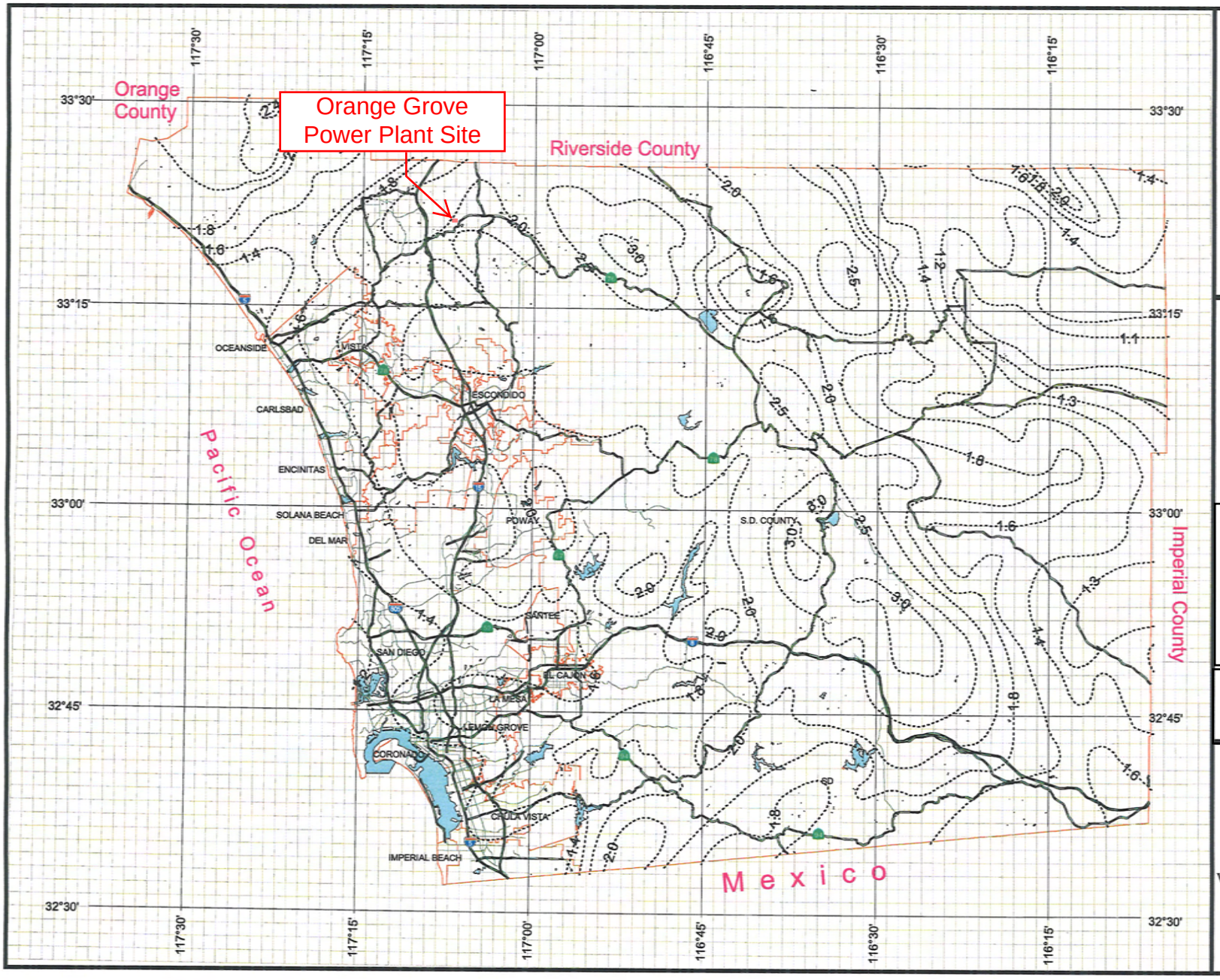

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5 Year Rainfall Event - 6 Hours

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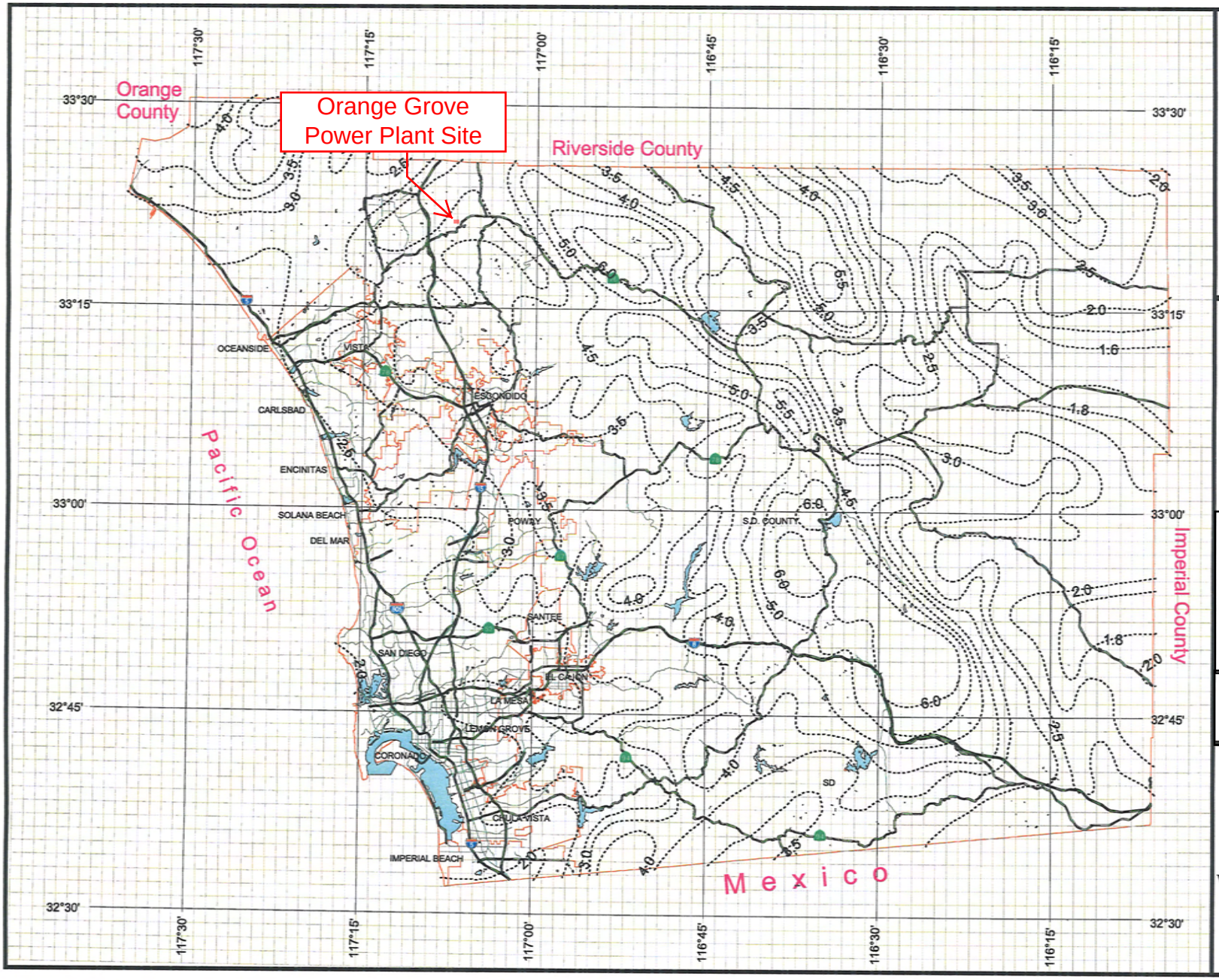

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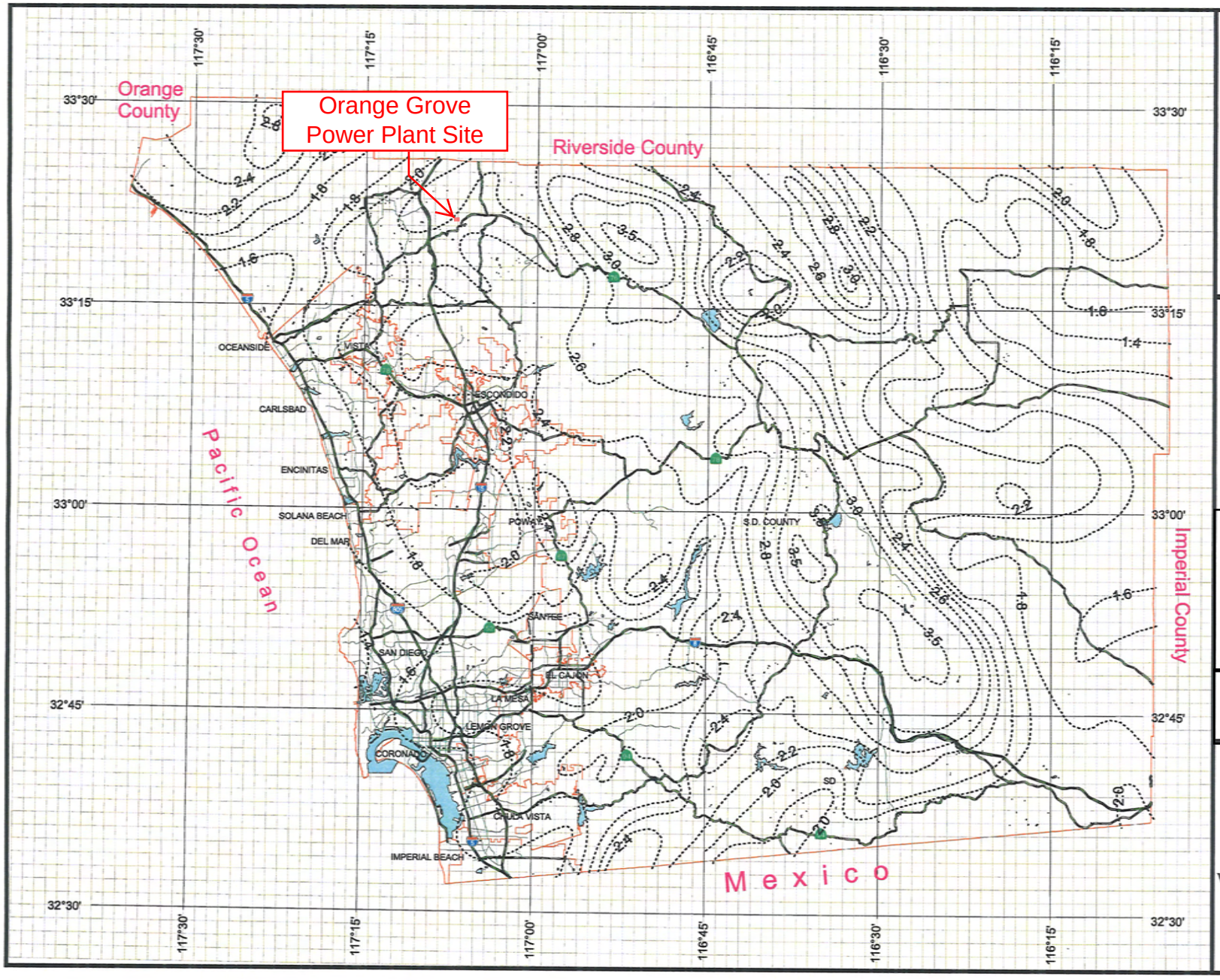

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10 Year Rainfall Event - 6 Hours

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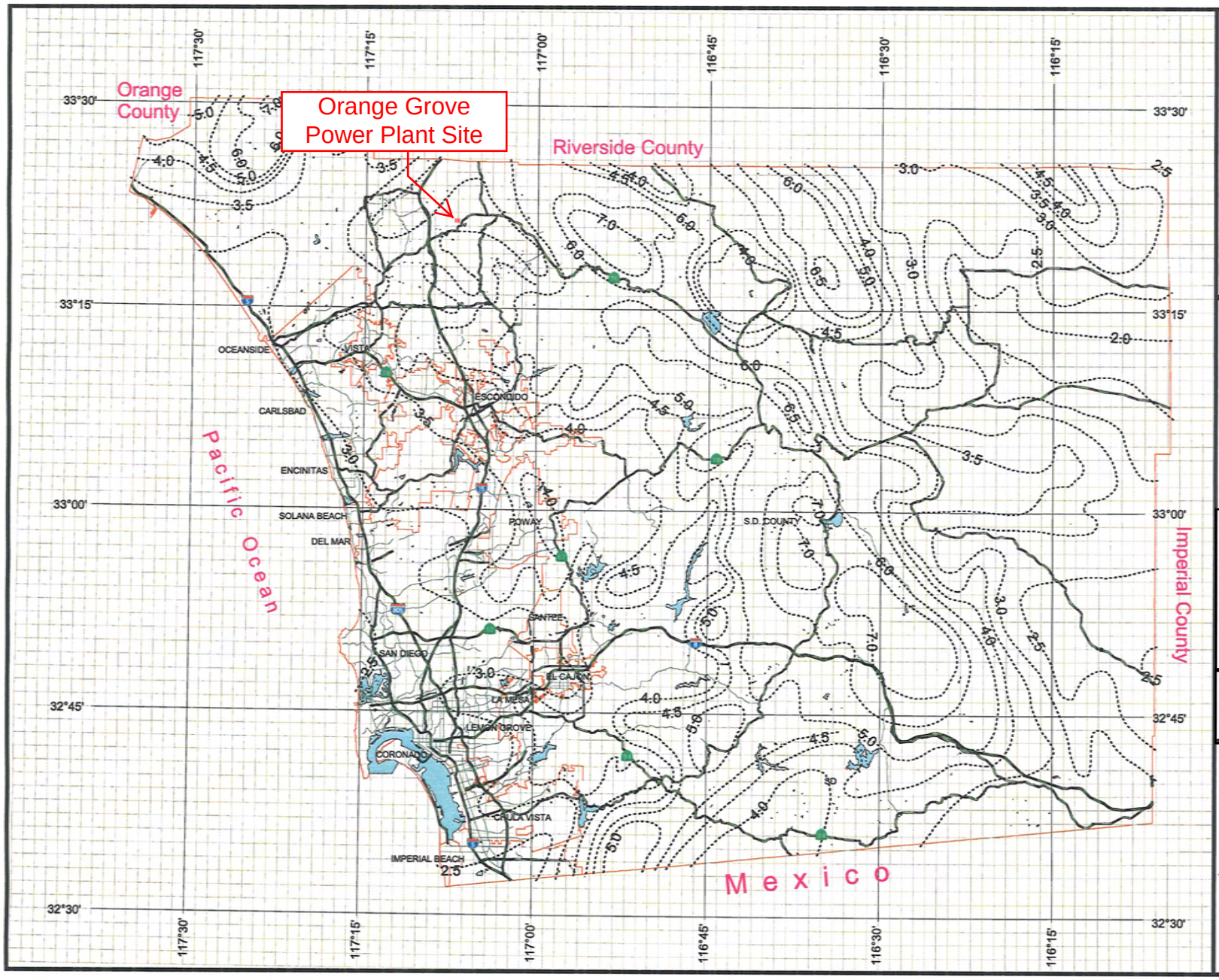

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10 Year Rainfall Event - 24 Hours

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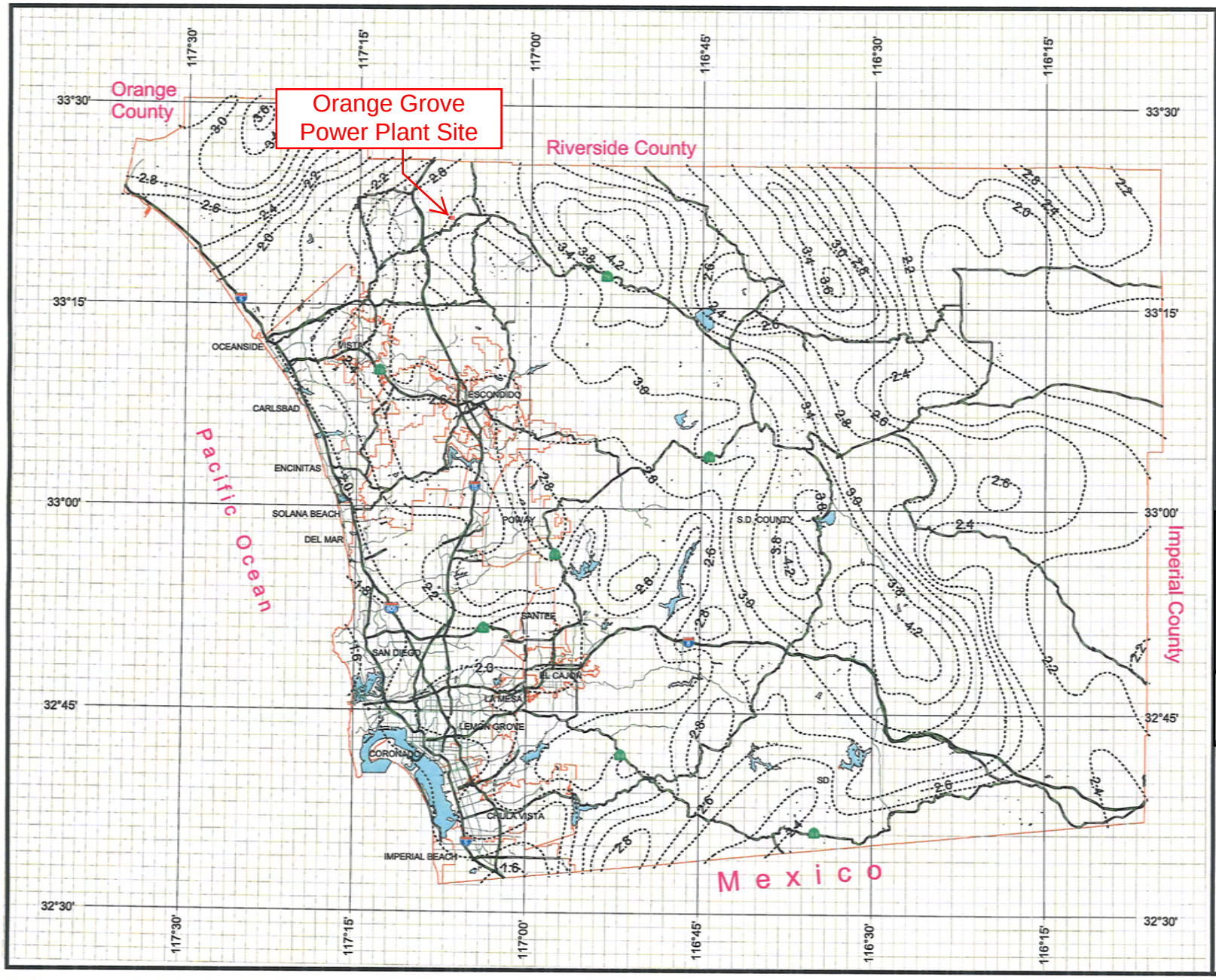

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25 Year Rainfall Event - 6 Hours

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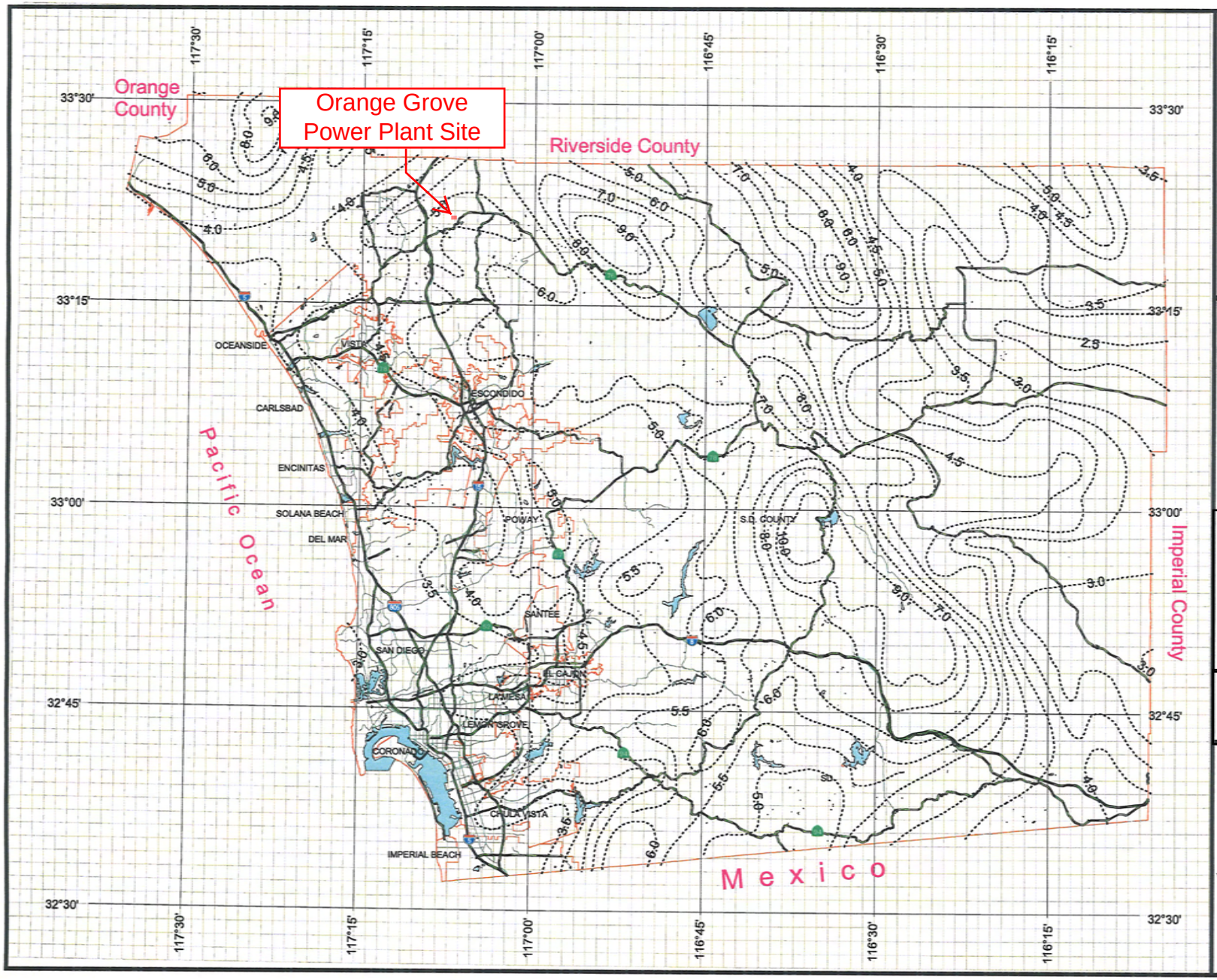

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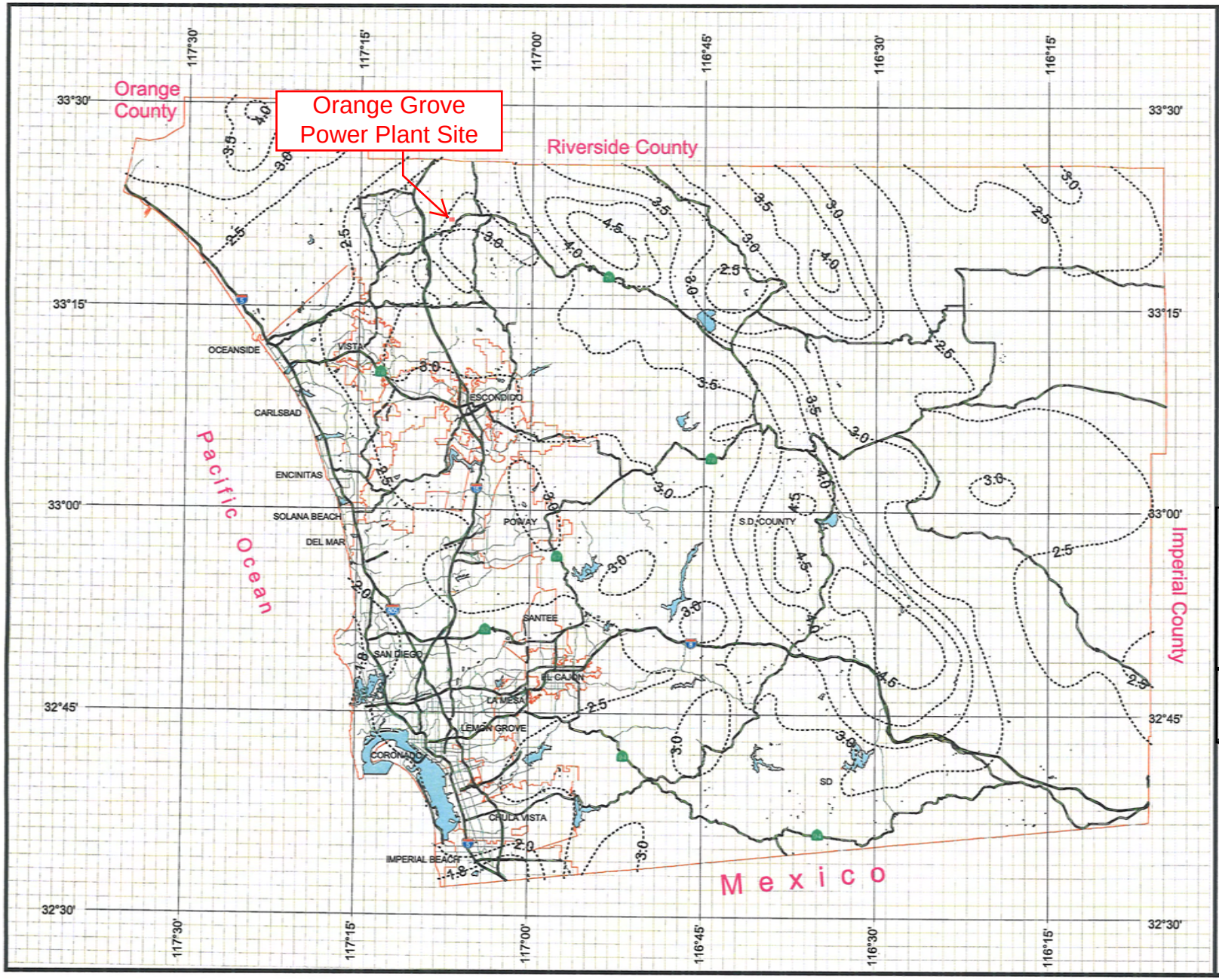

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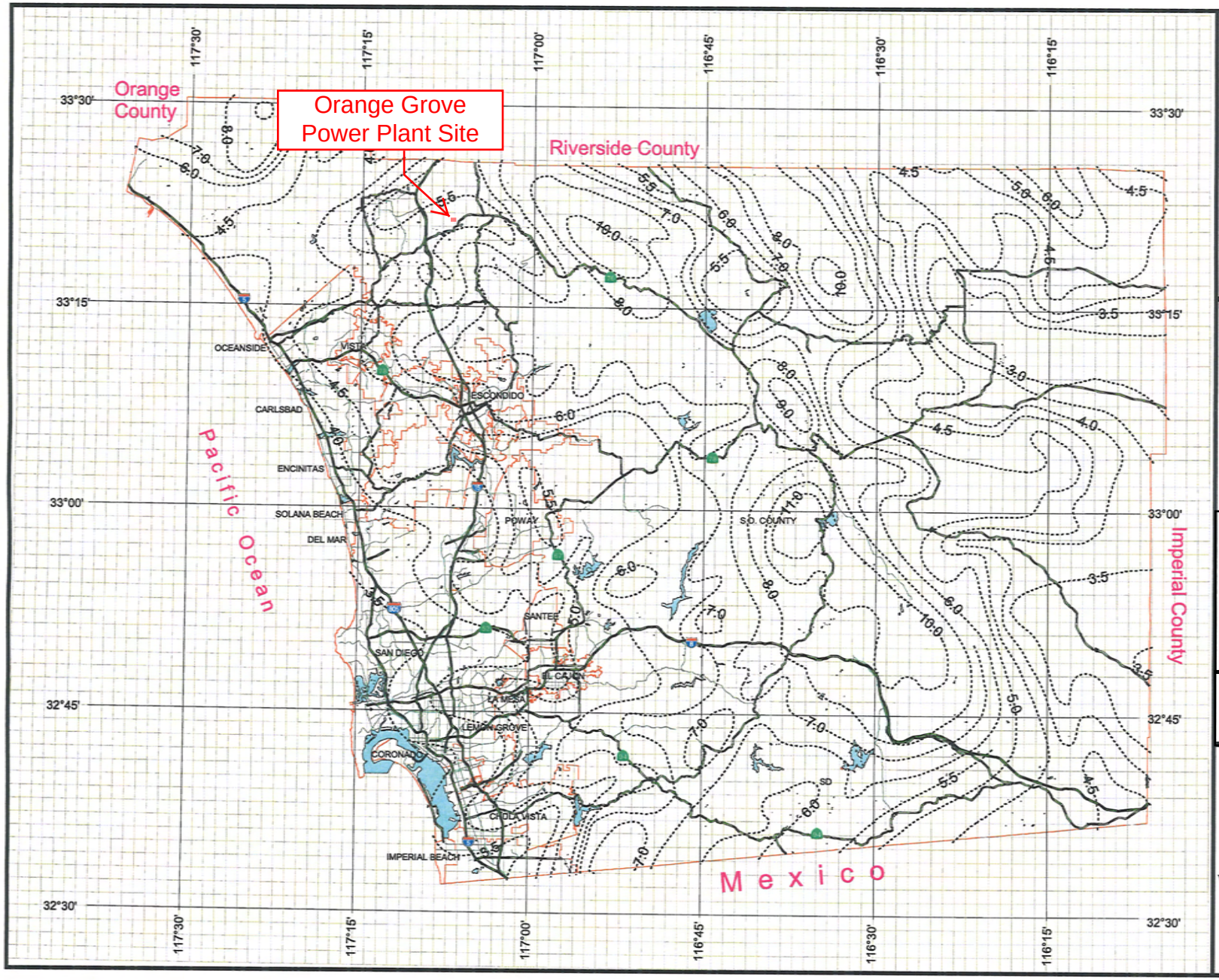

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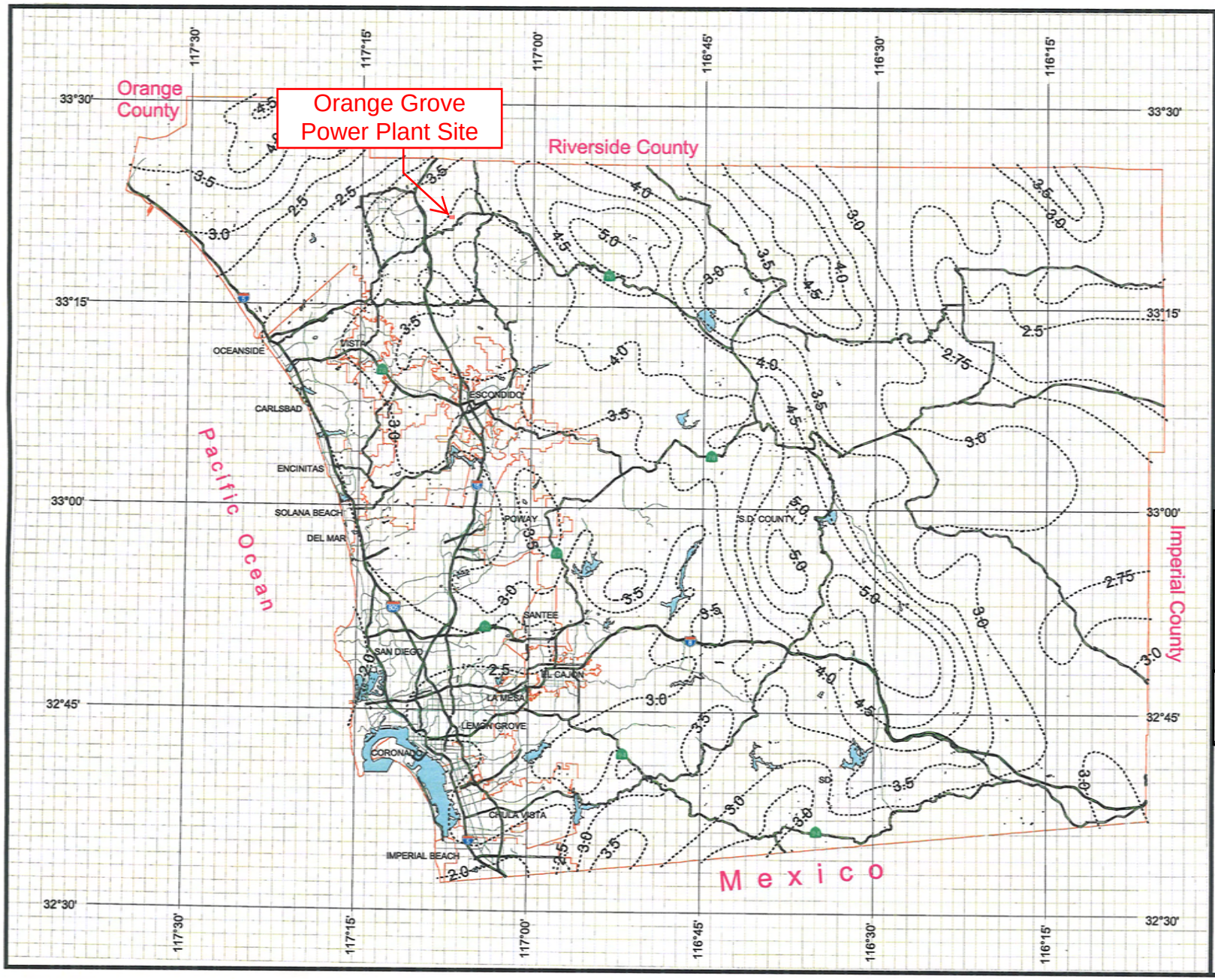

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100 Year Rainfall Event - 6 Hours

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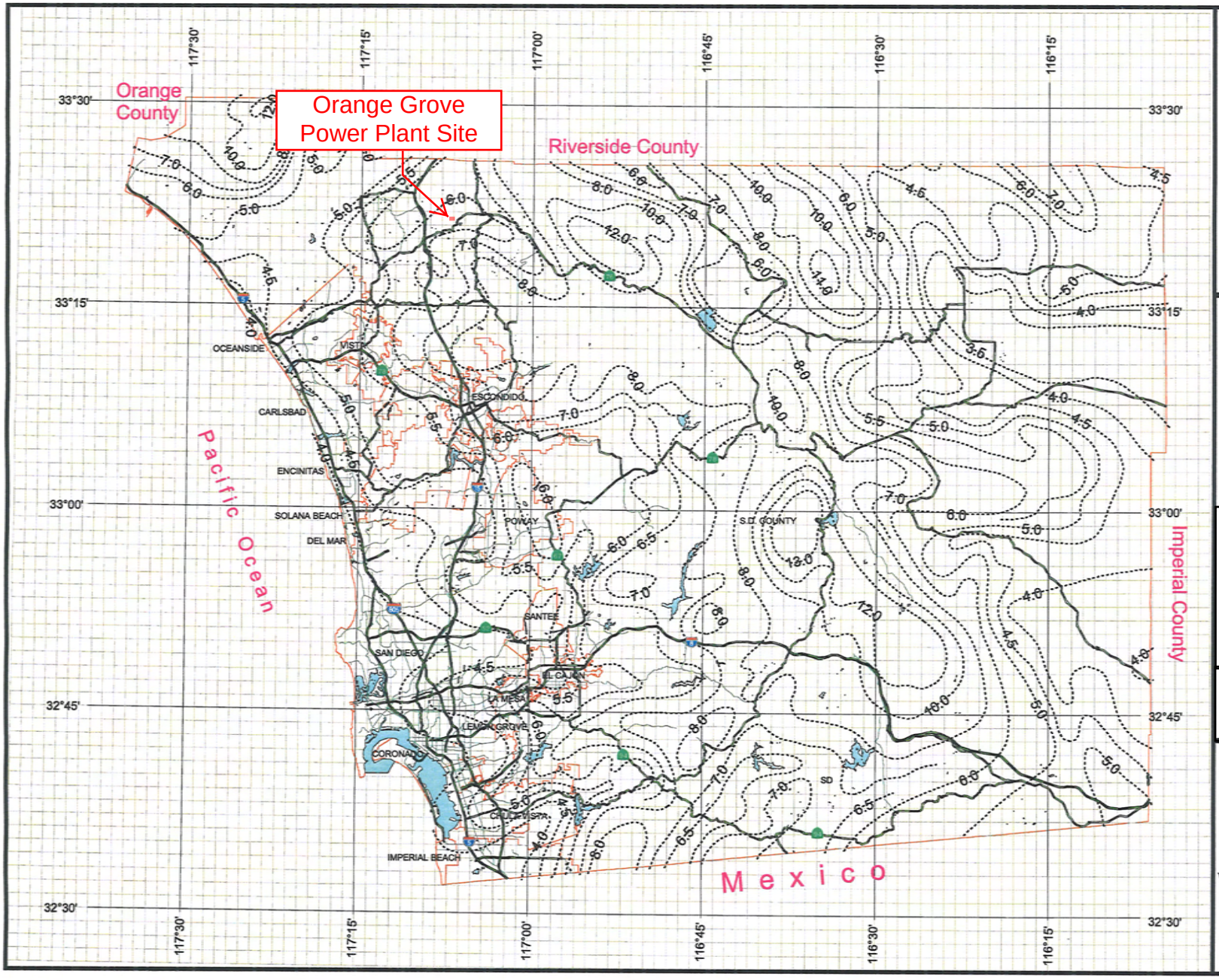

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APPENDIX 6.5-B
JURISDICTIONAL WATERS AND WETLAND DELINEATION REPORT

Jurisdictional Waters and Wetland Delineation

Orange Grove Project

April 2008

Prepared for:
Orange Grove Energy, L.P.

Prepared by:

21 Technology Drive
Irvine, CA 92618
(949) 727-9336

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1.1 PROJECT LOCATION 1
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2.0 METHODS 3
3.0 RESULTS 6
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3.2 POTENTIAL JURISDICTIONAL WATERS AND WETLANDS 7
3.3 NON-JURISDICTIONAL FEATURES 16
4.0 POTENTIAL PROJECT IMPACTS TO JURISDICTIONAL FEATURES 17
5.0 REFERENCES 18

LIST OF ATTACHMENTS

Attachment A: Figure 1 to Figure 6

Figure 1: Project Location
Figure 2: Vicinity Map
Figure 3: Aerial Overview
Figure 4: USFWS National Wetland Inventory Map
Figure 5: Soils Map
Figure 6 (Sheets 1-4): Jurisdictional Waters and Wetlands Map

Attachment B: Data Forms

Attachment C: Photo Exhibit

1.0 INTRODUCTION

TRC Solutions, Inc. (TRC) conducted a delineation of jurisdictional waters and wetlands for the proposed Orange Grove Project (the "Project") located in unincorporated San Diego County, California. This Jurisdictional Waters and Wetlands Delineation report was prepared to document the delineation work and the presence and boundaries of identified jurisdictional waters and wetlands regulated by the United States Army Corps of Engineers (Corps) and Regional Water Quality Control Board (RWQCB) pursuant to Section 404 and 401 of the Clean Water Act ("waters of the United States"), and California Department of Fish and Game (CDFG) pursuant to Section 1600 of the California Fish and Game Code ("waters of the State"). The Project consists of construction and operation of the following project facilities:

- 96-megawatt electric generating plant located on an approximately 8.5 acre site (the "Site");
- approximately 0.3-mile underground electric transmission line that will connect the Site to the existing Pala substation;
- approximately 2.4-mile long natural gas pipeline that will connect the Site to an existing regional natural gas transmission line; and
- fresh water pickup station where water trucks will be filled from an existing Rainbow Water District water main. The pick-up station will be constructed in the southern half of an approximately one-acre parcel.

The Project also includes construction and operation of a reclaim water pickup station located at an existing water reclamation plant about 15 miles from the Site in Fallbrook. The reclaim water pickup station is not further addressed in this report because it will be constructed by the Fallbrook Public Utility District (FPUD) within an existing FPUD water reclamation facility and its construction and operation will not impact any watercourse or wetlands and will not require any permits.

1.1 PROJECT LOCATION

The Site location is shown in Figure 1. A Vicinity Map and the location of Project facilities are provided in Figure 2. An aerial photograph is provided in Figure 3. The Power Plant Site is located approximately 2 miles west of the community of Pala, California, approximately 0.1 mile north of the intersection of State Route (SR) 76 and Pala Del Norte Road. The underground electric transmission line will extend from the Site generally southward to the existing substation located on the north side of SR 76 (Figure 3). The proposed gas pipeline will extend from the Site generally southwest to an existing regional gas transmission line located adjacent to Rice Canyon Road. The fresh water pickup station will be located on Rice Canyon road approximately 1.3 (air) miles west of the Site. Each of the Project facilities has been located and designed to minimize impacts to sensitive environmental resources, and most of the pipeline alignment is located within areas characterized as urban developed.

1.2 PROJECT SETTING

The Site is located north of SR 76 in upland terrain on an ancient alluvial fan on the south-facing slope of the mountains that comprise the north side of the San Luis Rey River valley. The San Luis Rey River occurs to the south of the Project and south of SR 76 on the alluvial floor of the valley. Regionally, the area is rural with agriculture, large residential plots, small communities, open space and large-scale commercial/industrial such as a hotel/casino and mining. Outside of developed areas and agriculture, coastal sage scrub and chaparral dominate the upland terrain with oak woodland and non-native grassland also occurring. Riparian forest occurs in association with the San Luis Rey River and its larger tributaries.

The Project is designed so that facilities will be located almost exclusively in areas that are already developed or disturbed in order to minimize disturbance to natural habitat. The Project is designed to avoid disturbance to the San Luis Rey River and associated wetlands and riparian vegetation. A biological resources assessment, including habitat mapping, has been conducted for the Project and is described in a separate report. The vegetation communities described in this report are taken from the biological resources assessment. The following paragraphs provide a description of the setting of various Project components. To facilitate description of the proposed gas pipeline route, the proposed route is characterized in segments. The location of each of the segments is shown in Figures 2 and 3.

The proposed Site occurs on an abandoned orchard that consists of citrus trees that have not been watered or maintained in several years and are no longer viable. The vegetation adjacent to the Site is Diegan coastal sage scrub to the west and north, additional abandoned orchard area to the east, and abandoned orchard and non-native grassland to the south. Coast live oak woodland occurs in a deeply incised drainage approximately 200 feet east of the Site that will not be disturbed. No wetland or riparian vegetation occurs on or adjacent to the Site.

The proposed underground transmission line will be located primarily within the roadbed or shoulder of Pala Del Norte Road and within a paved driveway that provides access to the existing substation from Pala Del Norte Road. Orchard, non-native grassland, and Diegan coastal sage scrub are the only vegetation types that occur on or adjacent to the underground transmission line route. Transmission line construction will temporarily disturb a small amount of Diegan coastal sage scrub. No wetland or riparian vegetation occurs on or adjacent to the underground transmission line route.

Segment A of the gas line begins at the Site boundary and ends at the southeast corner of the Pala substation. For this segment, the pipeline will be co-located with the underground electric transmission line (either vertically stacked or side by side) between the Site and the south end of Pala Del Norte Road. At the south end of Pala Del Norte Road, the transmission line and gas pipeline routes will split. The underground electric transmission line will be installed within the asphalt driveway to the substation as previously described, while the gas pipeline will be routed along an existing unpaved access road that extends beneath the electric transmission lines along the south side of the substation. The unpaved access road extends to an existing unpaved graded pad at the southeast corner of the substation, where this segment terminates. Segment A will be located entirely within developed areas (i.e., roads and road shoulder) except for a short segment

of Diegan coastal sage scrub that will be temporarily disturbed for construction. No wetland or riparian vegetation occurs on or adjacent to pipeline route Segment A.

Segment B begins at the existing unpaved graded pad at the southeast corner of the Pala substation and traverses generally steep upland terrain comprised of Diegan coastal sage scrub, and ends just south of SR 76 approximately 0.4 (air) mile southwest of the Pala substation in a former dairy farm. This segment follows existing unpaved roads throughout the upland terrain, except for the easternmost approximately 400 feet where the route is cross-country. Within the former dairy farm, the route is within terrain characterized as urban/developed. No wetland or riparian vegetation occurs on or adjacent to pipeline route Segment B.

Segment C begins on the south side of SR 76 approximately 0.4 (air) mile southwest of the Pala substation and generally parallels SR 76, following existing roads through the two former dairy farm areas and through a riparian forest that occurs between the dairy farm areas. The west end of Segment C occurs at a second crossing of SR 76, where the pipeline will cross back over to the north side of the road. This segment of the gas pipeline will not disturb any natural habitat, jurisdictional waters or wetlands. Through the riparian forest, the pipeline construction limits of disturbance will be entirely within an existing 12- to 15-foot wide unpaved road. The vertical and horizontal clearances required for construction equipment have been verified by field reconnaissance, and only a few branches will require trimming through this area to facilitate safe and efficient construction. Outside of the riparian forest area, Segment C traverses terrain that is exclusively urban/developed and agriculture with no natural habitat on or adjacent to the pipeline route.

Segment D is an approximately 0.4 mile long segment that will be constructed within urban developed land within or adjacent to the SR 76 right-of-way. Agricultural land and the highway are adjacent to this segment, with no natural habitat in areas to be disturbed. Oak woodland and riparian habitat occur near the west end of this segment, but on the opposite side of Rice Canyon Road and SR 76 from where pipeline construction will occur. Diegan coastal sage scrub occurs near the east end of this segment, but well beyond the planned limits of pipeline construction disturbances.

The fresh water pickup station will be located on disturbed land. Active orchard and agriculture occur adjacent to the pickup station to the south and east, and disturbed land occurs to the north. Rice Canyon Road abuts the fresh water pickup station location to the west.

2.0 METHODS

Prior to conducting field delineation of jurisdictional waters and wetlands, TRC examined maps and databases to identify potential jurisdictional “waters of the U.S.,” “waters of the State” or wetlands as follows:

- aerial photographs of the Project area to determine the potential locations of Corps, RWQCB, and CDFG jurisdictional waters or wetlands (Attachment A, Figure 3);

- United States Geological Survey (USGS) map (Attachment A, Figure 2) to determine the presence of any blueline drainages or other mapped water features;

- United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) to identify areas mapped as wetland features (Attachment A, Figure 4); and

- United States Department of Agriculture (USDA) Natural Resources Conservation Service soil mapping data (Attachment A, Figure 5).

Fieldwork for the delineation was conducted on February 7, 12, and 22 and April 9, 2008 by TRC biologists Dr. Ceri Williams-Dodd and Ms. Leslie Goff. The survey occurred after several recent rainstorms. Rainfall data from a location near Fallbrook approximately six miles west of the Site and at a similar elevation (450 feet) indicates that rainfall events occurred on January 5 and 6 (2.6 inches), January 27 and 28 (2.2 inches), February 3 (1.3 inches) and February 7 (1.3 inches). The delineation involved surveying the locations of the Project facilities and the area within a minimum 250-foot radius around each of the Project facilities (the "Survey Area") to physically identify hydrologic, vegetative, and geomorphic characteristics and to map the extent of drainages, wetlands, or features such as roadside ditches. The presence of mapped USGS blueline drainages/ponds and USFWS NWI features within the Survey Area were also confirmed.

The Survey Area extends beyond the areas proposed for disturbance by the Project facility construction and operations. All areas within the proposed Project disturbance area were accessible to survey. Three areas outside the proposed Project disturbance area were not accessible because access permission was not obtained from private landowners. Therefore, best efforts were made to survey these areas by other means including observation from outside the fence lines and aerial photo analysis. The three areas where access was not permitted are described below:

- Agricultural fields north and south of SR 76 at the westernmost end of the gas pipeline ("Segment D") were not open to access. For this portion of the Survey Area, observations beyond the accessible area were conducted from existing road corridors including SR 76, Rice Canyon Road, and Courser Canyon Road. Due to the flat topography and low growing vegetation on the agriculture land, visibility of this area from accessible locations was good.

- South of the Site, the south side of SR 76 is only open to access up to a fence line surrounding former sand and gravel mine. Direct observations of the area beyond the fence line were limited to the immediate margin of the mine site at some locations due to dense vegetation, so drainage pathways substantially beyond the fence line could not be clearly observed in some areas.

- Portions of lands surrounding the fresh water pickup station were observed from existing roads and from within the fresh water pickup location parcel. Due to the gentle topography and low growing vegetation on the agriculture land, visibility of these areas from accessible locations was good.

The three areas with access limitations are noted in the maps in Figure 6.

Once physical signs were identified representing potential jurisdictional features, further field observations and measurements were conducted at selected locations (data points). Data points were selected to represent typical conditions observed at a particular feature. Multiple data points were taken as needed to capture the diversity of physical characteristics associated with a particular feature, for example within each tributary of a main drainage. The following observations and measurements were taken at each data point as follows:

- "Waters of the U.S." were identified pursuant to criteria outlined in Section 401 and Section 404 of the Clean Water Act, including but not limited to the presence of an Ordinary High Water Mark (OHWM) and connection to a downstream jurisdictional water body. The OHWM was determined by observing signs of flow including but not limited to shelving, drift lines, and disturbed vegetation. Photographs and measurements in feet (') and inches (") were taken of the OHWM at each data point. Drainages that appeared to meet the criteria for "waters of the U.S." were considered potentially jurisdictional as any determination is subject to verification by the regulatory agencies.

- "Waters of the State" were identified pursuant to criteria outlined in Section 1600 of the California Fish and Game Code, including the presence of a defined bed and bank and any associated vegetation. Photographs and measurements in feet (') and inches (") were taken of the banks at each data point. Drainages that appeared to meet the criteria for "waters of the State" were considered potentially jurisdictional as any determination is subject to verification by the regulatory agencies.

- Wetlands were identified by the "three-factor" approach, in which criteria for wetland hydrology, hydrophytic vegetation, and hydric soils must all be met to conclude that an area is a wetland, as described in the 1987 Corps Wetland Delineation Manual and summarized below. Wetlands that appeared to meet the Corps criteria were considered potentially jurisdictional as any determination is subject to verification by the regulatory agencies.

  Vegetation: Plant species were identified in the field and the indicator status of dominant plants was determined using The National List of Plant Species that Occur in Wetlands: Region 0–California (USFWS 1988 and Draft Version from 1996). Plant species were classified as obligate wetland (OBL) with greater than 99% probability of occurring in wetlands; facultative wetland (FACW) with 67% to 99% probability of occurring in wetlands; facultative (FAC) with 33% to 67% probability of occurring in wetlands; facultative upland (FACU) with 1% to 33% probability of occurring in wetlands; or upland (UPL) with less than 1% probability of occurring in wetlands. Positive (+) and negative (-) modifiers subdivide the three facultative categories. The positive sign indicates that the species is more frequently found in wetlands, and a negative sign indicates that the species is less frequently found in wetlands.

  Hydrology: The presence of primary wetland hydrology indicators was determined by observing inundation, saturation, water marks, sediment deposits, drainage patterns,

and/or drift lines. Soil pits were dug to a depth of 14 inches, or until refusal, using a sharpshooter shovel, and allowed to stand undisturbed for at least 10 minutes. Observations were then recorded as to depth of free water in the pit, and depth of saturated soil.

Soil: Soil profiles were examined for color and texture. Soil color was determined using a Munsell Soil Color Chart and hydric soil characteristics were identified (i.e., sulfidic odor, low chroma colors, mottling, etc.).

The results were recorded on Wetland Delineation Forms and each data point was mapped using a Trimble Geo XT Global Positioning System (GPS) receiver and data collector. The GPS unit was operated following manufacturer's recommendations for obtaining sub-meter accuracy. Post-processing of the data was carried out using Pathfinder Office software and electronic Geographic Information Systems (GIS) shape files were created. GIS data was geo-referenced to aerial photography to produce figures mapping the data points.

3.0 RESULTS

3.1 SOILS

Eight dominant soils were identified mapped by USDA within the Survey Area (Attachment A, Figure 5), including Cieneba very rocky coarse sandy loam (CmrG), Las Posas stony fine sandy loam (LrE), Las Posas stony fine sandy loam (LrG), Tujunga sand (TuB), Visalia sandy loam (VaA), Steep gullied land (StG), Riverwash (Rm), and Wyman loam (WmC) (USDA and UC Davis online resources). A summary of the soil map units, drainage class and hydric conditions as reported by USDA and UC Davis are provided in Table 1.

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Table 1: Dominant Soil Map Units within the Survey Area

Map Unit Symbol	Map Unit Name	Drainage Class	Hydric Conditions
CmrG	Cieneba very rocky coarse sandy loam, 30 to 75% slopes	Somewhat excessively drained	Not hydric
LrE	Las Posas stony fine sandy loam, 9 to 30% slopes	Well drained	Not hydric
LrG	Las Posas stony fine sandy loam, 30 to 65% slopes	Well drained	Not hydric
TuB	Tujunga sand, 0 to 5% slopes	Somewhat excessively drained/partially hydric	Partially hydric
VaA	Visalia sandy loam, 0 to 2% slopes	Well drained	Partially hydric
StG	Steep gullied land	N/A	Partially hydric
Rm	Riverwash	Excessively drained	All hydric
WmC	Wyman loam, 5 to 9% slopes	Well drained	Not hydric

3.2 POTENTIAL JURISDICTIONAL WATERS AND WETLANDS

This section describes potential jurisdictional waters and wetlands identified in the Survey Area. The drainages and wetlands are mapped on Attachment A, Figure 6 (Sheets 1-4) and data sheets are provided as Attachment B. A summary of the widths of "waters of the U.S." and "waters of the State" are provided in Table 2, and representative photographs are provided as Attachment C. This section also describes USFWS NWI mapped wetlands and a USGS mapped pond that are potentially jurisdictional for which data was not collected due to limited accessibility.

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Table 2: Summary of Widths of "Waters of the U.S." and "Waters of the State"

Date	Drainage	Tributary or General Location	"Waters of the U.S." (feet/inches)	"Waters of the State" (feet/inches)	Wetland (Y/N)
2/7/2008	1	North of SR 76	2'5"	38'4"	N
2/12/2008	1	South of SR 76	2'0"	7'0"	N
2/7/2008	1	Tributary 1.1	2'2"	13'5"	N
2/7/2008	1	Tributary 1.2	1'9"	2'8"	N
2/7/2008	1	Tributary 1.3	2'6"	19'5"	N
2/12/2008	2	North of SR 76	1'8"	59'0"	N
2/12/2008	3	Tributary 3.1	3'8"	12'3"	N
2/12/2008	3	Tributary 3.2	3'7"	16'10"	N
2/12/2008	4	Upstream	1'8"	13'5"	N
2/12/2008	4	Downstream	1'8"	13'6"	N
2/12/2008	5	Adjacent to SR 76	4'0"	11'5"	N
2/12/2008	6	Adjacent to SR 76	3'8"	13'11"	N
4/9/2008	6	Tributary 6.1	2' 8"	16'	N
2/12/2008	San Luis Rey	Riparian Area	*	*	N
2/12/2008	San Luis Rey	Wetland Area	+	+	Y

***** This area totals 0.4 acres. No OHWM or wetland indicators were observed and surface hydrology connection to the San Luis Rey River has been cut off by an existing dirt access road. This area was not considered potential jurisdictional "waters of the U.S." However, this area appears to have been associated with the San Luis Rey River banks in the past and still supports riparian vegetation and was therefore considered potential jurisdictional "waters of the State."

+ No measurements were taken due to inaccessible conditions.

DRAINAGE 1

This unnamed ephemeral drainage with three tributaries traverses areas mapped as Diegan Coastal Sage Scrub (Holland Classification 32500) and Non-native Grassland (Holland Classification 42200) and appears to receive runoff from a roadside ditch further north on Pala Del Norte Road (Attachment A, Figure 6, Sheet 2). The natural headwater of the drainage was likely altered during construction of the road. Drainage 1 is not mapped as a blueline drainage on the USGS map. This drainage has a defined bed and bank and OHWM in the upper reaches. The bed and bank and OHWM become less defined in the lower reaches due to past alterations from orchard operations and SR 76. The drainage flows just west of the Site boundary heading southwest, and then turns heading southeast until it crosses under SR 76 via a culvert after which it flows adjacent to SR 76 within a sparsely vegetated ditch heading southwest. The ditch becomes less defined until no physical signs of channelized flow are evident. At this point a few stands of mulefat (*Baccharis salicifolia*) were observed. The ground slope in this area is toward the former mine site on the south side of SR 76. Observation beyond the mine site fence line is limited in the area of this drainage due to access restrictions and dense vegetation. The pathway for this drainage within the mine site could not be ascertained with certainty, but based on review of aerial photographs water in this drainage likely either flows to the San Luis Rey River when enough flow is present or to the former mine pit ponds which are considered jurisdictional

"waters of the U.S." and "waters of the State" based on connection to the San Luis Rey River. Therefore this drainage is considered potential jurisdictional "waters of the U.S." and "waters of the State." The portion of this drainage north of SR 76 is mapped on the USDA web soil survey map (Attachment A, Figure 5) as predominantly StG and classified as partially hydric. A small portion of the drainage just north of SR 76 is mapped as LrE and classified as well drained and not hydric. On the south side of SR 76 the drainage is mapped as TuB and classified as somewhat excessively drained and partially hydric. Two data points were collected along Drainage 1 (Attachment A, Figure 6, Sheet 2) as follows:

Data Point north of SR 76: This data point was taken upstream of a dirt road crossing that provides access to an existing SDG&E storage facility from Pala Del Norte Road. The area is mapped as non-native grassland. The dominant species was recorded as wild mustard (*Brassica nigra/hirschfeldia*) (non-native, no wetland indicator status), in addition to a few native species including phacelia (*Phacelia* sp.) (native, UPL or not wetland indicator status[1]), popcorn flower (*Plagiobothrys* sp., likely *P. trachycarpus*) (native, FACW) and common fiddleneck (A*msinckia menziesii* (native, no wetland indicator status). The channel is clearly defined with the width measured as 2 feet 5 inches. Drift lines and sediment deposits were noted, but no hydric soils or hydrophytic vegetation was found in the channel. Based on these observations, the drainage was not characterized as a wetland. The banks of the drainage at this location, measured as 38 feet 4 inches in width, appear to have been altered during construction of Pala Del Norte Road to the west and a disturbed area to the east.

Data Point south of SR 76: This data point was taken just south of the culvert under SR 76. Dominant species were noted as storksbill filaree (*Erodium cicutarium*) (non-native, no wetland indicator status) in the herb stratum and California buckwheat (*Eriogonum fasciculatum*) (native, no wetland indicator status) in the shrub stratum. Sediment deposits were observed, but no hydric soils or hydrophytic vegetation were found at the data point. Based on these observations, the drainage was not characterized as a wetland. The width of "waters of the U.S." was measured as 2 feet and "waters of the State" as 7 feet.

Three unnamed tributaries to Drainage 1 were identified (tributaries 1.1, 1.2 and 1.3). Each of these tributaries was characterized as ephemeral and is located within an area mapped as Diegan Coastal Sage Scrub. These tributaries are considered jurisdictional due to their ultimate connection to the San Luis Rey River (see above). Data points were taken within each tributary (Attachment A, Figure 6, Sheet 2) as follows:

Data Point within tributary 1.1: Dominant vegetation consisted of wild mustard, storksbill filaree, common fiddleneck and scarlet pimpernel (*Anagallis arvensis*) (non-native, FAC) within coastal sage scrub habitat. Free water was noted in a pit at 6 inches deep and soil saturation was noted within 1.5 inches of the surface, but no hydric soils or hydrophytic

[1] The plant was not flowering and could not be identified to species. However, from the *Phacelia* sp. listed on the National List of Plant Species that Occur in Wetlands for California, only one occurs in San Diego County, *Phacelia visida*. This species has a UPL wetland indicator status. The *Phacelia* sp. observed is therefore determined to have either no wetland status indicator or a UPL indicator and therefore is not hydrophytic.

vegetation were found at this data point. Based on these observations, the drainage was not characterized as a wetland. The width of "waters of the U.S." was measured at 2 feet 2 inches and "waters of the State" as 13 feet 5 inches. This tributary flows through a culvert beneath Pala Del Norte Road upstream of the confluence with Drainage 1.

Data Point within tributary 1.2: Dominant vegetation consisted of non-hydrophytic vegetation including storksbill filaree and thistle (*Cirsium* sp., likely *C. vulgare*) (native, no wetland indicator status) within coastal sage scrub habitat. Surface inundation, sediment deposits, and saturated soils in the upper 12 inches (at 0 inches) were observed, but no hydric soils or hydrophytic vegetation were found at this data point. Based on these observations, the drainage was not characterized as a wetland. The width of "waters of the U.S." was measured at 1 foot 9 inches and "waters of the State" as 2 feet 8 inches. This tributary flows through a culvert beneath Pala Del Norte Road upstream of the confluence with Drainage 1.

Data Point within tributary 1.3: Dominant vegetation consisted of non-hydrophytic vegetation including wild mustard and storksbill filaree within coastal sage scrub habitat. Saturated conditions were observed in the upper 12 inches of soil (within 2 inches), but no hydric soils or hydrophytic vegetation were found at this data point. Based on these observations, the drainage was not characterized as a wetland. The width of "waters of the U.S." was measured at 2 feet 6 inches and "waters of the State" as 19 feet 5 inches. This tributary flows through a culvert beneath Pala Del Norte Road upstream of the confluence with Drainage 1. An additional topographic low point was also investigated approximately parallel to tributary 1.1 to the southwest. This low point was determined to lack signs of hydrology or a defined bed and bank, and therefore was not considered a jurisdictional water or wetland.

DRAINAGE 2

This unnamed ephemeral drainage is mapped as Open Coast Live Oak Woodland (Holland Classification 71161) and originates from natural headwaters to the northwest (Attachment A, Figure 6, Sheet 2). Drainage 2 is mapped as a blueline drainage on the USGS map (Attachment A, Figure 2). This drainage has a defined bed and bank and OHWM in the upstream portion which becomes less defined adjacent to SR 76 due to past anthropogenic alterations. This drainage occurs about 200 feet to the east of the Site and flows southeast and crosses under SR 76 via a culvert. A coast live oak (*Quercus agrifolia*) tree is associated with the drainage where it enters the culvert under SR 76. Based on observations from SR 76, the drainage appears to connect to the former mine pits to the southeast which are considered jurisdictional "waters of the U.S." and "waters of the State" as previously described. Therefore this drainage is considered potential jurisdictional "waters of the U.S." and "waters of the State" based on its direct connection to the jurisdictional former mine pits. The portion of this drainage north of SR 76 is mapped on the USDA web soil survey map (Attachment A, Figure 5) as LrE and classified as well drained. On the south side of SR 76 the drainage is mapped as TuB and classified as somewhat excessively drained. One data point was collected along Drainage 2 (Attachment A, Figure 6, Sheet 2) as follows:

Data Point north of SR 76: The dominant species were coast live oak (native, no wetland indicator status), black sage (*Salvia mellifera*) (native, no wetland indicator status), pincushion (*Chaenactis* sp.) (native, no wetland indicator status) and wild cucumber (*Marah macrocarpus*) (native, no wetland indicator status). Drift lines and sediment deposits were observed, but no hydric soils or hydrophytic vegetation. Based on these observations, the drainage was not characterized as a wetland. The width of "waters of the U.S." was measured at 1 foot 8 inches and "waters of the State" as 59 feet.

DRAINAGE 3

This unnamed ephemeral drainage with two tributaries is mapped as Diegan Coastal Sage Scrub (Holland classification 32500) and originates from natural headwaters to the northwest (Attachment A, Figure 6, Sheet 2). Drainage 3 is not mapped as a blueline drainage on the USGS map. This drainage has a defined bed and bank and OHWM in the upstream portion which becomes less defined adjacent to SR 76 due to past anthropogenic alterations. The drainage flows south of the existing Pala substation heading southeast and crosses under SR 76 via a culvert. A dirt/rock berm exists immediately upstream of the culvert that appears to be a man-made feature functioning as a flow dissipater. After crossing under SR 76 the drainage flows into the former mine site. Observation beyond the mine site fence line is limited in the area of this drainage due to access restrictions and dense vegetation. The pathway for this drainage within the mine site could not be ascertained with certainty, but based on review of aerial photographs water in this drainage likely flows to the San Luis Rey River when enough flow is present or to the former mine pit ponds which are considered jurisdictional "waters of the U.S." and "waters of the State" as previously described. Therefore this drainage is considered potential jurisdictional "waters of the U.S." and "waters of the State." The drainage is mapped on the USDA web soil survey map (Attachment A, Figure 5) as LrE and LrG. Both soil types are classified as well drained and not hydric. Two data points were collected along Drainage 3 (Attachment A, Figure 6, Sheet 2) as follows:

Data Point within tributary 3.1: The dominant vegetation was California sagebrush (A*rtemisia californica*) and *Phacelia* sp. Shelving was noted at this area, but this was not clearly defined and no hydric soils or hydrophytic vegetation were observed at this data point. Based on these observations, the drainage was not characterized as a wetland. The width of "waters of the U.S." was measured at 3 feet 8 inches and "waters of the State" as 12 feet 3 inches. This data point is representative of the downstream channel.

Data Point within tributary 3.2: This site was dominated by non-hydrophytic vegetation including California sagebrush (native, no wetland indicator status) and *Phacelia* sp. Shelving was noted at this area, but this was not clearly defined and no hydric soils or hydrophytic vegetation were observed at this data point. Based on these observations, the drainage was not characterized as a wetland. The width of "waters of the U.S." was measured at 3 feet 7 inches and "waters of the State" as 16 feet 10 inches.

DRAINAGE 4

This unnamed ephemeral drainage is mapped as Diegan Coastal Sage Scrub (Holland classification 32500) and originates from natural headwaters to the northwest (Attachment A, Figure 6, Sheet 2). Drainage 4 is not mapped as a blueline drainage on the USGS map. This

drainage has a defined bed and bank and OHWM which becomes less defined in the vicinity of an existing unpaved road that it crosses near the upstream boundary of the Survey Area (Attachment A, Figure 6, Sheet 2), and again near the downstream end of the Survey Area near a second unpaved road crossing and SR 76. The drainage flows approximately east. As the drainage reaches the unpaved road near the upstream end of the Survey Area, it appears that flows pool before crossing the road via sheet flow either to the defined channel on the other side of the road or down the road heading south. Flow within the defined channel heads in an approximately east direction as it flows toward SR 76. This drainage crosses under a second dirt access road just upstream of SR 76 via a culvert and then surfaces for a short distance before crossing under SR 76 via another culvert. Based on observations from SR 76, the drainage appears to connect to either the former mine pits to the east which are considered jurisdictional "waters of the U.S." and "waters of the State" as previously described, or directly to the San Luis Rey River. Therefore this drainage is considered potential jurisdictional "waters of the U.S." and "waters of the State." The drainage is mapped on the USDA web soil survey map (Attachment A, Figure 5) as CmrG and classified as somewhat excessively drained and not hydric, with the upper reaches mapped as LrG and classified as well drained and not hydric. Two data points were collected along Drainage 4 (Attachment A, Figure 6, Sheet 2) as follows:

Data Point upstream: This data point was taken upstream of an uppaved road within a representative channelized reach of the drainage (Attachment A, Figure 6, Sheet 2). This area was dominated by non-hydrophytic vegetation including pincushion and wishbone bush (*Mirabilis californica*) (native, no wetland indicator status). Shelving was noted at this location, but no hydric soils or hydrophytic vegetation was found at this data point. Based on these observations, the drainage was not characterized as a wetland. The width of "waters of the U.S." was measured at 1 foot 8 inches and "waters of the State" as 13 feet 5 inches.

Data Point downstream*:* This data point was taken in a disturbed portion of the drainage just upstream of the unpaved road near SR 76 (a more representative upstream reach was not accessible due to steep topography and dense vegetation). The dominant vegetation was pincushion. Some debris collection was noted around the culvert, but no hydric soils or hydrophytic vegetation was present at this data point. Based on these observations, the drainage was not characterized as a wetland. The width of "waters of the U.S." was measured at 1 foot 8 inches and "waters of the State" as 13 feet 6 inches.

DRAINAGE 5

This ephemeral drainage ditch is mapped as Agriculture (Holland classification 18000) and appears to have been artificially channelized (Attachment A, Figure 6, Sheet 3). Based on a 1947 USGS 15-minute series topographic map (Temecula Quadrangle), this drainage previously connected to a USGS mapped blueline drainage that now terminates at a stock pond approximately 3,000 feet north of the Survey Area (Attachment A, Figure 2) and may still have a connection through an outlet and/or pond overspills. The ditch flows south, crosses SR 76 via a culvert, and follows adjacent to Couser Canyon Road before connecting to the San Luis Rey River. Based on the source and connection to the San Luis Rey River, this ditch is considered potential jurisdictional "waters of the U.S." and "waters of the State." No wetland delineation data points were taken at this drainage since permission for access was not granted by the landowner to the surrounding private property. However, channel measurements were taken

adjacent to SR 76. The ditch has a defined bed and bank and OHWM measurements were taken on the downstream side of SR 76. The width of "waters of the U.S." was measured at 4 feet and "waters of the State" as 11 feet 5 inches. The ditch was mostly unvegetated with only scattered weedy species and riprap on the channel bed (upstream of SR 76) and banks (upstream and downstream of SR 76). A debris grid exists within a fence just upstream of SR 76. The drainage is mapped on the USDA web soil survey map (Attachment A, Figure 5) as VaA and classified as well drained and partially hydric.

Drainage 5 was subsequently observed following the plant blooming period. Vegetation within and adjacent to the channel upstream of SR 76 between the fence and the road had recently been cut and was therefore sparse. However, based on a few remaining plants and the uncleared area north of the fence, the vegetation consists of grasses including barley (*Hordeum murinum*) (non-native, no wetland indicator status), bromes (*Bromus madritensis* and *Bromus diandrus*) (non-native, no wetland indicator status), and wild mustard. The channel downstream of SR 76 did not appear to have been recently cleared, but vegetation was sparse and consisted of the same species as observed upstream. The species observed lack a wetland indicator status and are not considered hydrophytic vegetation. Based on the absence of hydrophytic vegetation, the drainage is not considered likely to be a Corps jurisdictional wetland.

DRAINAGE 6 (RICE CANYON CREEK)

This ephemeral drainage is mapped as Agriculture (Holland classification 18000) north of SR 76 and Southern Cottonwood Willow Riparian Forest (Holland classification 61330) south of SR 76 (Attachment A, Figure 6, Sheet 3). The drainage is a USGS blueline drainage (Attachment A, Figure 2) known as Rice Canyon Creek and flows adjacent to Rice Canyon Road, crosses under SR 76 via a culvert, and connects to the San Luis Rey River. No wetland delineation data points were taken at this drainage since permission for access was not granted by the landowner to the surrounding private property. However, channel measurements were taken. The ditch has a defined bed and bank and OHWM measurements were taken from SR 76 at the downstream side. The width of "waters of the U.S." was measured at 3 feet 8 inches and "waters of the State" as 13 feet 11 inches. The ditch was mostly vegetated with grasses north of SR 76. The drainage is mapped on the USDA web soil survey map (Attachment A, Figure 5) as VaA and classified as well drained and partially hydric.

Drainage 6 was subsequently observed following the plant blooming period. Vegetation within and adjacent to the channel upstream of SR 76 had recently been cut. However, based on the remaining and regenerating plants, the vegetation consists of grasses including barley and ripgut brome (*Bromus diandrus*), in addition to wild mustard. The channel downstream of SR 76 did not appear to have been recently cleared, but vegetation was sparse and included one saltcedar (*Tamarix ramosissima*) (non-native, FAC). Just outside the Survey Area the channel becomes vegetated with riparian forest species. The species observed upstream lack a wetland indicator status and are not considered hydrophytic vegetation. Based on the absence of hydrophytic vegetation, the drainage is not considered to be a Corps jurisdictional wetland north of SR 76. Although one plant with a wetland indicator status was observed downstream, based on the lack of vegetation and similarity with the immediate upstream area, the portion of the drainage

between SR 76 and the drip line of the riparian forest is not considered likely to be a Corps jurisdictional wetland.

An unnamed ephemeral tributary to Drainage 6/Rice Canyon Creek (Tributary 6.1) was observed just north of the proposed fresh water pickup station traversing in a northwest to southeast direction (Attachment A, Figure 6, Sheet 4). The drainage marginally traverses the northeast corner of the fresh water pickup station parcel, outside of the area planned for Project construction. The drainage flows through an area mapped as Disturbed (Holland classification 11300) with a few remnant oak trees and coastal sage scrub species, before crossing under Rice Canyon Road via a culvert and flowing through an area with three coast live oak trees along the banks that is also mapped as Disturbed. The tributary then flows across Agriculture (Holland classification 18000) before joining Open Coast Live Oak Woodland (Holland classification 71161) associated with Rice Canyon Creek. The drainage has a modified bed and bank with signs of an OHWM in the upstream reach that become less defined downstream due to established anthropogenic activities. This tributary is considered jurisdictional "waters of the U.S." and "waters of the State." The drainage is mapped on the USDA web soil survey map (Attachment A, Figure 5) as WmC and classified as well drained and not hydric. One data point was collected in the upstream portion of Tributary 6.1 within the Survey Area (Attachment A, Figure 6, Sheet 4) as follows:

> ***Data Point within Tributary 6.1***: This data point was taken upstream of a small stand of dense, inaccessible oaks and one Mexican elderberry (*Sambucus mexicana*) (native, FAC) located adjacent to Rice Canyon Road. The vegetation at the data point is characteristic of the disturbed habitat observed in the drainage within the Survey Area and includesg wild mustard, *Phacelia* sp., and bromes, none of which have a wetland indicator status. Shelving, drift lines, and sediment deposits were noted at this location, but no hydric soils or hydrophytic vegetation were found at this data point. Based on these observations, the drainage was not characterized as a wetland. The width of "waters of the U.S." was measured at 2 foot 8 inches and "waters of the State" as 16 feet.

SAN LUIS REY RIVER AND ASSOCIATED WETLANDS

The San Luis Rey River generally parallels the Survey Area and lies to the south and southeast of the Survey Area. The map symbol used by USGS corresponds with an intermittent river (Attachment A, Figure 2). The USFWS NWI has a number of mapped wetland features along the San Luis Rey River, but mostly outside of the Survey Area. The NWI map shows a freshwater emergent wetland associated with the San Luis Rey River extending into the Survey Area to within approximately 100 feet south of the pipeline route along Segment C between the two dairy farm areas (Attachment A, Figure 4). The delineation work included observations throughout accessible portions of this area and collection of two data points from the vicinity. One data point is located approximately 100 feet north of the NWI-mapped wetland in an area that appears to be wetland based on vegetation and proximity to the NWI-mapped wetland. The second data point was taken in a riparian area approximately 150 feet north of the NWI-mapped wetland on the opposite side of the unpaved road that the proposed gas pipeline route follows between the two dairy farm areas. These data points are described below.

Data Point in riparian area: Based on the presence of riparian vegetation, proximity, and topographic setting, this riparian area appears to have been part of the San Luis Rey River bank, but is now separated from the river channel by a prism of fill that the unpaved road between the two former dairy farm areas is constructed on (Attachment A, Figure 6, Sheet 3). Dominant vegetation consists of California sycamore (*Platanus racemosa*) (native, FACW), Fremont's cottonwood (*Populus fremontii*) (native, FACW) and phacelia (*Phacelia* sp.) (native, UPL or no wetland indicator status[1]). Since an estimated 67 percent of the species observed have a wetland indicator status above FAC-, the vegetation is considered hydrophytic. However, no wetland hydrology, hydric soils, or OHWM were noted. Therefore, this area is not considered a jurisdictional wetland or "waters of the U.S." Because this area appears to have at one time been associated with the San Luis Rey River bank and still supports riparian vegetation in proximity to the river, it is considered potential jurisdictional "waters of the State." This area totals 0.4 acre.

Data Point in wetland area: This area was identified as a potential wetland area based on the presence of known wetland plants and an adjacent NWI-mapped wetland. Several locations within this area were observed from the road, but the steep slope of the road fill, dense vegetation, soft soils, and/or standing water resulted in limited access for data collection. One data point was collected at an accessible location. The dominant vegetation consisted of mulefat (*Baccharis salicifolia*) (native, FACW), broad-leafed cattail (*Typha latifolia*) (native, OBL) and sandbar willow (S*alix exigua*) (native, FACW). Since 100 percent of the species observed had a wetland indicator status above FAC-, the vegetation is considered hydrophytic. The area also displayed several wetland hydrology indicators including inundation, saturation in the upper 12 inches (at 0 inches), water marks, sediment deposits, and drift lines, in addition to gleyed hydric soils. This area is therefore considered a jurisdictional wetland. The exact boundary of the wetland could not be determined due to limited access, but based on field observations and the data point collected the wetland area was conservatively mapped to encompass the entire area identified by NWI mapping plus the entire area to the southeast edge of the road fill prism (Attachment A, Figure 6, Sheet 3). This entire area should be considered potential jurisdictional wetland unless additional evaluations show otherwise. The Project currently does not plan to disturb this feature, so no further delineation is needed for the Project as proposed.

NWI-MAPPED "OTHER WETLANDS"

The NWI mapping identifies three areas of "Other Wetland" within the Survey Area along SR 76 adjacent to pipeline Segment D (Attachment A, Figure 6, Sheet 3). These three areas are identified by the NWI as Palustrine wetlands. Landowner permission was not granted to survey these areas. Therefore, observations were made from SR 76, Couser Canyon Road, and Rice Canyon Road. The two areas north of SR 76 are mapped as Agriculture (Holland classification 18000) and were observed as being actively maintained agricultural fields currently utilized for grazing. There were no visible signs of wetland hydrology or vegetation from the roads. Based on the absence of these indicators, the two NWI-mapped wetlands north of SR 76 are not considered likely to be Corps jurisdictional wetlands. The area south of SR 76 is also mapped as Agriculture and appears to be an actively maintained field, but fallowed at the time of field studies. Vegetation observed in this area during the plant blooming period included non-native

grasses (e.g., barley and bromes) with no wetland indicator status. Based on the lack of hydrophytic vegetation, the NWI-mapped wetland south of SR 76 is not considered likely to be a Corps jurisdictional wetland.

In addition, a culvert was observed draining both road runoff from SR 76 and flows from the agriculture land north of SR 76. The culvert extends from the road into the mapped NWI area south of the road. A berm exists adjacent to the San Luis Rey River at the south end of this field However, a break in the berm and a shallow swale from the culvert to this break suggest flows from the culvert can drain into the river when enough flow is present. Sediment deposits and channel morphology characteristics observed in the small swale suggest low volume flows. No swale or signs of hydrology were observed upstream of SR 76. Therefore, the culvert appears to drain diffuse run-off flows from the agriculture land. As described above, no wetland or riparian vegetation was observed in this area. The flow capture area of the swale appears to be limited to the agriculture area immediately upstream of SR 76 and road runoff and is therefore man-made. There is no blueline mapped by USGS in this area. Since the swale carries low volume and infrequent or short duration flows from a limited upland capture area, the Corps is not likely to assert jurisdiction over this feature as "waters of the U.S." under the new Rapanos guidelines. The swale is also not considered jurisdictional "waters of the State" based on the lack of a defined bed and bank. However, this determination would require verification from the agencies. In addition, the Project currently does not plan to disturb this feature. So, further delineation is not needed for the Project as proposed.

USGS MAPPED PONDS

The USGS map (Attachment A, Figure 2) shows two small ponds just south of the Survey Area near the west end of pipeline route Segment C. The more eastern of the two ponds has a generally linear configuration while the more western of the ponds is U-shaped. These pond locations were observed to confirm their existence and to delineate their extent within the Survey Area. The delineation maps (Attachment A, Figure 6, Sheet 3) provide more detail than the USGS map and show that the top of the banks of these ponds actually extend marginally inside of the Survey Area. Both ponds appear to be man-made and may be associated with the former dairy farm operation. Both ponds appear to support wetland vegetation such as broad-leafed cattail and mulefat. No signs of wetland hydrology were observed in the eastern pond, but open water exists in the western pond. The eastern pond directly abuts the berm parallel to the San Luis Rey River, while the western pond appears to connect to the San Luis Rey River based on aerials and the USGS map (this was not field-confirmed). Although these areas appear to be former dairy farm stock ponds, they could potentially be jurisdictional features. These features should be considered potentially jurisdictional unless additional evaluations show otherwise. However, since these features only marginally occur within the Survey Area and are well outside of any areas that would be disturbed by Project construction, no further delineation is needed for the Project as proposed.

3.3 NON-JURISDICTIONAL FEATURES

This section describes a roadside ditch and three areas with scattered mulefat that were determined to be non-jurisdictional. These features are mapped on Attachment A, Figure 6, Sheet 3. Photographs of these areas are included in Attachment C.

ROADSIDE DITCH

A roadside ditch exists along the south side of SR 76 between the east and west former dairy farm areas. The ditch originates from a culvert that appears to capture road runoff. Associated with the ditch are several sycamores, a Fremont's cottonwood, and a coast live oak. The ditch is vegetated with tall non-native grasses. No wetland hydrology, OHWM, or connection to the San Luis Rey River was observed. The ditch is not considered jurisdictional "waters of the U.S." or "waters of the State."

TOPOGRAPHIC FEATURE

A topographic feature exists on the north side of SR 76 that originates in an upland area vegetated with coastal sage scrub and terminates once the gradient approaches road level. The feature resembles a swale with no signs of hydrology, OHWM, or defined bed and bank. A stand of large coast live oaks exists directly adjacent to SR 76 in line with the topographic feature, but no connection could be determined between the feature and oaks. An overgrown culvert with no signs of flows is located near the oak stand north of SR 76 and goes under the road. The culvert is believed to emerge on the south side of SR 76 within the roadside ditch described above, but the location of this opening could not be confirmed. Based on the lack of hydrology indicators, defined bed and bank, and connection to a jurisdictional drainage, this isolated topographic feature is not considered a jurisdictional "waters of the U.S." or "waters of the State."

SCATTERED MULEFAT AREAS

Three low lying areas (A.1, A.2 and A.3) with scattered stands of mulefat were observed during the field surveys in an area mapped as Disturbed (Holland classification 11300) within the west former dairy farm (Attachment A, Figure 6, Sheet 3). Although mulefat has a wetland indicator status, this area is dominated by non-native vegetation with no wetland indicator status such as Russian thistle (*Salsola kali*) and tree tobacco (*Nicotiana glauca*). In addition, no signs of wetland hydrology or OHWM were observed and the areas are separated from the San Luis Rey River by open land to the south followed by a tall berm. Based on these observations, the three areas are not considered jurisdictional wetland, "waters of the U.S.," or "waters of the State."

4.0 POTENTIAL PROJECT IMPACTS TO JURISDICTIONAL FEATURES

Based on the Project facility locations and delineation maps shown in Attachment A, Figure 6, the Project will impact potential jurisdictional "waters of the U.S." and potential jurisdictional "waters of the State" in the following drainages and tributaries identified in this delineation: Drainage 1 and Tributaries 1.1 and 1.2; Drainage 3; Drainage 4; and Drainage 5. Regulatory permits from the Corps, RWQCB and CDFG would be required to authorize impacts to these jurisdictional waters pending their verification of the jurisdictional delineation. None of the impacts in these drainages would affect wetlands.

The following features identified in this delineation report are outside the proposed Project construction footprint and will not be impacted: Tributary 1.3; Drainage 2; Tributaries 3.1 and 3.2; Drainage 6 and Tributary 6.1; San Luis Rey River; jurisdictional wetland area associated

with the San Luis Rey River; agricultural fields mapped in the NWI as "Other Wetlands" (i.e., Palustrine wetland locations); USGS-mapped ponds; riparian area, and the roadside ditch.

5.0 REFERENCES

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Attachment A: Figure 1 to Figure 6

G:\Orange_Grove-125158\MXD\Vicinity Map.mxd

Figure 1

Vicinity Map
Orange Grove Project
San Diego County, CA

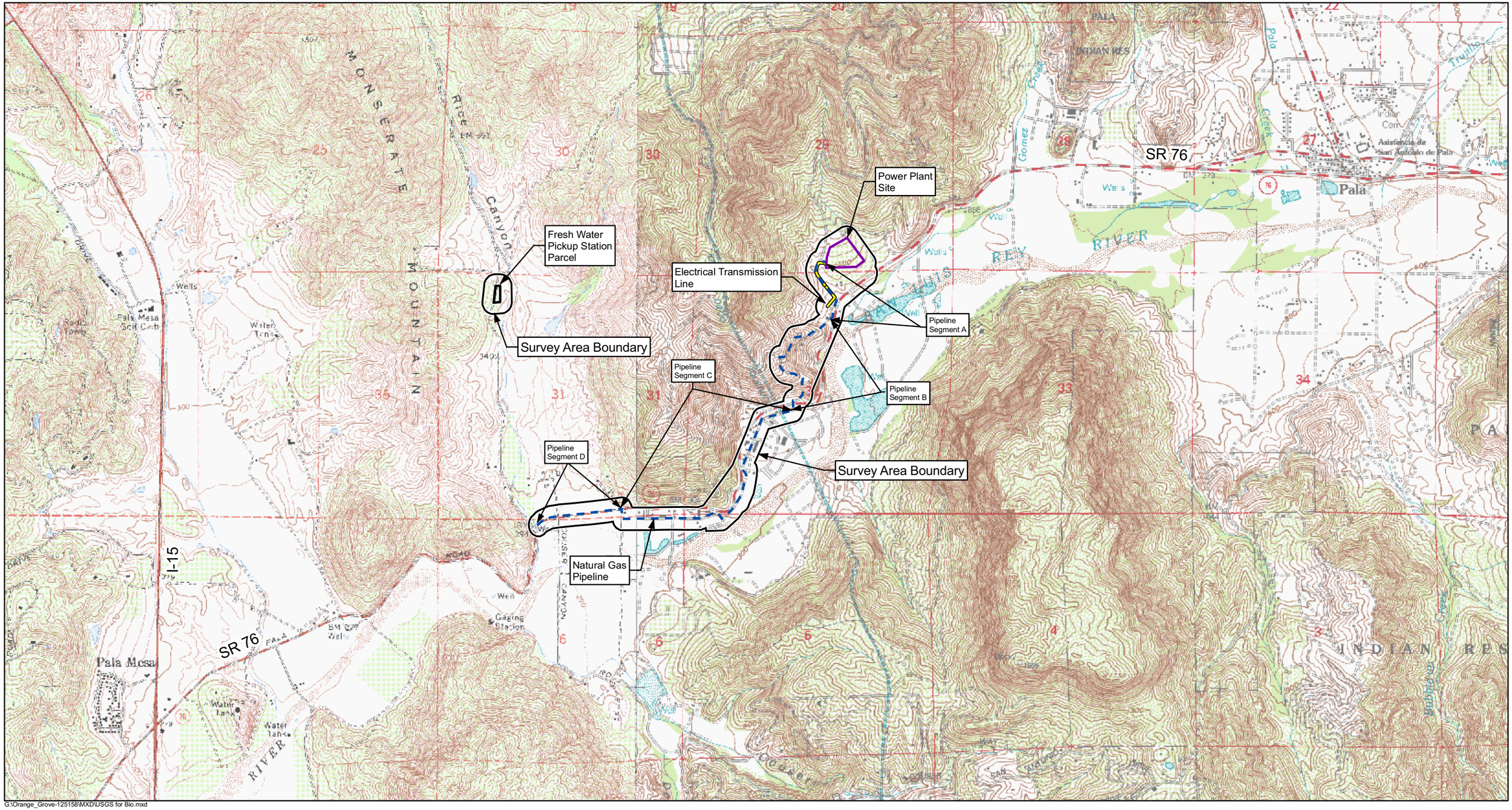
N
W E
S

1" = 15 Miles

15 7.5 0 15 30
Miles

Source:
Data obtained from ESRI Generic Base
Data included with ArcMap 9.2

TRC



G:\Orange_Grove-125158\MXD\USGS for Bio.mxd

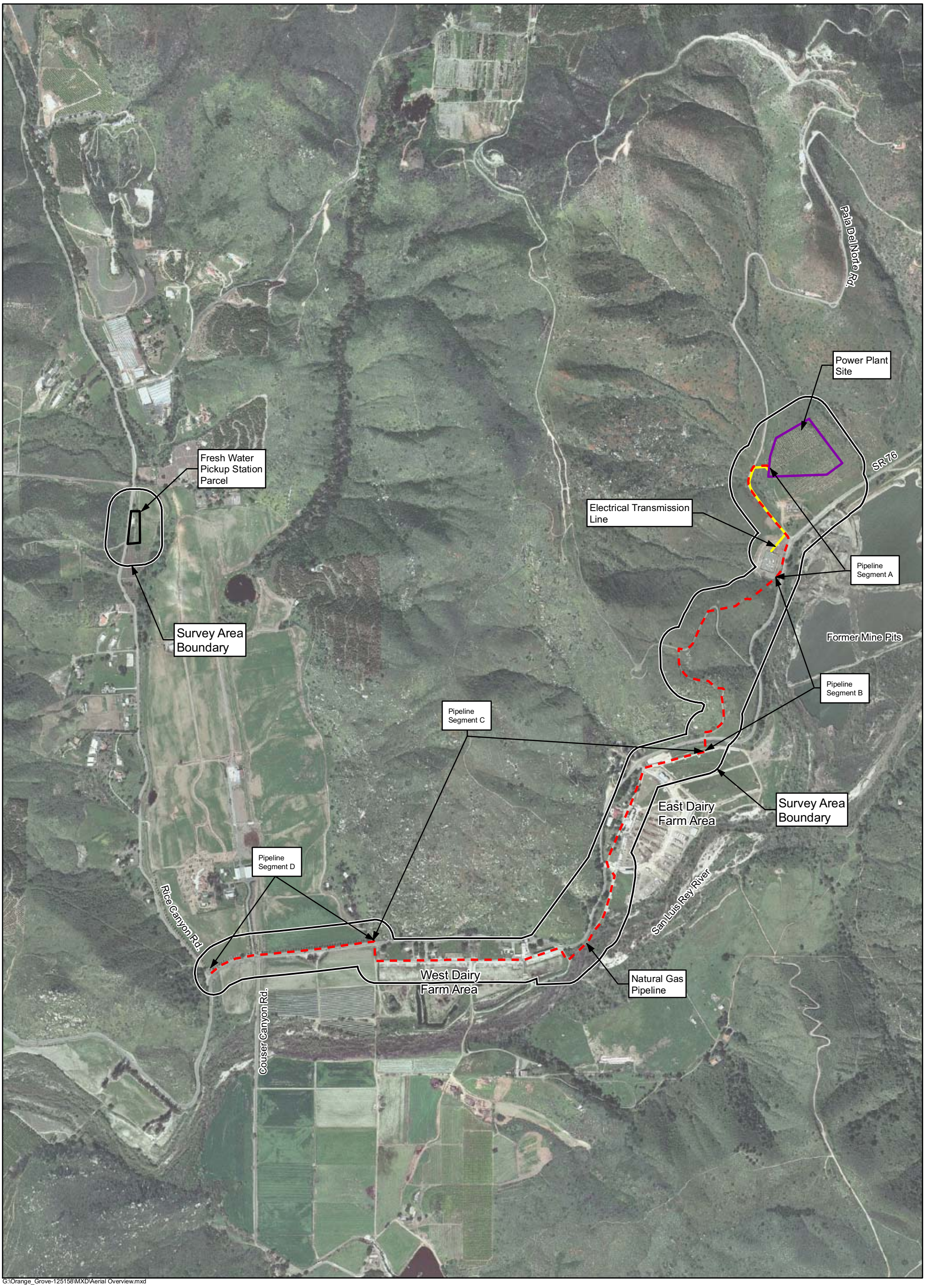
Figure 2
Vicinity Map
Orange Grove Project
San Diego County, CA

1" = 2,000'

2,000 1,000 0 2,000 4,000 6,000 Feet

Source:
USGS Topographical Quardrangles:
Pala, Bonsall

TRC



G:\Orange_Grove-125158\MXD\Aerial Overview.mxd

Figure 3

Aerial Overview
Orange Grove Project
San Diego County, CA

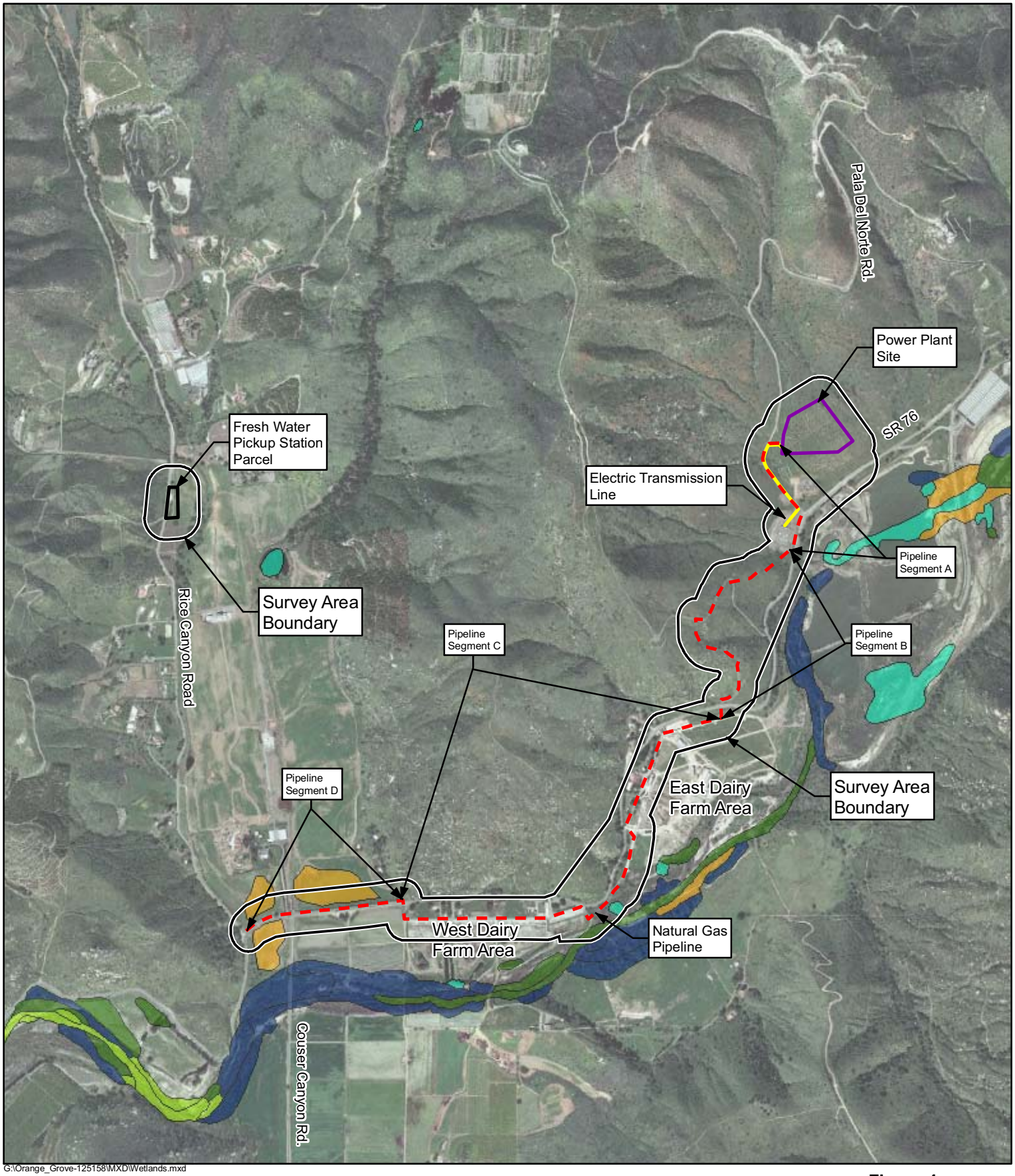
N
W E
S

1" = 1,000'

1,000 500 0 1,000 2,000 3,000
Feet

Source:
USGS Topographical Quardrangles: Pala, Bonsall
Aerial Photographs from ESRI_Imagery_World_2D

TRC



G:\Orange_Grove-125158\MXD\Wetlands.mxd

Figure 4

National Wetland Inventory map
Orange Grove Project
San Diego County, CA

Freshwater Emergent Wetland
Freshwater Forested/Shrub Wetland
Freshwater Pond
Riverine Wetland
Other Wetland

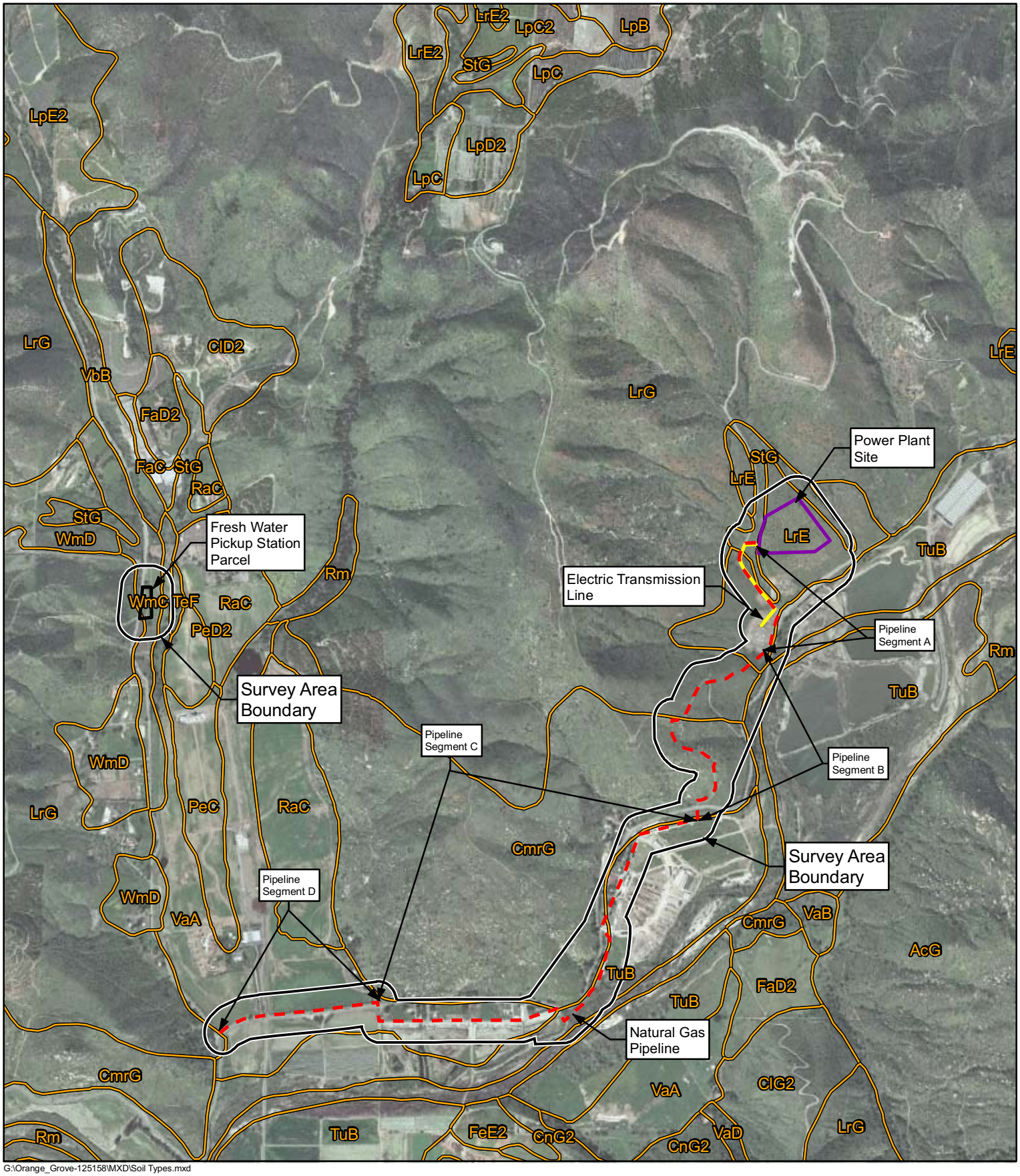
N
W E
S

1" = 1,500'

1,000 500 0 1,000 2,000 3,000 Feet

Source:
Aerial Photography from ESRI_Imagery_World_2D
Wetlands data from National Wetlands Inventory (http://www.fws.gov.nwi/)
USGS Topographical Quadrangles: Pala, Bonsall

TRC



G:\Orange_Grove-125158\MXD\Soil Types.mxd

Figure 5

Soils Map

Orange Grove Project

San Diego County, CA

N
W E
S

1" = 1,500'

1,000 500 0 1,000 2,000 3,000 Feet

Source:
Aerial Photography from ESRI_Imagery_World_2D
Soils data from http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

TRC

SHEET 4

SHEET 2

SHEET 3

Pala Del Norte Rd.

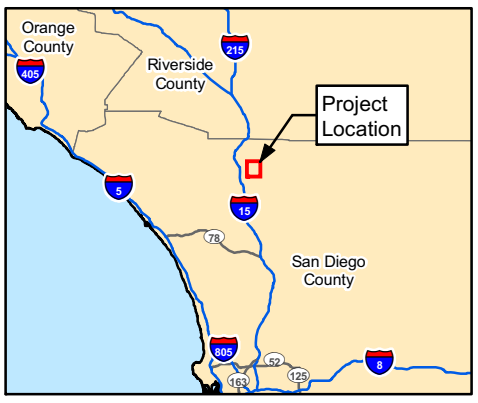
SR 76

San Luis Rey River

Rice Canyon Rd.

Couser Canyon Rd.

G:\Orange_Grove-125158\MXD\Bio_Overview v2.mxd



Legend

- Proposed Gas Line
- Survey Boundary
- Proposed Underground Electrical Transmission Line
- Water Truck Loading Station
- Site Location
- Map Sheets

Source:
USGS Topographical Quardrangles: Pala, Bonsall.
Aerial Photography from ESRI_Imagery_World_2D
Library-Remote Sensing 2005

N
W E
S

1" = 1,000'

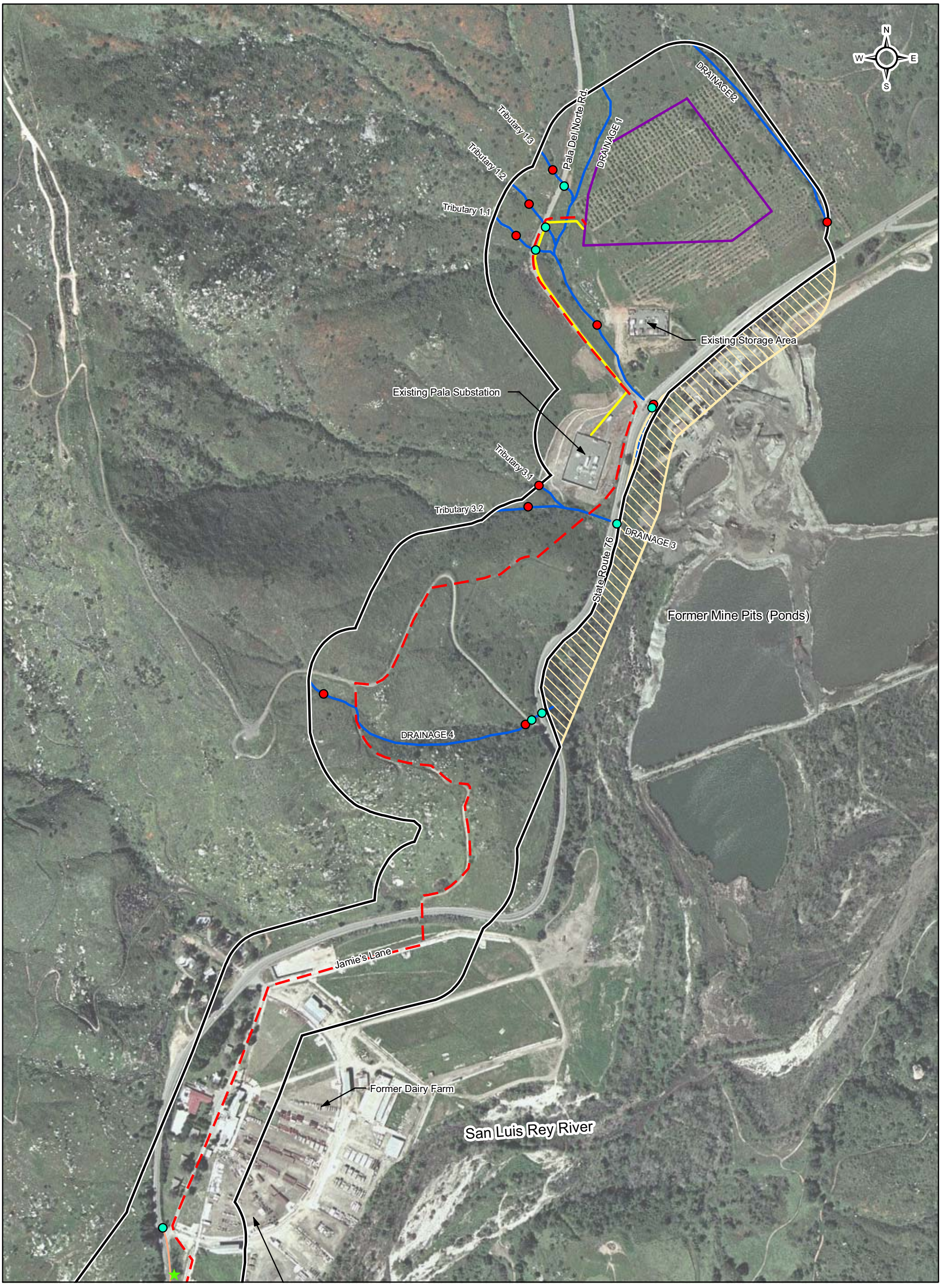
1,000 500 0 1,000 2,000 Feet

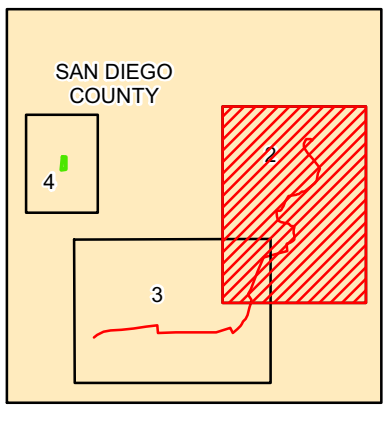
Figure 6

Sheet: 1

Overview Map of the Survey Area for Jurisdictional & Wetlands Waters
Orange Grove Project
San Diego County

TRC





Cottonwood
Sycamore
Coast Live Oak
Culverts
Data Points
Proposed Gas Line
Topographic Feature
Water Truck Loading Station
Survey Area Boundary
Survey Area: Limited Access*
Survey Boundary: Mapped From Aerials
Proposed Underground Electrical Transmission Line
Jurisdictional Drainage
Site Boundary
San Luis Rey River With Wetland Areas
Non-Jurisdictional feature
USFWS NWI mapped wetlands/ponds
USGS mapped ponds
Riparian Area

Source:
USGS Topographical Quardrangles: Pala, Bonsall.
Wetlands data from National Wetlands Inventory (http://www.fws.gov/nwi/)
Aerial Photography from California Spatial Information Library-Remote Sensing 2005

*Surveyed by observation from public roads

1 " equals 400 '

200 100 0 200 400 600 800 1,000 Feet

Figure 6

Sheet: 2

Survey area for Jurisdictional Wetlands and Waters

Orange Grove Project

San Diego County

TRC

G:\Orange_Grove-125158\MXD\Bio_Tiles v2.mxd

Former Dairy Farm

A.1

Former Dairy Farm

A.2

East Pond

West Pond

A.3

San Luis Rey River

State Route 76

DRAINAGE 5

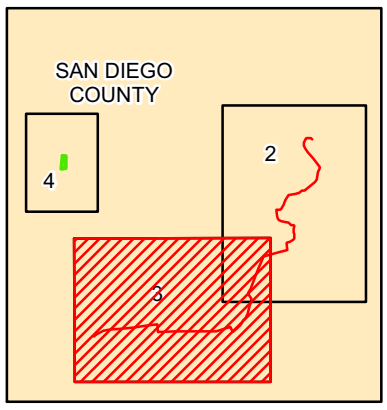
Couser Canyon Road

Rice Canyon Creek

DRAINAGE 6

Rice Canyon Road

G:\Orange_Grove-125158\MXD\Bio_Tiles v2.mxd



- Cottonwood
- Sycamore
- Coast Live Oak
- Culverts
- Data Points
- Proposed Gas Line
- Topographic Feature
- Water Truck Loading Station
- Survey Area Boundary
- Survey Area: Limited Access*
- Survey Boundary: Mapped From Aerials
- Proposed Underground Electrical Transmission Line
- Jurisdictional Drainage
- Site Boundary
- San Luis Rey River With Wetland Areas
- Non-Jurisdictional feature
- USFWS NWI mapped wetlands/ponds
- USGS mapped ponds
- Riparian Area

Source:
USGS Topographical Quardrangles: Pala, Bonsall.
Wetlands data from National Wetlands Inventory (http://www.fws.gov/nwi/)
Aerial Photography from California Spatial Information Library-Remote Sensing 2005

*Surveyed by observation from public roads

1 " equals 400 '

200 100 0 200 400 600 800 1,000 Feet

Figure 6

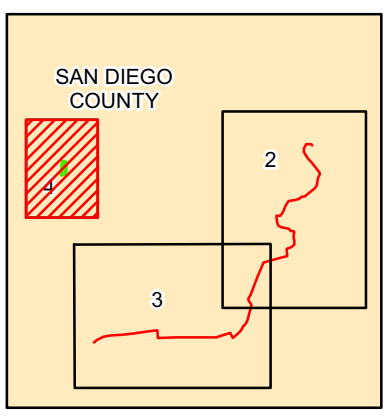
Sheet: 3

Survey area for Jurisdictional Wetlands and Waters

Orange Grove Project

San Diego County

TRC



Cottonwood
Sycamore
Coast Live Oak
Culverts
Data Points

Proposed Gas Line
Topographic Feature
Water Truck Loading Station
Survey Area Boundary
Survey Area: Limited Access*
Survey Boundary: Mapped From Aerials
Proposed Underground Electrical Transmission Line

Jurisdictional Drainage
Site Boundary
San Luis Rey River With Wetland Areas
Non-Jurisdictional feature
USFWS NWI mapped wetlands/ponds
USGS mapped ponds
Riparian Area

Source:
USGS Topographical Quardrangles: Pala, Bonsall.
Wetlands data from National Wetlands Inventory (http://www.fws.gov/nwi/)
Aerial Photography from California Spatial Information Library-Remote Sensing 2005

*Surveyed by observation from public roads

1 " equals 200 '

200 100 0 200 400 Feet

Figure 6

Sheet: 4

Survey area for Jurisdictional Wetlands and Waters

Orange Grove Project

San Diego County

TRC

G:\Orange_Grove-125158\MXD\Bio_Tiles v2.mxd

Attachment B: Wetland Delineation Data Forms

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 Corps of Engineers Manual)

Project/Site:	Orange Grove Project	Date:	2/7/2008
Applicant/Owner:	Orange Grove Energy L.P.	County:	San Diego
Investigator:	Ceri Williams-Dodd & Leslie Goff	State:	CA
Do Normal Circumstances exist on the site?	[✓] Yes [ ] No	Community ID:	Drainage 1
Is the site significantly disturbed (Atypical Situation)?	[ ] Yes [✓] No	Transect ID:	South of SR 76
Is the area a potential Problem Area?	[ ] Yes [✓] No	Plot ID:	6

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Eriogonum fasciculatum	S	None	7.		
2. Erodium cicutarium	H	None	8.		
3.			9.		
4.			10.		
5.			11.		
6.			12.		

Percent of Dominant Species that are OBL, FACW, and/or FAC (exclude FAC- species). 0%

Remarks: Adjacent vegetation is CSS

HYDROLOGY

[ ] Recorded Data (Describe in Remarks)
[ ] Stream, Lake, or Tide Gauge
[✓] Aerial Photographs
[✓] Other - Topographic and NWI Maps
[ ] No Known Recorded Data

Field Observations:
Depth of Surface Water: 0 inches
Depth to Free Water in Pit: N/A inches
Depth to Saturated Soil: N/A inches

Wetland Hydrology Indicators:
Primary Indicators:
[ ] Inundated
[ ] Saturated in Upper 12 inches
[ ] Water Marks
[ ] Drift Lines
[✓] Sediment Deposits
[ ] Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
[ ] Oxidized Root Channels in Upper 12 inches
[ ] Water-stained Leaves
[ ] Local Soil Survey Data
[ ] FAC-Neutral Test
[ ] Other (Explain in Remarks)

Remarks: OHWM width - 2'
Banks width - 7'
signs of OHWM - ephemeral drainage

SOILS

Map Unit Name (Series and Phase):	Tujunga sand (TuB)	Drainage Class:	somewhat excessively drained
Taxonomy (Subgroup):	unknown	Field Observations Confirm Map Type? [✓] Yes [ ] No	

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
Top layer	w/in	1 inch			sandy loam

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] Reducing Conditions (test required)
- [ ] Gleyed or Low-Chroma Colors
- [ ] Concretions
- [ ] High Organic Content in Surface Layer of Sandy Soils
- [ ] Organic Streaking in Sandy Soils
- [ ] Listed on Local Hydric Soils List
- [ ] Listed on National Hydric Soils List
- [ ] Other (Explain in Remarks)

Remarks: Too rocky to dig soil pit

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	[ ] Yes	[✓] No	Is this Sampling Point within a Wetland? [ ] Yes [✓] No
Wetland Hydrology Present?	[✓] Yes	[ ] No	
Hydric Soils Present?	[ ] Yes	[✓] No	

Remarks: Signs of hydrology typical of ephemeral, upland drainage

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 Corps of Engineers Manual)

Project/Site:	Orange Grove Project	Date:	2/7/2008
Applicant/Owner:	Orange Grove Energy L.P.	County:	San Diego
Investigator:	Ceri Williams-Dodd + Leslie Goff	State:	CA
Do Normal Circumstances exist on the site?	[✓] Yes [ ] No	Community ID:	
Is the site significantly disturbed (Atypical Situation)?	[ ] Yes [✓] No	Transect ID:	Tributary 1.1
Is the area a potential Problem Area?	[ ] Yes [✓] No	Plot ID:	S

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Brassica nigra / Hirschfeldia incana	H	None	7.		
2. Erodium cicutarium	H	None	8.		
3. Amsinckia menziesii	H	None	9.		
4. Anagallis arvensis	H	FAC	10.		
5.			11.		
6.			12.		

Percent of Dominant Species that are OBL, FACW, and/or FAC (exclude FAC- species). 25%

Remarks: Adjacent vegetation is CSS. Need ≥ 50% dominant species therefore vegetation not considered hydrophytic in this drainage

HYDROLOGY

[ ] Recorded Data (Describe in Remarks)
[ ] Stream, Lake, or Tide Gauge
[✓] Aerial Photographs
[✓] Other - Topographic and NWI Maps
[ ] No Known Recorded Data

Field Observations:
Depth of Surface Water: none inches
Depth to Free Water in Pit: 6 inches
Depth to Saturated Soil: 1.5 inches

Wetland Hydrology Indicators:
Primary Indicators:
[ ] Inundated
[✓] Saturated in Upper 12 inches
[ ] Water Marks
[ ] Drift Lines
[ ] Sediment Deposits
[ ] Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
[ ] Oxidized Root Channels in Upper 12 inches
[ ] Water-stained Leaves
[ ] Local Soil Survey Data
[ ] FAC-Neutral Test
[ ] Other (Explain in Remarks)

Remarks: hydrology signs typical of ephemeral drainage (upland)
OHWM width - 2'2
Banks width - 13'5

SOILS

Map Unit Name (Series and Phase):	Las Posas Stoney fine sandy loam (LrE)	Drainage Class:	well drained
Taxonomy (Subgroup):	unknown	Field Observations Confirm Map Type? [✓] Yes [ ] No	

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
6	A	7.5YR 3/2	N/A	N/A	sandy clay
too rocky to dig further					

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] Reducing Conditions (test required)
- [ ] Gleyed or Low-Chroma Colors
- [ ] Concretions
- [ ] High Organic Content in Surface Layer of Sandy Soils
- [ ] Organic Streaking in Sandy Soils
- [ ] Listed on Local Hydric Soils List
- [ ] Listed on National Hydric Soils List
- [ ] Other (Explain in Remarks)

Remarks: very rocky - 6 inches limit for digging soil pit.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	[ ] Yes	[✓] No	Is this Sampling Point within a Wetland? [ ] Yes [✓] No
Wetland Hydrology Present?	[✓] Yes	[ ] No	
Hydric Soils Present?	[ ] Yes	[✓] No	

Remarks: Ephemeral drainage.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 Corps of Engineers Manual)

Project/Site:	Orange Grove Project	Date:	2/7/2008
Applicant/Owner:	Orange Grove Energy L.P.	County:	San Diego
Investigator:	Ceri Williams-Dodd + Leslie Goff	State:	CA
Do Normal Circumstances exist on the site?	[✓] Yes [ ] No	Community ID:	
Is the site significantly disturbed (Atypical Situation)?	[ ] Yes [✓] No	Transect ID:	Tributary 1.2
Is the area a potential Problem Area?	[ ] Yes [✓] No	Plot ID:	4

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Erodium cicutarium	H	None	7.		
2. Cirsium sp. (probably vulgare)	H	FACU	8.		
3.			9.		
4.			10.		
5.			11.		
6.			12.		

Percent of Dominant Species that are OBL, FACW, and/or FAC (exclude FAC- species). 0%
(FACU = lower wetland rating than FAC-, therefore not considered)

Remarks: Surrounding vegetation = CSS dominated by Artemisia californica, Eriogonum fasciculatum

HYDROLOGY

[ ] Recorded Data (Describe in Remarks)
[ ] Stream, Lake, or Tide Gauge
[✓] Aerial Photographs
[✓] Other - Topographic and NWI Maps
[ ] No Known Recorded Data

Field Observations:
Depth of Surface Water: 1.5 inches
Depth to Free Water in Pit: 1.5 inches
Depth to Saturated Soil: 0 inches

Wetland Hydrology Indicators:
Primary Indicators:
[✓] Inundated
[✓] Saturated in Upper 12 inches
[ ] Water Marks
[ ] Drift Lines
[✓] Sediment Deposits
[ ] Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
[ ] Oxidized Root Channels in Upper 12 inches
[ ] Water-stained Leaves
[ ] Local Soil Survey Data
[ ] FAC-Neutral Test
[ ] Other (Explain in Remarks)

Remarks: Ephemeral drainage - hydrology present including flowing water (due to recent rains and/or potentially a spring)
OHWM width - 1'9 Bank width - 2'8

SOILS

Map Unit Name (Series and Phase):	Las Posas Stoney fine sandy loam (LrE)	Drainage Class:	well drained
Taxonomy (Subgroup):	unKnown	Field Observations Confirm Map Type? [✓] Yes [ ] No	

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
3	A	7.5YR 3/2	N/A	N/A	sandy loam -gritty
6	A	"	"	"	sandy

Hydric Soil Indicators:
- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] Reducing Conditions (test required)
- [ ] Gleyed or Low-Chroma Colors
- [ ] Concretions
- [ ] High Organic Content in Surface Layer of Sandy Soils
- [ ] Organic Streaking in Sandy Soils
- [ ] Listed on Local Hydric Soils List
- [ ] Listed on National Hydric Soils List
- [ ] Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	[ ] Yes	[✓] No
Wetland Hydrology Present?	[✓] Yes	[ ] No
Hydric Soils Present?	[ ] Yes	[✓] No

Is this Sampling Point within a Wetland? [ ] Yes [✓] No

Remarks: Hydrology signs typical of ephemeral drainage (upland)

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 Corps of Engineers Manual)

Project/Site:	Orange Grove Project	Date:	2/7/2008
Applicant/Owner:	Orange Grove Energy L.P.	County:	San Diego
Investigator:	Ceri Williams-Dodd + Leslie Goff	State:	CA
Do Normal Circumstances exist on the site?	[✓] Yes [ ] No	Community ID:	
Is the site significantly disturbed (Atypical Situation)?	[ ] Yes [✓] No	Transect ID:	Tributary 1.3
Is the area a potential Problem Area?	[ ] Yes [✓] No	Plot ID:	3

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Brassica nigra/ Hirschfeldia incana	H	None	7.		
2. Erodium cicutarium	H	None	8.		
3. Bromus sp.	H	None	9.		
4. Unidentified sp.	H	N/A	10.		
5.			11.		
6.			12.		

Percent of Dominant Species that are OBL, FACW, and/or FAC (exclude FAC- species). 0%

Remarks: Surrounding vegetation = CSS dominated by Artemisia californica Eriogonum fasciculatum

HYDROLOGY

[ ] Recorded Data (Describe in Remarks)
[ ] Stream, Lake, or Tide Gauge
[✓] Aerial Photographs
[✓] Other - Topographic and NWI Maps
[ ] No Known Recorded Data

Field Observations:
Depth of Surface Water: none inches
Depth to Free Water in Pit: 10 inches
Depth to Saturated Soil: 2 inches

Wetland Hydrology Indicators:
Primary Indicators:
[ ] Inundated
[✓] Saturated in Upper 12 inches
[ ] Water Marks
[ ] Drift Lines
[ ] Sediment Deposits
[ ] Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
[ ] Oxidized Root Channels in Upper 12 inches
[ ] Water-stained Leaves
[ ] Local Soil Survey Data
[ ] FAC-Neutral Test
[ ] Other (Explain in Remarks)

Remarks: Hydrology present- ephemeral drainage.
OHWM width - 2'6 Banks width - 19'6

SOILS

Map Unit Name (Series and Phase):	Las Posas Stoney fine sandy loam (LrE)	Drainage Class:	well drained
Taxonomy (Subgroup):	unknown	Field Observations Confirm Map Type? [✓] Yes [ ] No	

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
10	A	7.5YR 2.5/2	N/A	N/A	Sandy loam clay

Hydric Soil Indicators:
- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] Reducing Conditions (test required)
- [ ] Gleyed or Low-Chroma Colors
- [ ] Concretions
- [ ] High Organic Content in Surface Layer of Sandy Soils
- [ ] Organic Streaking in Sandy Soils
- [ ] Listed on Local Hydric Soils List
- [ ] Listed on National Hydric Soils List
- [ ] Other (Explain in Remarks)

Remarks: uniform horizon 0-10 inches

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	[ ] Yes	[✓] No	Is this Sampling Point within a Wetland? [ ] Yes [✓] No
Wetland Hydrology Present?	[✓] Yes	[ ] No	
Hydric Soils Present?	[ ] Yes	[✓] No	

Remarks: Hydrology signs typical of ephemeral drainage (upland)

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 Corps of Engineers Manual)

Project/Site:	Orange Grove Project	Date:	2/12/2008
Applicant/Owner:	Orange Grove Energy L.P.	County:	San Diego
Investigator:	Ceri Williams-Dodd + Leslie Goff	State:	CA
Do Normal Circumstances exist on the site?	[✓] Yes [ ] No	Community ID:	Drainage 4
Is the site significantly disturbed (Atypical Situation)?	[ ] Yes [✓] No	Transect ID:	upstream
Is the area a potential Problem Area?	[ ] Yes [✓] No	Plot ID:	9

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Mirabilis californica	H	None	7.		
2. Chaenactis sp.	H	None	8.		
3. Rhamnus sp.	S	None	9.		
4.			10.		
5.			11.		
6.			12.		

Percent of Dominant Species that are OBL, FACW, and/or FAC (exclude FAC- species). 0%

Remarks: CSS upland vegetation

HYDROLOGY

[ ] Recorded Data (Describe in Remarks)
[ ] Stream, Lake, or Tide Gauge
[✓] Aerial Photographs
[✓] Other - Topographic and NWI Maps
[ ] No Known Recorded Data

Field Observations:
Depth of Surface Water: None inches
Depth to Free Water in Pit: N/A inches
Depth to Saturated Soil: N/A inches

Wetland Hydrology Indicators:
Primary Indicators:
[ ] Inundated
[ ] Saturated in Upper 12 inches
[ ] Water Marks
[ ] Drift Lines
[✓] Sediment Deposits
[ ] Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
[ ] Oxidized Root Channels in Upper 12 inches
[ ] Water-stained Leaves
[ ] Local Soil Survey Data
[ ] FAC-Neutral Test
[ ] Other (Explain in Remarks)

Remarks: Braiding within defined channel upstream - becomes one gully and then becomes less steep and braids into a wide area due to low gradient and diffused by a rock. Downstream - dirt road existing; sheet flows to defined channel on other side or down road

OHWM width - 1'8
Banks width - 13'5

Downstream (widened area)
OHWM width - 13'7
Banks width - 27'1

SOILS

Map Unit Name (Series and Phase):	Cieneba very rocky coarse sandy loam (CmrG)	Drainage Class:	somewhat excessively well drained
Taxonomy (Subgroup):	undetermined	Field Observations Confirm Map Type?	[✓] Yes [ ] No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
6	A	7.5YR 3/3	None	None	Sandy Clay loam
rocky					

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] Reducing Conditions (test required)
- [ ] Gleyed or Low-Chroma Colors
- [ ] Concretions
- [ ] High Organic Content in Surface Layer of Sandy Soils
- [ ] Organic Streaking in Sandy Soils
- [ ] Listed on Local Hydric Soils List
- [ ] Listed on National Hydric Soils List
- [ ] Other (Explain in Remarks)

Remarks: moist upper layer due to rains
Too rocky to dig soil pit below 6" depth

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	[ ] Yes	[✓] No
Wetland Hydrology Present?	[✓] Yes	[ ] No
Hydric Soils Present?	[ ] Yes	[✓] No

Is this Sampling Point within a Wetland? [ ] Yes [✓] No

Remarks: Hydrology signs characteristic of ephemeral upland drainage.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 Corps of Engineers Manual)

Project/Site:	Orange Grove Project	Date:	2/12/2008
Applicant/Owner:	Orange Grove Energy L.P.	County:	San Diego
Investigator:	Ceri Williams-Dodd + Leslie Goff	State:	CA
Do Normal Circumstances exist on the site?	[✓] Yes [ ] No	Community ID:	Drainage 3
Is the site significantly disturbed (Atypical Situation)?	[ ] Yes [✓] No	Transect ID:	Tributary 3.1
Is the area a potential Problem Area?	[ ] Yes [✓] No	Plot ID:	11

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Artemisia californica	S	None	7.		
2. Phacelia sp. ⊛	H	None/UPL	8.		
3.			9.		
4.			10.		
5.			11.		
6.			12.		

Percent of Dominant Species that are OBL, FACW, and/or FAC (exclude FAC- species). 0%

⊛ Remarks: Not flowering, therefore could not be identified. Only species with an indicator is P. visida (UPL) for San Diego Co. Upland CSS vegetation

HYDROLOGY

[ ] Recorded Data (Describe in Remarks)
[ ] Stream, Lake, or Tide Gauge
[✓] Aerial Photographs
[✓] Other - Topographic and NWI Maps
[ ] No Known Recorded Data

Field Observations:
Depth of Surface Water: none inches
Depth to Free Water in Pit: N/A inches
Depth to Saturated Soil: N/A inches

Wetland Hydrology Indicators:
Primary Indicators:
[ ] Inundated
[ ] Saturated in Upper 12 inches
[ ] Water Marks
[ ] Drift Lines
[ ] Sediment Deposits
[ ] Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
[ ] Oxidized Root Channels in Upper 12 inches
[ ] Water-stained Leaves
[ ] Local Soil Survey Data
[ ] FAC-Neutral Test
[ ] Other (Explain in Remarks)

Remarks: Ephemeral drainage
Signs of shelving - not clearly defined
Erosion and blow out areas evident

OHWM width - 3'8
bank width - 12'3

SOILS

Map Unit Name (Series and Phase):	Las Rosas Stony fine sandy loam (LrE)	Drainage Class:	well drained
Taxonomy (Subgroup):	unknown	Field Observations Confirm Map Type? [✓] Yes [ ] No	

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
12	A	7.5YR 3/2	N/A	N/A	sandy stony clay

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] Reducing Conditions (test required)
- [ ] Gleyed or Low-Chroma Colors
- [ ] Concretions
- [ ] High Organic Content in Surface Layer of Sandy Soils
- [ ] Organic Streaking in Sandy Soils
- [ ] Listed on Local Hydric Soils List
- [ ] Listed on National Hydric Soils List
- [ ] Other (Explain in Remarks)

Remarks: Slight moisture from recent rains

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	[ ] Yes	[✓] No	Is this Sampling Point within a Wetland? [ ] Yes [✓] No
Wetland Hydrology Present?	[ ] Yes	[✓] No	
Hydric Soils Present?	[ ] Yes	[✓] No	

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 Corps of Engineers Manual)

Project/Site:	Orange Grove Project	Date:	2/12/2008
Applicant/Owner:	Orange Grove Energy L.P.	County:	San Diego
Investigator:	Ceri Williams-Dodd + Leslie Goff	State:	CA
Do Normal Circumstances exist on the site?	[✓] Yes [ ] No	Community ID:	Drainage 1
Is the site significantly disturbed (Atypical Situation)?	[ ] Yes [✓] No	Transect ID:	north of SR-76
Is the area a potential Problem Area?	[ ] Yes [✓] No	Plot ID:	12

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Brassica nigra / Hirschfeldia incana	H	None	7.		
2. Phacelia sp. (*)	H	None/upl (*)	8.		
3. Plagiobothrys sp. (+)	H	FACW (+)	9.		
4. Amsinckia menziesii	H	None	10.		
5.			11.		
6.			12.		

Percent of Dominant Species that are OBL, FACW, and/or FAC (exclude FAC- species). 25% (not hydrophytic unless ≥ 50%)

Remarks: CSS vegetation upstream. Non-native grassland at data point.
(*) not flowering therefore could not be identified to species. Only species with an indicator is P. visida for San Diego county (UPL)
(+) In San Diego County probably P. trachycarpus = FACW. Not flowering at time to positively identify

HYDROLOGY

[ ] Recorded Data (Describe in Remarks)
[ ] Stream, Lake, or Tide Gauge
[✓] Aerial Photographs
[✓] Other - Topographic and NWI Maps
[ ] No Known Recorded Data

Field Observations:
Depth of Surface Water: None inches
Depth to Free Water in Pit: N/A inches
Depth to Saturated Soil: N/A inches

Wetland Hydrology Indicators:
Primary Indicators:
[ ] Inundated
[ ] Saturated in Upper 12 inches
[ ] Water Marks
[✓] Drift Lines
[ ] Sediment Deposits
[ ] Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
[ ] Oxidized Root Channels in Upper 12 inches
[ ] Water-stained Leaves
[ ] Local Soil Survey Data
[ ] FAC-Neutral Test
[ ] Other (Explain in Remarks)

Remarks: Clearly defined flow channel - bare soil and drift lines
OHWM width - 2'5 Banks width - 38'4

SOILS

Map Unit Name (Series and Phase):	Las Posas Stoney fine sandy loam (LrE)	Drainage Class:	well drained
Taxonomy (Subgroup):	Unknown	Field Observations Confirm Map Type? [✓] Yes [ ] No	

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
7	A	7.5YR 2.5/2	N/A	N/A	sandy loam
rocky	—				

Hydric Soil Indicators:
- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] Reducing Conditions (test required)
- [ ] Gleyed or Low-Chroma Colors
- [ ] Concretions
- [ ] High Organic Content in Surface Layer of Sandy Soils
- [ ] Organic Streaking in Sandy Soils
- [ ] Listed on Local Hydric Soils List
- [ ] Listed on National Hydric Soils List
- [ ] Other (Explain in Remarks)

Remarks: Too rocky to dig soil pit below 7 inches

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	[ ] Yes	[✓] No
Wetland Hydrology Present?	[✓] Yes	[ ] No
Hydric Soils Present?	[ ] Yes	[✓] No

Is this Sampling Point within a Wetland? [ ] Yes [✓] No

Remarks: Hydrology signs characteristic of ephemeral upland drainage.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 Corps of Engineers Manual)

Project/Site:	Orange Grove Project	Date:	2/12/2008
Applicant/Owner:	Orange Grove Energy L.P.	County:	San Diego
Investigator:	Ceri Williams-Dodd + Leslie Goff	State:	CA
Do Normal Circumstances exist on the site?	[✓] Yes [ ] No	Community ID:	San Luis Rey River
Is the site significantly disturbed (Atypical Situation)?	[ ] Yes [✓] No	Transect ID:	Wetland Area
Is the area a potential Problem Area?	[ ] Yes [✓] No	Plot ID:	16

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Baccharis salicifolia	T	FACW	7.		
2. Typha latifolia	S	OBL	8.		
3. Salix exigua	T	OBL	9.		
4.			10.		
5.			11.		
6.			12.		

Percent of Dominant Species that are OBL, FACW, and/or FAC (exclude FAC- species). 100%

Remarks: All wetland vegetation.

HYDROLOGY

[ ] Recorded Data (Describe in Remarks)
[ ] Stream, Lake, or Tide Gauge
[✓] Aerial Photographs
[✓] Other - Topographic and NWI Maps
[ ] No Known Recorded Data

Field Observations:
Depth of Surface Water: 0 inches
Depth to Free Water in Pit: 0 inches
Depth to Saturated Soil: 0 inches

Wetland Hydrology Indicators:
Primary Indicators:
[✓] Inundated
[✓] Saturated in Upper 12 inches
[✓] Water Marks
[✓] Drift Lines
[✓] Sediment Deposits
[ ] Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
[ ] Oxidized Root Channels in Upper 12 inches
[ ] Water-stained Leaves
[ ] Local Soil Survey Data
[ ] FAC-Neutral Test
[ ] Other (Explain in Remarks)

Remarks:

SOILS

Map Unit Name (Series and Phase):	Tujunga Sand (TuB)	Drainage Class:	somewhat excessively drained
Taxonomy (Subgroup):	unknown	Field Observations Confirm Map Type? [✓] Yes [ ] No	

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
12	A	2.5/10Y Gley1	N/A	N/A	Sandy clay

Hydric Soil Indicators:
- [ ] Histosol
- [ ] Histic Epipedon
- [✓] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] Reducing Conditions (test required)
- [✓] Gleyed or Low-Chroma Colors
- [ ] Concretions
- [✓] High Organic Content in Surface Layer of Sandy Soils
- [ ] Organic Streaking in Sandy Soils
- [ ] Listed on Local Hydric Soils List
- [ ] Listed on National Hydric Soils List
- [ ] Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	[✓] Yes	[ ] No
Wetland Hydrology Present?	[✓] Yes	[ ] No
Hydric Soils Present?	[✓] Yes	[ ] No

Is this Sampling Point within a Wetland? [✓] Yes [ ] No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 Corps of Engineers Manual)

Project/Site:	Orange Grove Project	Date:	2/12/2008
Applicant/Owner:	Orange Grove Energy L.P.	County:	San Diego
Investigator:	Ceri Williams-Dodd + Leslie Goff	State:	CA
Do Normal Circumstances exist on the site?	[✓] Yes [ ] No	Community ID:	San Luis Rey River
Is the site significantly disturbed (Atypical Situation)?	[ ] Yes [✓] No	Transect ID:	Riparian Area
Is the area a potential Problem Area?	[ ] Yes [✓] No	Plot ID:	5

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Platanus racemosa	T	FACW	7.		
2. Populus fremontii	T	FACW	8.		
3. Phacelia sp. (*)	H	None/UPL	9.		
4.			10.		
5.			11.		
6.			12.		

Percent of Dominant Species that are OBL, FACW, and/or FAC (exclude FAC- species). 66.6%

Remarks: Rip-rap road and rock berm appear to have cut off a corner of the riparian forest from the San Luis Rey River - historical alteration. Potential habitat for riparian species.

(*) Not flowering therefore positive identification to species not possible. Only species with an indicator on San Diego Co. list is P. viscida (UPL)

HYDROLOGY

[ ] Recorded Data (Describe in Remarks)
[ ] Stream, Lake, or Tide Gauge
[✓] Aerial Photographs
[✓] Other - Topographic and NWI Maps
[ ] No Known Recorded Data

Field Observations:
Depth of Surface Water: None inches
Depth to Free Water in Pit: N/A inches
Depth to Saturated Soil: N/A inches

Wetland Hydrology Indicators:
Primary Indicators:
[ ] Inundated
[ ] Saturated in Upper 12 inches
[ ] Water Marks
[ ] Drift Lines
[ ] Sediment Deposits
[ ] Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
[ ] Oxidized Root Channels in Upper 12 inches
[ ] Water-stained Leaves
[ ] Local Soil Survey Data
[ ] FAC-Neutral Test
[ ] Other (Explain in Remarks)

Remarks: No signs of flow or water ponding. Depressional area. OHWM width - none Banks width - N/A

Calculate acreage. Likely jurisdictional due to proximity to river, historical connection and riparian habitat.

SOILS

Map Unit Name (Series and Phase):	Tujunga Sand (TuB)	Drainage Class:	somewhat excessively drained
Taxonomy (Subgroup):	unknown	Field Observations Confirm Map Type? [ ] Yes [✓] No	

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
11	A	7.5YR 3/2	N/A	N/A	silty clay

Hydric Soil Indicators:
- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] Reducing Conditions (test required)
- [ ] Gleyed or Low-Chroma Colors
- [ ] Concretions
- [ ] High Organic Content in Surface Layer of Sandy Soils
- [ ] Organic Streaking in Sandy Soils
- [ ] Listed on Local Hydric Soils List
- [ ] Listed on National Hydric Soils List
- [ ] Other (Explain in Remarks)

Remarks: Moist from recent rains.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	[✓] Yes	[ ] No	Is this Sampling Point within a Wetland? [ ] Yes [✓] No
Wetland Hydrology Present?	[ ] Yes	[✓] No	
Hydric Soils Present?	[ ] Yes	[✓] No	

Remarks: Likely historically part of San Luis Rey River - dirt access road + rock berm currently seperate them

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 Corps of Engineers Manual)

Project/Site:	Orange Grove Project	Date:	2/12/2008
Applicant/Owner:	Orange Grove Energy L.P.	County:	San Diego
Investigator:	Ceri Williams-Dodd + Leslie Goff	State:	CA
Do Normal Circumstances exist on the site?	[✓] Yes [ ] No	Community ID:	Drainage 2
Is the site significantly disturbed (Atypical Situation)?	[ ] Yes [✓] No	Transect ID:	north of SR-76
Is the area a potential Problem Area?	[ ] Yes [✓] No	Plot ID:	13

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Quercus agrifolia	T	None	7.		
2. Salvia mellifera	S	None	8.		
3. Chaenactis sp.	H	None	9.		
4. Morah macrocarpus	vine	None	10.		
5.			11.		
6.			12.		

Percent of Dominant Species that are OBL, FACW, and/or FAC (exclude FAC- species). 0%

Remarks: Coast live oak woodland - shady, rocky

HYDROLOGY

[ ] Recorded Data (Describe in Remarks)
[ ] Stream, Lake, or Tide Gauge
[✓] Aerial Photographs
[✓] Other - Topographic and NWI Maps
[ ] No Known Recorded Data

Field Observations:
Depth of Surface Water: None inches
Depth to Free Water in Pit: N/A inches
Depth to Saturated Soil: N/A inches

Wetland Hydrology Indicators:
Primary Indicators:
[ ] Inundated
[ ] Saturated in Upper 12 inches
[ ] Water Marks
[✓] Drift Lines
[✓] Sediment Deposits
[ ] Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
[ ] Oxidized Root Channels in Upper 12 inches
[ ] Water-stained Leaves
[ ] Local Soil Survey Data
[ ] FAC-Neutral Test
[ ] Other (Explain in Remarks)

Remarks: Ephemeral drainage. Rocky bed. Defined flow path
OHWM width - 1'8 Bank width - 5'9'

SOILS

Map Unit Name (Series and Phase):	Steep gullied land (StG)	Drainage Class:	N/A
Taxonomy (Subgroup):	unknown	Field Observations Confirm Map Type? [✓] Yes [ ] No	

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
12	A	7.5YR 2.5/2	N/A	N/A	Sandy clay loam
rocky					

Hydric Soil Indicators:
- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] Reducing Conditions (test required)
- [ ] Gleyed or Low-Chroma Colors
- [ ] Concretions
- [ ] High Organic Content in Surface Layer of Sandy Soils
- [ ] Organic Streaking in Sandy Soils
- [ ] Listed on Local Hydric Soils List
- [ ] Listed on National Hydric Soils List
- [ ] Other (Explain in Remarks)

Remarks: slightly moist from recent rains

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	[ ] Yes	[✓] No
Wetland Hydrology Present?	[✓] Yes	[ ] No
Hydric Soils Present?	[ ] Yes	[✓] No

Is this Sampling Point within a Wetland? [ ] Yes [✓] No

Remarks: Hydrology signs characteristic of ephemeral upland drainage.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 Corps of Engineers Manual)

Project/Site:	Orange Grove Project	Date:	2/12/2008
Applicant/Owner:	Orange Grove Energy L.P	County:	San Diego
Investigator:	Ceri Williams-Dodd + Leslie Goff	State:	CA
Do Normal Circumstances exist on the site?	[✓] Yes [ ] No	Community ID:	Drainage 3
Is the site significantly disturbed (Atypical Situation)?	[ ] Yes [✓] No	Transect ID:	Tributary 3.2
Is the area a potential Problem Area?	[ ] Yes [✓] No	Plot ID:	10

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Artemisia californica	S	None	7.		
2. Phacelia sp. ⊛ see remarks	H	None/UPL	8.		
3.			9.		
4.			10.		
5.			11.		
6.			12.		

Percent of Dominant Species that are OBL, FACW, and/or FAC (exclude FAC- species). 0%

⊛ Remarks: Not flowering therefore could not be identified to species. Only species with an indicator is P. visida (UPL) for San Diego Co. Upland CSS vegetation adjacent - very rocky.

HYDROLOGY

[ ] Recorded Data (Describe in Remarks)
[ ] Stream, Lake, or Tide Gauge
[✓] Aerial Photographs
[✓] Other - Topographic and NWI Maps
[ ] No Known Recorded Data

Field Observations:
Depth of Surface Water: None inches
Depth to Free Water in Pit: N/A inches
Depth to Saturated Soil: N/A inches

Wetland Hydrology Indicators:
Primary Indicators:
[ ] Inundated
[ ] Saturated in Upper 12 inches
[ ] Water Marks
[ ] Drift Lines
[ ] Sediment Deposits
[ ] Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
[ ] Oxidized Root Channels in Upper 12 inches
[ ] Water-stained Leaves
[ ] Local Soil Survey Data
[ ] FAC-Neutral Test
[ ] Other (Explain in Remarks)

Remarks: Evidence of shelving, not clearly defined.
Ephemeral Drainage
OHWM width - 3'7 bank width - 16'10

SOILS

Map Unit Name (Series and Phase):	Las Posas Stoney fine sandy loam	Drainage Class:	well drained
Taxonomy (Subgroup):	unknown	Field Observations Confirm Map Type? [✓] Yes [ ] No	

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
6	A	7.5YR 3/2	N/A	N/A	sand
rocky	—				

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] Reducing Conditions (test required)
- [ ] Gleyed or Low-Chroma Colors
- [ ] Concretions
- [ ] High Organic Content in Surface Layer of Sandy Soils
- [ ] Organic Streaking in Sandy Soils
- [ ] Listed on Local Hydric Soils List
- [ ] Listed on National Hydric Soils List
- [ ] Other (Explain in Remarks)

Remarks: Too rocky to dig pit past 6 inches depth.
Slightly moist from recent rains

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	[ ] Yes	[✓] No	Is this Sampling Point within a Wetland? [ ] Yes [✓] No
Wetland Hydrology Present?	[ ] Yes	[✓] No	
Hydric Soils Present?	[ ] Yes	[✓] No	

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 Corps of Engineers Manual)

Project/Site:	Orange Grove Project	Date:	2/12/2008
Applicant/Owner:	Orange Grove Energy L.P	County:	San Diego
Investigator:	Ceri Willions-Dodd + Leslie Goff	State:	CA
Do Normal Circumstances exist on the site?	[✓] Yes [ ] No	Community ID:	Drainage 4
Is the site significantly disturbed (Atypical Situation)?	[ ] Yes [✓] No	Transect ID:	Downstream
Is the area a potential Problem Area?	[ ] Yes [✓] No	Plot ID:	14

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Chaenactis sp.	H	None	7.		
2.			8.		
3.			9.		
4.			10.		
5.			11.		
6.			12.		

Percent of Dominant Species that are OBL, FACW, and/or FAC (exclude FAC- species). 0%

Remarks: Upstream is steep and rocky with CSS vegetation but not accessible to sample. Data taken in a small disturbed portion upstream of first culvert.

HYDROLOGY

[ ] Recorded Data (Describe in Remarks)
[ ] Stream, Lake, or Tide Gauge
[✓] Aerial Photographs
[✓] Other - Topographic and NWI Maps
[ ] No Known Recorded Data

Field Observations:
Depth of Surface Water: None inches
Depth to Free Water in Pit: N/A inches
Depth to Saturated Soil: N/A inches

Wetland Hydrology Indicators:
Primary Indicators:
[ ] Inundated
[ ] Saturated in Upper 12 inches
[ ] Water Marks
[ ] Drift Lines
[ ] Sediment Deposits
[ ] Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
[ ] Oxidized Root Channels in Upper 12 inches
[ ] Water-stained Leaves
[ ] Local Soil Survey Data
[ ] FAC-Neutral Test
[ ] Other (Explain in Remarks)

Remarks: Based on upstream portion was likely CSS-vegetation and hydrology likely altered during construction of dirt access road. Trash + debris. Partially blocked culvert. No clear signs of flow path. Debris collection near culvert suggests some hydrology
OHWM - 1'8
bank width - 13'6

SOILS

Map Unit Name (Series and Phase):	Cieneba very rocky coarse sandy loam (CmrG)	Drainage Class:	Somewhat excessively drained
Taxonomy (Subgroup):	unknown	Field Observations Confirm Map Type? [✓] Yes [ ] No	

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
11	A	7.5YR 3/2	N/A	N/A	sandy clay

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] Reducing Conditions (test required)
- [ ] Gleyed or Low-Chroma Colors
- [ ] Concretions
- [ ] High Organic Content in Surface Layer of Sandy Soils
- [ ] Organic Streaking in Sandy Soils
- [ ] Listed on Local Hydric Soils List
- [ ] Listed on National Hydric Soils List
- [ ] Other (Explain in Remarks)

Remarks: moist from recent rains

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	[ ] Yes	[✓] No	Is this Sampling Point within a Wetland? [ ] Yes [✓] No
Wetland Hydrology Present?	[ ] Yes	[✓] No	
Hydric Soils Present?	[ ] Yes	[✓] No	

Remarks: Hydrology signs characteristic of ephemeral, upland drainage,

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 Corps of Engineers Manual)

Project/Site:	Orange Grove Project	Date:	4/9/2008
Applicant/Owner:	Orange Grove Energy L.P.	County:	San Diego
Investigator:	Ceri Williams-Dodd	State:	CA
Do Normal Circumstances exist on the site?	[✓] Yes [ ] No	Community ID:	
Is the site significantly disturbed (Atypical Situation)?	[ ] Yes [✓] No	Transect ID:	Drainage 6
Is the area a potential Problem Area?	[ ] Yes [✓] No	Plot ID:	Tributary 6.1

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Brassica nigra / Hirschfeldia incana	H	None	7.		
2. Phacelia viscida	H	UPL	8.		
3. Bromus madritensis	H	None	9.		
4.			10.		
5.			11.		
6.			12.		

Percent of Dominant Species that are OBL, FACW, and/or FAC (exclude FAC- species). 0 %

Remarks: Downstream - oak trees (Quercus sp.)
upstream - disturbed/non-native grassland

HYDROLOGY

[ ] Recorded Data (Describe in Remarks)
[ ] Stream, Lake, or Tide Gauge
[ ] Aerial Photographs
[ ] Other - Topographic and NWI Maps
[ ] No Known Recorded Data

Field Observations:
Depth of Surface Water: None inches
Depth to Free Water in Pit: None inches
Depth to Saturated Soil: None inches

Wetland Hydrology Indicators:
Primary Indicators:
[ ] Inundated
[ ] Saturated in Upper 12 inches
[ ] Water Marks
[✓] Drift Lines
[✓] Sediment Deposits
[ ] Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
[ ] Oxidized Root Channels in Upper 12 inches
[ ] Water-stained Leaves
[ ] Local Soil Survey Data
[ ] FAC-Neutral Test
[ ] Other (Explain in Remarks)

Remarks: 2.8 feet OHWM width
16 feet Banks width
OHWM evident not clear upstream of data point

SOILS

Map Unit Name (Series and Phase):	Wyman loam (WmD)	Drainage Class:	well drained
Taxonomy (Subgroup):	unknown	Field Observations Confirm Map Type? [✓] Yes [ ] No	

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
16	A	7.5 YR 3/3	None	None	loamy sand

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] Reducing Conditions (test required)
- [ ] Gleyed or Low-Chroma Colors
- [ ] Concretions
- [ ] High Organic Content in Surface Layer of Sandy Soils
- [ ] Organic Streaking in Sandy Soils
- [ ] Listed on Local Hydric Soils List
- [ ] Listed on National Hydric Soils List
- [ ] Other (Explain in Remarks)

Remarks: only slight moisture after recent rains

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	[ ] Yes	[✓] No	Is this Sampling Point within a Wetland? [ ] Yes [✓] No
Wetland Hydrology Present?	[✓] Yes	[ ] No	
Hydric Soils Present?	[ ] Yes	[✓] No	

Remarks: Ephemeral drainage - upland. Typical ephemeral hydrology signs. Disturbed by agricultural activities (weeds + non-native vegetation, was CSS/chaparral dominant in the past)

Attachment C: Photo Exhibit

Orange Grove Project Delineation Photo Log

[See attached map for Photo Station (PS) locations]

Drainage 1

PS 1 – Drainage 1 north of SR 76, facing northwest (upstream). Taken on 2/12/08.

PS 2 – Drainage 1 north of SR 76, facing southeast (downstream). Taken on 2/12/08.

Orange Grove Project Delineation Photo Log

Drainage 1

PS 3 - Drainage 1 south of SR 76 (channelized ditch), facing northeast (upstream). Taken on 2/12/08.

PS 4 – Drainage 1 south of SR 76 near terminus, facing northeast (upstream). Taken on 2/12/08.

Orange Grove Project Delineation Photo Log

Tributary 1.1

PS 5 – Tributary 1.1 upstream of Pala Del Norte Road, facing northwest. Taken on 2/7/08.

Tributary 1.2

PS 6 – Tributary 1.2 upstream of Pala Del Norte Road, facing northwest. Taken on 2/7/08.

Orange Grove Project Delineation Photo Log

Tributary 1.3

PS 7 – Tributary 1.3 upstream of Pala Del Norte Road, facing northwest. Taken on 2/7/08.

PS 8 – Tributary 1.3 downstream of Pala Del Norte Road (Drainage 1 in background), facing southwest. Taken on 2/7/08.

Drainage 2

PS 9 – Drainage 2 upstream of SR 76, facing northwest (upstream). Taken on 2/12/08.

PS 10 – Drainage 2 upstream of SR 76, facing southeast (downstream). Taken on 2/12/08.

Orange Grove Project Delineation Photo Log

Tributary 3.1

PS 11 – Tributary 3.1, facing northwest (upstream). Taken on 2/12/08.

PS 12 – Tributary 3.1, facing southeast (downstream). Taken on 2/12/08.

Orange Grove Project Delineation Photo Log

Tributary 3.2

PS 13 – Tributary 3.2, facing west (upstream). Taken on 2/12/08.

PS 14 – Tributary 3.2, facing southeast (downstream). Taken on 2/12/08.

Orange Grove Project Delineation Photo Log

Drainage 4

PS 15 – Drainage 4 upstream of dirt road, facing northwest (upstream). Taken on 2/12/08.

PS 16 – Drainage 4 at diffuse flow path portion (channelized portion in background), facing northwest (upstream). Taken on 2/12/08.

Orange Grove Project Delineation Photo Log

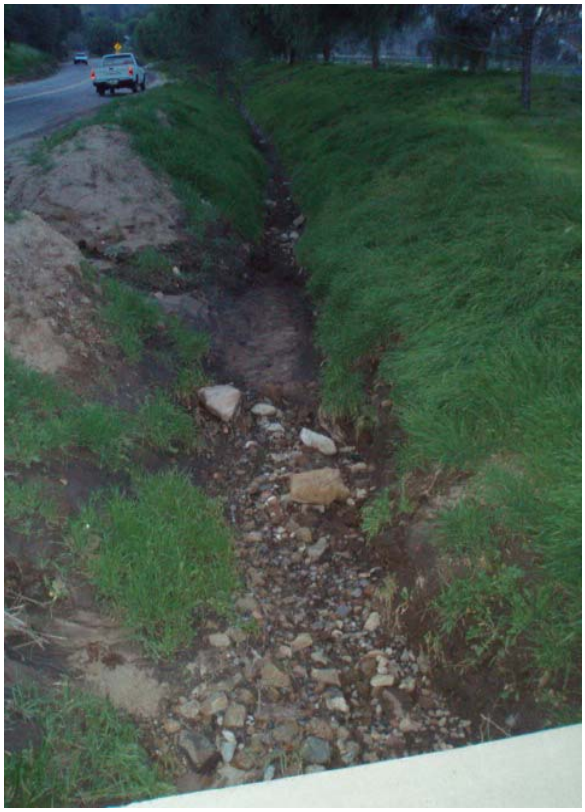
Drainage 5

PS 17 – Drainage 5 north of SR 76, facing north (upstream). Taken on 2/12/08.

PS 18 – Drainage 5 south of SR 76 and parallel to Couser Canyon Road, facing south (downstream). Taken on 2/12/08.

Orange Grove Project Delineation Photo Log

Drainage 6 (Rice Canyon Creek)



PS 19 – Drainage 6 north of SR 76 and parallel to Rice Canyon Road, facing north (upstream). Taken on 2/12/08.

PS 20 – Drainage 6 south of SR 76, facing south (downstream). Taken on 2/12/08.

Orange Grove Project Delineation Photo Log

Tributary 6.1

PS 21 – Tributary 6.1 at northeast corner of fresh water pickup station parcel east of Rice Canyon Road, facing southwest. Taken on 2/22/08.

Orange Grove Project Delineation Photo Log

San Luis Rey River – Riparian Area

PS 22 – San Luis Rey River riparian area understory, facing west. Taken on 2/12/08.

PS 23 – Berm between riparian area (background) and San Luis Rey River, facing north. Taken on 2/12/08.

Orange Grove Project Delineation Photo Log

San Luis Rey River – Wetland Area

PS 24 – San Luis Rey River with wetland areas, facing south. Taken on 2/12/08.

PS 25 – San Luis Rey River wetland, facing south. Taken on 2/12/08.

APPENDIX 6.5-C – WATERSHED PROTECTION, STORMWATER MANAGEMENT AND DISCHARGE CONTROL ORDINANCE

CHAPTER 8. WATERSHED PROTECTION, STORMWATER MANAGEMENT AND DISCHARGE CONTROL*

***Editor's note**--Repealed and new Chapter, Stormwater and Discharge Contol, §§ 67.801--67.825, added by Ord. No. 9424 (N.S.), effective 2-20-02; Chapter 8 amended (with new title Watershed Protection, Stormwater Management and Discharge Control) by Ord. No. 9926 (N.S.), effective 4-11-08.

SEC. 67.801. PURPOSE AND INTENT.

(a) The purpose of this chapter is to protect water resources and to improve water quality by controlling the non-stormwater conveyance system and receiving waters; to cause the use of management practices by the County and its citizens that will reduce the adverse effects of polluted run-off discharges on waters of the state; to secure benefits from the use of stormwater as a resource; and to ensure the County is compliant with applicable state and federal law.

(b) The requirements of this chapter are intended to:

(1) Prohibit polluted non-stormwater discharges to the stormwater conveyance system and receiving waters.

(2) Establish requirements to prevent and reduce pollution to water resources.

(3) Establish requirements for development project site design to reduce stormwater pollution and erosion.

(4) Establish requirements for the management of stormwater flows from development projects to prevent erosion and to protect and enhance existing water-dependent habitats.

(5) Establish standards for the use of off-site facilities for stormwater management to supplement on-site practices at new development sites.

(6) Establish notice procedures and standards for adjusting stormwater and non-stormwater management requirements, where necessary.

(Added by Ord. No. 9424 (N.S.), effective 2-20-02; amended by Ord. No. 9926 (N.S.), effective 4-11-08)

SEC. 67.802. DEFINITIONS.

For purposes of this Chapter, the following definitions shall apply:

(a) "Advanced treatment" shall have the same meaning as defined in California Regional Water Quality Control Board, San Diego Region Order No. R9-2007-0001, NPDES No. CAS0108758, Attachment C.

(b) "Authorized enforcement official" means the Director of Public Works, the Director of the Department of Planning and Land Use, the Director of Environmental Health, the Agricultural Commissioner, Department of Agriculture, Weights and Measures, or their designees.

(c) "Authorized non-stormwater discharge" means a discharge allowed to enter the stormwater conveyance system or receiving waters in accordance with a permit under the National Pollutant Discharge and Elimination System program.

(d) "Best management practices" (BMPs) shall have the same meaning as defined in California Regional Water Quality Control Board, San Diego Region Order No. R9-2007-0001, NPDES No. CAS0108758, Attachment C. Best management practices may include any type of pollution prevention and pollution control measure that achieves compliance with this chapter.

(e) "Business activity" has the same meaning as those activities or facilities listed in section D.3.b.1 of the California Regional Water Quality Control Board, San Diego Region Order No. R9-2007-0001, NPDES No. CAS0108758; and also means airplane mechanical repair, maintenance, fueling, or cleaning; motor vehicle (or other vehicle) parking lots and storage facilities; motor vehicle and other vehicle body repair or painting; motor vehicle mechanical repair, maintenance, fueling, or cleaning; boat mechanical repair, maintenance, fueling, or cleaning; botanical or zoological gardens and exhibits; cement mixing or cutting; cemeteries; food facilities,

including, but not limited to, restaurants, taverns, markets, booths, mobile vendors, and commissaries; equipment repair, maintenance, fueling, or cleaning; golf courses, parks and other recreational facilities; landscaping; marinas; masonry storage or installation; mobile motor vehicle or other vehicle washing; mobile carpet, drape or furniture cleaning; nurseries and greenhouses; painting and coating; pest control services; pool, spa, and fountain cleaning; portable sanitary toilet servicing; retail or wholesale fueling; animal facilities; building material retail, wholesale, and storage; power washing services; and also means a facility that is involved in manufacturing; oil and gas mining; hazardous waste treatment, storage, or disposal; solid waste disposal (landfills, land application sites, and open dumps); recycling facilities; steam electric- generation; transportation; sewage or wastewater treatment; or is subject to stormwater effluent limitations guidelines, new source performance standards, or toxic Pollutant effluent standards (40 Code of Federal Regulations Subchapter N), as described in the statewide General Industrial Permit (Water Quality Order No. 97-03-DWQ); and also means any commercial, industrial, or institutional use, as described in the County of San Diego Zoning Ordinance, notwithstanding the zone in which the activity or facility is located.

(f) "Detention" means the temporary storage of storm run-off in a manner that controls peak discharge rates and provides some gravity settling of pollutants.

(g) "Detention facility" means a detention basin or alternative structure designed for the purpose of temporary storage of stream flow or surface run-off and gradual release of stored water at controlled rates.

(h) "Development project" means any land disturbance activity, construction or installation of a structure, the creation of impervious surfaces, or land subdivision.

(i) "Discharge", when used as a verb, means to allow pollutants to directly or indirectly enter stormwater, or to allow stormwater or non-stormwater to directly or indirectly enter the stormwater conveyance system or receiving waters, from an activity or operations which one owns or operates. When used as a noun, "discharge" means the pollutants, stormwater or non- stormwater that are discharged.

(j) "Discharger" means any person or entity engaged in activities or operations or owning facilities, which will or may result in pollutants entering stormwater, the stormwater conveyance system, or receiving waters or the owners of real property on which such activities, operations or facilities are located, except that a local government or public authority is not a discharger as to activities conducted by others in public rights of way.

(k) "Environmentally sensitive area" means impaired water bodies, as defined by the federal Clean Water Act, section 303(d) areas designated as Areas of Special Biological Significance or with the RARE beneficial use by the SWRCB in the Water Quality Control Plan for the San Diego Basin (1994 and amendments), areas designated as preserves for species- protection purposes by the State of California or a local government, and pre-approved mitigation areas identified in agreements between the County and state or federal natural resources agencies.

(l) "Feasible" means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, and technological factors as determined in the sole discretion of the County.

(m) "Illicit connection" means a pipe, facility, or other device connected to the stormwater conveyance system or receiving waters, which has not been authorized by the County; or a permitted/authorized pipe, facility, or other device, which conveys unauthorized discharges.

(n) "Impervious surface area" means the ground area covered or sheltered by an impervious surface, measured in plan view. For example, the "impervious surface area" for a pitched roof is equal to the ground area it shelters, rather than the surface area of the roof itself.

(o) "Infiltration BMPs" means any treatment BMP designed primarily to percolate water into the subsurface. These include infiltration trench, infiltration basin, dry wells, permeable pavements without an under-drain, and sub-surface reservoir beds without an under-drain. BMPs that have some incidental infiltration but which are designed primarily to retain water or to treat water, such as bioretention, filter strips, permeable pavements with an under-drain, or vegetated/rock swales are not infiltration BMPs.

(p) "Land disturbance activity" means any activity, whether or not a stormwater management plan or County permit or approval is required, that moves soils or substantially alters the land such as grading, digging, cutting, scraping, stockpiling or excavating of soil; placement of fill materials; paving, pavement removal, exterior construction; substantial removal of vegetation where soils are disturbed including but not limited to removal by clearing or grubbing; clearing or road- cutting associated with geotechnical exploration and assessment, percolation testing, or any other activity that is a condition of a permit application; or any activity which bares soil or rock or involves streambed alterations or the diversion or piping of any watercourse. Land disturbance activity does not include routine maintenance to maintain original line and grade, hydraulic capacity, or the original purpose of the facility, emergency construction activities required to protect public health and safety; or tilling or cultivating land exclusively for the purpose of growing plants or animals, provided that all disturbed material remains on the same site, the tilling or cultivating will not block or divert any natural drainage way, and the land to be tilled or cultivated has been in agricultural production for at least one of the preceding five years.

(q) "Maximum extent practicable" (MEP) shall have the same meaning as defined in California Regional Water Quality Control

Board, San Diego Region Order No. R9-2007-0001, NPDES No. CAS0108758, Attachment C.

(r) "Natural drainage" means a drainage consisting of native soils such as a natural swale or topographic depression which gathers or conveys run-off to a permanent or intermittent watercourse or waterbody.

(s) "Non-stormwater" shall have the same meaning as defined in California Regional Water Quality Control Board, San Diego Region Order No. R9-2007-0001, NPDES No. CAS0108758, Attachment C.

(t) "Performance standard" means a requirement under this chapter that specifies a result that must be achieved (e.g., "minimize impervious surface area" or "do not impair receiving water quality") without specifying the means that must be used to achieve that result.

(u) Pollutant: means any agent introduced to stormwater or non-stormwater through human activity that may cause, potentially cause, or contribute to the degradation of water quality such that public health, the environment, or beneficial uses of waters may be affected. The term includes dredged spoil, rock, sand, or silt (excluding sediment, silt, or substances in quantities which would enter stormwater from a natural undeveloped watershed); solid waste, sewage, garbage, or medical waste; wrecked or discarded equipment; radioactive materials; industrial waste; fecal coliform, fecal streptococcus, and enterococcus bacteria and other pathogens that pose a threat to human health; volatile organic carbon, surfactants, oil and grease, petroleum hydrocarbons, total organic carbon, lead, copper, chromium, cadmium, silver, nickel, zinc, cyanides, phenols, and biocides; and any contaminant which can significantly degrade the quality of receiving waters by altering pH, total suspended or settleable solids, biochemical oxygen demand, chemical oxygen demand, nutrients, or temperature.

(v) "Pollution prevention" means the practices and processes that reduce or eliminate the generation of pollutants such as the use of smaller quantities of toxic materials or substitution of less toxic materials; changes to production processes to reduce waste; decreases in waste water flows; recycling of wastes as part of the production process; segregation of wastes, and treatment of wastes on site to decrease volume or toxicity.

(w) Priority development project means:

(1) a new development project that falls within any of the following categories:

(A) Residential subdivisions of 10 or more dwelling units. This category includes single-family homes, multi-family homes, condominiums, and apartments.

(B) Commercial developments greater than one acre. This category is any development on private land that is not for heavy industrial or residential uses where the land area for development is greater than one acre. The category includes: hospitals; laboratories and other medical facilities; educational institutions; recreational facilities; commercial nurseries; multi-apartment buildings; car wash facilities; mini-malls and other business complexes; shopping malls; hotels; office buildings; public warehouses; automotive dealerships; airfields; and other light industrial facilities.

(C) Heavy industry developments greater than one acre. This category includes: manufacturing plants, food processing plants, metal working facilities, printing plants, and fleet, such as buses or trucks storage areas.

(D) Automotive repair shops. This category is a facility that is described in any one of the following Standard Industrial Classification (SIC) codes: 5013, 5014, 5541, 7532-7534, or 7536-7539.

(E) Restaurants. This category is any food establishment that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (SIC code 5812), where the land area for development is greater than 5,000 square feet. Restaurants where land development is less than 5,000 square feet shall meet all SUSMP requirements except for structural treatment BMP, numeric sizing criteria requirement, and hydromodification requirement.

(F) All hillside development greater than 5,000 square feet. This category is defined as any development which creates 5,000 square feet of impervious surface which is located in an area with known erosive soil conditions and where the development will grade on any natural slope that is 25% or greater.

(G) Environmentally sensitive areas. This category is any development located within or directly adjacent to or discharging directly to an environmentally sensitive area (where discharges from the development or redevelopment will enter receiving waters within the environmentally sensitive area), which either creates 2,500 square feet of impervious surface on a proposed project site or increases the area of imperviousness of a proposed project site to 10% or more of its naturally occurring condition. For purposes of this definition, "directly adjacent" means situated within 200 feet of the environmentally sensitive area and "discharging directly to" means outflow from a drainage conveyance system that is composed entirely of flows from the subject development or redevelopment site, and not commingled with flows from adjacent lands.

(H) Parking lots 5,000 square feet or more or with 15 or more parking spaces and potentially exposed to urban run-off.

Parking lot is defined as a land area or facility for the temporary parking or storage of motor vehicles used personally, for business, or for commerce.

(I) Street, roads, highways, and freeways. This category is the construction of any paved surface which is 5,000 square feet or greater used for the transportation of automobiles, trucks, motorcycles, and other vehicles.

(J) Retail gasoline outlets (RGOs). This category is a retail establishment that sells gasoline and is 5,000 square feet or greater in size or encounters 100 average daily trips or more per day.

(2) A redevelopment project that creates, adds or replaces at least 5,000 square feet of impervious surfaces to a developed site described in section 67.802(w)(1) (A) - (E), (H) and (I).

(x) "Public improvement projects" shall have the same meaning as defined in the Labor Code or Public Contract Code.

(y) "Rainy season" means from November 11 through April 30.

(z) "Receiving waters" shall mean Waters of the State as defined in California Regional Water Quality Control Board, San Diego Region Order No. R9-2007-0001, NPDES No. CAS0108758, Attachment C.

(aa) "Redevelopment" means creation, addition, or replacement of impervious surface on an already developed site. Examples include the expansion of building footprints, road widening, the addition or replacement of a structure, and creation or addition of impervious surfaces. Replacement of existing impervious surfaces includes any activity that is not part of a routine maintenance activity where impervious material(s) are removed exposing underlying soil during construction. Redevelopment does not include trenching and resurfacing associated with utility work, resurfacing and reconfiguring surface parking lots and existing roadways, new sidewalk construction, pedestrian ramps, or bike lane on existing roads; and routine replacement of damaged pavement, such as pothole repair.

(bb) "Residential discharger" means the occupant, real property owner(s), manager, caretaker, or association board officer of a single-family dwelling, a multiple-family dwelling, mobile home park, condominium complex, or board-and-care house, or other housing structure.

(cc) "Source control BMP" shall have the same meaning as defined in California Regional Water Quality Control Board, San Diego Region Order No. R9-2007-0001, NPDES No. CAS0108758, Attachment C.

(dd) "Stormwater conveyance system" means private and public drainage facilities other than sanitary sewers within the unincorporated area of San Diego County by which urban run-off may be conveyed to receiving waters, and includes but is not limited to roads, streets, constructed channels, aqueducts, storm drains, pipes, street gutters, inlets to storm drains or pipes, or catch basins.

(ee) "Stormwater management" means the use of structural (treatment control) or non-structural (source control) BMPs that are designed to reduce urban run-off pollutant loads, discharge volumes, and/or peak discharge flow rates or velocities. When applied to the County or another municipality, stormwater management also includes planning and programmatic measures.

(ff) "Stormwater management plan" means a plan, submitted on a County form or in a County approved format with an application for a County permit or other County approval, identifying the measures that will be used for stormwater and non-stormwater management during the permitted activity.

(gg) "Stormwater BMP implementation plan" means a document which meets the requirements for a total maximum daily load (TMDL) study, and is submitted and approved by the San Diego Regional Water Quality Control Board.

(hh) "Stormwater pollution prevention plan" (SWPPP) means an approved site-specific plan that (1) identifies and evaluates sources of pollutants associated with activities that may affect the quality of stormwater discharges and authorized non-stormwater discharges from a facility or site, and (2) identifies and implements site-specific BMPs to reduce to the MEP or to prevent pollutants in stormwater or authorized non-stormwater discharges.

(ii) "SUSMP standard urban stormwater mitigation plan for land development projects and public improvement projects" means the SUSMP standard urban stormwater mitigation plan for land development projects and public improvement projects adopted by the County Board of Supervisors on November 13, 2002, as it may thereafter be revised by the Director, Department of Public Works.

(jj) "Treatment control BMP" shall have the same meaning as defined in California Regional Water Quality Control Board, San Diego Region Order No. R9-2007-0001, NPDES No. CAS0108758, Attachment C.

(kk) Tributary to an impaired water body means a facility or activity is tributary to an impaired water body if urban run-off from that facility or activity enters (1) the stormwater conveyance system at a place and in a manner that will carry pollutants for which that water body is impaired in that discharge to the impaired water body; (2) a flowing stream that will carry pollutants for which that water body is impaired in that discharge to the impaired water body; or (3) an ephemeral stream that reaches the impaired water body during

storm events and that will carry pollutants for which that water body is impaired from the facility or activity to the impaired water body during such storm events.

(ll) "Water quality standards" shall have the same meaning as defined in California Regional Water Quality Control Board, San Diego Region Order No. R9-2007-0001, NPDES No. CAS0108758, Attachment C.

(Added by Ord. No. 9424 (N.S.), effective 2-20-02; amended by Ord. No. 9518 (N.S.), effective 1-10-03; amended by Ord. No. 9589 (N.S.), effective 9-5-03; amended by Ord. No. 9926 (N.S.), effective 4-11-08)

SEC. 67.803. GENERAL PROVISIONS.

(a) Interpretation of this chapter shall be consistent with the provisions of the California Regional Water Quality Control Board, San Diego Region Order No. R9-2007-0001, NPDES Permit No. CAS0108758. The requirements of this chapter are not intended to interfere with, abrogate or annul any other ordinance, rule or regulation, statute, or other provision of law. The requirements of this chapter are minimum requirements, and where any provision of this chapter imposes restrictions different from those imposed by any other ordinance, rule or regulation, or other provision of law, whichever provisions are more restrictive or impose higher protective standards for human health or the environment shall take precedence.

(b) Except as set forth in section 67.805, this chapter shall apply to any development project in the County, whether or not a permit or other approval is required.

(c) County Permits and Approvals.

(1) An application for any of the following discretionary permits or approvals shall be accompanied by plans demonstrating how the development project will comply with the requirements of this chapter. The permit or approval shall not be granted unless the decision maker determines that the development project complies with the applicable requirements of this chapter.

(A) Administrative permit for clearing.

(B) Final map modification.

(C) Grading plans or grading permits, if approval is discretionary, including Modification or Renewal.

(D) Improvement Plan, including Modification.

(E) Landscape Plan.

(F) Major Use Permit, including modification, minor deviation, or extension.

(G) Minor Use Permit, including modification, minor deviation, or extension.

(H) Parcel map modification.

(I) Reclamation plan.

(J) Site plan, including modification, minor deviation, or extension.

(K) Solid waste facility permit.

(L) Tentative map, including resolution amendment, time extension, expired tentative map and revised tentative map.

(M) Tentative parcel map, including resolution amendment, time extension, expired tentative parcel map and revised tentative parcel map.

(N) Watercourse permit.

(2) An application for any of the following ministerial permits or approvals shall be accompanied by plans demonstrating how the development project will comply with the requirements of this chapter. The permit or approval shall not be granted unless the decision-maker determines that the development project complies with the requirements of this chapter.

(A) Building permit.

(B) Construction right of way permit.

(C) Encroachment permit.

(D) Excavation permit.

(E) Grading plans or grading permits, if approval is ministerial, including modification or renewal.

(F) On-site wastewater system permit.

(G) Underground tank permit.

(H) Well permit.

(d) A priority development project shall not receive final approval until the developer has installed and implemented the required BMPs in accordance with the requirements of this chapter.

(e) If the authorized enforcement official identifies a discharge or category of facility or activity that is a significant source of contaminants to waters of the United States, despite compliance with this chapter, the discharger may be ordered by the authorized enforcement official to install, implement and maintain additional source control or treatment control BMPs to prevent or reduce contamination in stormwater and non-stormwater to the MEP. Any such order shall specify a reasonable date by which those BMPs must be put in place. Failure to install, implement, or maintain additional BMPs as required by such order, is a violation of this chapter.

(f) Areas within which facilities and sources will be presumed to be tributary to an impaired water body are identified on the most current listing in the Clean Water Act, section 303(d). The presumption that a discharge is tributary to an impaired water body can be overcome for a particular discharge based on specific facts and analysis presented by a discharger. In making a site-specific determination as to whether a discharge is tributary to an impaired water body, consideration may be given to the amount of water and pollutant discharged; to whether the pollutant for which the water body is impaired is a suspended or dissolved pollutant; to whether the pollutant is volatile or degradable; and to whether the pollutant is substantially removed during transport by any natural or man-made features (sinks, infiltration areas, ponds or impoundments, vegetated swales or wetlands, media filtration devices, etc.) located between the site and the impaired water body. Any such analysis must consider common mechanisms for pollutant mobilization, remobilization, and transport over time.

(g) An Authorized Enforcement Official may modify any requirement imposed by this chapter to allow the on-site collection and use of stormwater, or the collection of stormwater for delivery to and use at County-designated sites, provided the modified requirements are enforceable and provide equivalent environmental protection.

(Added by Ord. No. 9424 (N.S.), effective 2-20-02; amended by Ord. No. 9518 (N.S.), effective 1-10-03; amended by Ord. No. 9589 (N.S.), effective 9-5-03; amended by Ord. No. 9926 (N.S), effective 4-11-08)

SEC. 67.804. DISCHARGE PROHIBITIONS.

(a) It is unlawful for any person to discharge or cause the discharge of pollutants directly or indirectly into the stormwater conveyance system or receiving waters, except as set forth in section 67.805 or as otherwise authorized by law.

(b) It is unlawful for any person to construct, use or maintain a connection to the stormwater conveyance system that discharges any matter other than stormwater, except as set forth in section 67.805(a). This section expressly supersedes any previously issued permit or authorization granted by the County and expressly prohibits any previously legal non-conforming connection.

(c) It is unlawful to throw, deposit, leave, abandon, maintain, or keep materials or wastes on public or private lands in a manner and place where they may result in a discharge.

(d) Stormwater discharges from the site may not contain sediments in amounts in excess of the sediments that would have been discharged from the site in an undisturbed condition.

(Added by Ord. No. 9424 (N.S.), effective 2-20-02; amended by Ord. No. 9589 (N.S.), effective 9-5-03; amended by Ord. No. 9926 (N.S), effective 4-11-08)

SEC. 67.805. EXEMPTIONS FROM DISCHARGE PROHIBITIONS.

Except as described in section 67.805(f), the following are exempt from the prohibitions in section 67.804:

(a) Any discharge or connection regulated under a valid facility-specific NPDES permit or facility-specific Regional Water Quality Control Board Waste Discharge Requirements permit, not including a state General permit, provided that the discharge or connection is in compliance with all relevant permit conditions to the satisfaction of the Regional Water Quality Control Board.

(b) Stormwater discharges regulated under the State General Industrial Stormwater Permit or State General Construction Stormwater permit, are exempt from discharge prohibitions established by this chapter, provided that the discharger is in compliance with all relevant general permit conditions to the satisfaction of the Regional Water Quality Control Board.

(c) Non-stormwater agricultural discharges that the State Water Resources Control Board or Regional Water Quality Control Board explicitly allows pursuant to a written waiver, waste discharge requirement, or formal policy, provided that the discharger can demonstrate compliance with all relevant permit, waiver or policy conditions to the satisfaction of the State Water Resources Control Board or Regional Water Quality Control Board.

(d) Except as described in section 67.806(g), the following categories of non-stormwater discharges, if the discharger installs, implements and maintains BMPs or other appropriate action to reduce the discharge of pollutants to the MEP using the best available technology and if the discharge does not degrade the stormwater conveyance system:

(1) Diverted stream flows, provided required permits are obtained.

(2) Flows from riparian habitats and wetlands.

(3) Foundation drains, not including active groundwater dewatering systems.

(4) Individual residential washing of vehicles.

(5) Irrigation water including recycled water used for irrigation.

(6) Landscape irrigation.

(7) Lawn watering.

(8) Rising ground water.

(9) Swimming pool, spa, or fountain discharges (if the disinfectant concentration is reduced to 0.0 ppm chlorine or bromine and the pH adjusted to 7.2 - 8.0 pH) excluding filter backwash, acid wash, and algicide-treated other process water discharges.

(10) Uncontaminated ground water infiltration to storm drains.

(11) Uncontaminated pumped ground water.

(12) Water from crawl space pumps.

(13) Water from footing drains, not including active groundwater dewatering systems.

(14) Springs.

(15) Air conditioning condensation.

(16) County pre-approved diversions of potable water as part of utility line maintenance, provided that the discharge does not cause erosion or contain sediment or other pollutants.

(17) Discharges from potable water sources not subject to NPDES Permit No. CAG679001, other than water main breaks.

(e) Exemptions to protect public health and safety. Discharges of trauma scene post-cleanup residues, and other discharges provided that it is in conformance with the California RWQCB's Conditional Waiver of Waste Discharge Requirements, Resolution No. R9-2007-0104, adopted October 10, 2007.

(f) Any discharge category described in section 67.805(d) that the authorized enforcement official determines is a significant source of pollutant to waters of the United States shall be prohibited from entering the stormwater conveyance system or receiving waters, or the discharger shall implement additional BMPs to reduce pollutants in that discharge to the MEP, using the best available technology.

(1) The authorized enforcement official may issue a written notice to the discharger imposing a schedule to cease the discharge or implement the additional BMPs.

(2) The schedule may take into account the nature and severity of any effects caused by the discharge and the time required to design, engineer, fund, procure, construct and make appropriate BMPs or interim BMPs operational.

(Added by Ord. No. 9424 (N.S.), effective 2-20-02; amended by Ord. No. 9518 (N.S.), effective 1-10-03; amended by Ord. No. 9926 (N.S), effective 4-11-08)

SEC. 67.806. GENERAL BEST MANAGEMENT PRACTICE REQUIREMENTS.

The following requirements apply to all dischargers:

(a) All dischargers must perform and maintain the following BMPs:

(1) Prior to the rainy season, remove or secure any significant accumulations of eroded soils from slopes previously disturbed by landscaping, clearing or grading, if those eroded soils could otherwise enter and impact the stormwater conveyance system or receiving waters during the rainy season.

(2) Implement, as practicable, those stormwater pollution prevention practices that are generally recognized in that discharger's industry or business as being effective and economically advantageous.

(3) Eliminate illicit connections.

(4) Protect, from erosion, those slopes that have been disturbed by clearing, grading, or landscaping and are more than three feet in height or steeper than 3:1 (run-to-rise). Slope protection shall occur prior to the first rainy season following the clearing, grading or landscaping of the slope and continuously thereafter.

(5) Store all materials and wastes with the potential to pollute stormwater in a manner that either prevents contact with rainfall and run-off from storm flows or contains contaminated run-off for treatment and disposal.

(6) Locate, configure, and manage stockpiles of soil, green waste and compost to prevent the release of materials to the stormwater conveyance system or receiving waters.

(7) Use all materials with the potential to pollute run-off, such as outdoor cleaning and maintenance products, fertilizers, pesticides and herbicides in accordance with label directions. No such product may be disposed of or rinsed into receiving waters or the stormwater conveyance system.

(8) Use dry methods such as sweeping, vacuuming, raking, and application of absorbents to cleanup pollutants, unless wet cleanup methods are otherwise allowed in this chapter.

(b) All applications to the County for a permit or approval associated with a development project must be accompanied by a stormwater management plan on a form or in a format specified by the County. The plan shall describe the manner in which the BMPs required by this chapter will be implemented.

(c) All development projects with the potential to add pollutants to stormwater or to affect the flow rate or velocity of stormwater run-off after construction is completed shall employ the following post-construction BMPs, where feasible, to ensure that pollutants and run-off from the development will be reduced to the MEP and will not significantly degrade receiving water quality:

(1) Source control BMPs. Source control BMPs include storm drain system stenciling and posting of signs; posting of signs or other form of notification at storm drain inlets and access points to creeks and channels discouraging illegal dumping and stating the receiving water by name; properly designed outdoor material storage areas; properly designed trash storage areas; and implementation of efficient irrigation systems.

(2) Low Impact Development (LID) BMPs. LID BMPs shall maximize infiltration, provide retention, slow run-off, minimize impervious footprint and constructed widths and direct run-off from impervious areas into landscaping.

(3) Buffer zones. A project shall be designed to include a buffer zone for natural water bodies. Where buffer zones are not feasible, other equally serving methods may be implemented such as trees or access restrictions.

(4) Construction BMPs. Implement land disturbance BMPs described in section 67.811.

(5) Maintenance agreement.

(d) BMPs at construction facilities shall be inspected by the discharger before and following predicted rain events.

(e) BMPs shall be maintained to function as intended and designed. BMPs which fail shall be repaired or replaced as soon as it is safe or practicable. If BMPs fail notwithstanding their intent or design, the BMPs shall be modified or upgraded to prevent any further failure in the same or similar circumstances.

(f) Notwithstanding the provisions of this chapter, an authorized enforcement official may require a discharger to prepare and submit a Stormwater Pollution Prevention Plan (SWPPP) for approval by the authorized enforcement official as follows:

(1) If the discharger fails to comply with any applicable requirement of this chapter after one or more written notifications or other enforcement action, because BMPs have been determined to be inadequate or are not being adequately maintained.

(2) The activity at issue is considered a significant source of contaminants to the stormwater conveyance system or receiving waters despite compliance with this chapter. Any discharger required to submit and to obtain approval of a SWPPP shall install, implement and maintain the BMPs specified in the approved SWPPP.

(3) The SWPPP shall identify the BMPs or corrective measures will be used by the discharger to prevent or control pollution of stormwater to the MEP. If the facility operates under the State NPDES General Industrial Stormwater Permit, the SWPPP submitted to the County shall at a minimum meet the requirements of that permit. If the activity at issue is a construction or land disturbance activity, the SWPPP submitted to the County shall, at a minimum, meet the requirements of the State NPDES General Construction Stormwater permit. If a facility discharges non-stormwater to ground water, the facility shall obtain an RWQCB permit as required by the State Water Code, and shall describe the requirements of that permit in the SWPPP.

(g) Notification of Spills, Releases and Illegal Discharges.

(1) Spills, releases, or discharges of pollutants to receiving waters or to the stormwater conveyance system shall be reported by the discharger as required by all applicable state and federal laws.

(2) Any such spills, releases or discharges with the potential to endanger health, safety or the environment shall be reported to the Director or Assistant Director, Department of Public Works, within 24 hours after discovery of the spill, release or discharge. Spills that have been completely contained and cleaned up on-site are not considered significant unless they pose a threat to human health or safety.

(3) If safe to do so, necessary actions shall be taken to contain and minimize the spill, release or discharge to the MEP

(h) Sampling, Testing, Monitoring, and Reporting.

(1) Dischargers shall perform the sampling, testing, monitoring and reporting required by this chapter.

(2) An authorized enforcement official may order a discharger to conduct testing or monitoring and to report the results to the County if one or more of the following occurs:

(A) The authorized enforcement official determines that testing or monitoring is needed to determine whether BMPs are effectively preventing or reducing pollution in stormwater to the MEP.

(B) Testing or monitoring is needed to determine whether the facility is a significant source of contaminants to receiving waters.

(C) The authorized enforcement official determines that testing or monitoring is needed to assess the impacts of a discharge on the public's health, safety or the environment.

(D) A discharge has not been eliminated after written notice by an authorized enforcement official.

(E) The RWQCB requires the County to provide any information related to the discharger's activities.

(3) Sampling, testing or monitoring ordered pursuant to section 67.808(b)(2)(D) may include one or more of the following:

(A) Visual monitoring of dry weather flows, wet weather erosion, discharge points or conditions of BMPs.

(B) Visual monitoring of premises for spills or discharges.

(C) Laboratory analyses of stormwater or non-stormwater discharges for pollutants.

(D) Background or baseline monitoring or analysis.

(E) Monitoring of receiving waters or sediments that may be affected by pollutant discharges by the discharger or by a group of dischargers including the discharger.

(4) The authorized enforcement official may direct the manner in which the results of required testing and monitoring are reported, and may determine that sampling, testing or monitoring may discontinue.

(Added by Ord. No. 9424 (N.S.), effective 2-20-02; amended by Ord. No. 9518 (N.S.), effective 1-10-03; amended by Ord. No. 9589 (N.S.), effective 9-5-03; amended by Ord. No. 9926 (N.S), effective 4-11-08)

SEC. 67.807. ADDITIONAL MINIMUM BEST MANAGEMENT PRACTICE REQUIREMENTS FOR RESIDENTIAL ACTIVITIES AND USES.

Residential dischargers shall install, implement and maintain the following additional minimum BMPs, where applicable:

(a) Motor Vehicle or Boat Repair and Maintenance.

(1) All repair and maintenance activities shall be performed under a permanent roof or other permanent cover, where feasible.

(2) All maintenance and repair activities conducted without cover or without BMPs to prevent discharges are prohibited during times of precipitation.

(3) Any release of fluids, including boat bilge water, during repair or maintenance shall be promptly contained and cleaned up. Any absorbent materials used shall be disposed of as required by law.

(4) Degreasing or pressure washing of engines and other parts is prohibited unless the liquid wastes are contained and properly disposed of as required by law.

(5) Automotive and boat materials and wastes shall be stored indoors, under cover, or in secure and watertight containers.

(b) Motor Vehicle Washing.

(1) Individual motor vehicles shall be washed over porous surfaces such as lawns and gravel areas where feasible.

(2) Unused detergent solutions shall not be disposed of directly or indirectly into the stormwater conveyance system or receiving waters. Disposal to the sanitary sewer, such as a sink, toilet or floor drain or to a porous surface, where allowed by this chapter, is required.

(3) The use of "hose off" or single use engine degreasing chemicals is prohibited, unless captured and disposed of properly.

(4) Motor vehicle washing other than individual residential motor vehicle washing is prohibited, unless all wash and rinse water is diverted to a porous area, or the sanitary sewer, or contained and disposed of in the same manner.

(5) Degreasing or pressure washing of engines and other parts is prohibited unless the liquid wastes are contained and properly disposed of as required by law.

(c) Motor Vehicle Parking.

(1) Residential dischargers shall remove excessive accumulations of oil and grease deposited by vehicles they own from parking areas, using dry clean up methods such as absorbents, scraping, vacuuming, sweeping, mop and bucket.

(2) Residential dischargers shall move vehicles from streets when notified to allow street cleaning.

(d) Home and garden care activities and product use.

(1) Residential dischargers or their contractors shall adjust irrigation systems to avoid excessive run-off.

(2) Residential dischargers or their contractors shall clean up and properly dispose of spills from gardening chemicals, fertilizers or soils to non- porous surfaces.

(3) Lawn and garden care products shall be stored in closed, labeled containers, such as in covered areas, off the ground, or under protective tarps, and in a manner that will not lead to a discharge.

(4) Disposal of household hazardous directly or indirectly to the trash or to the street, gutter or storm drain is prohibited.

(e) Home care and maintenance.

(1) Cleaning of painting equipment in or over streets, sidewalks, gutters, or yard drains is prohibited.

(2) Action shall be taken to minimize and contain all spills of hazardous materials, if it is safe to do so.

(3) Household hazardous materials shall be stored indoors or under cover, and in closed and labeled containers.

(f) Manure and pet waste management.

(1) Where practicable, all areas, where livestock, horses or other large animals are confined, shall be bermed or curbed to contain animal waste where it is produced or managed in a manner that avoids a discharge to the stormwater conveyance system or receiving waters. If compliance is not practicable, manure shall be cleaned up at least twice weekly and must be composted or properly stored prior to disposal.

(2) Areas used for storing or composting manure shall be located, configured or managed to prevent run-off to stormwater conveyance system or receiving waters.

(g) Private sewer laterals and on-site wastewater systems.

(1) Private sewer laterals shall be cleaned, maintained and when necessary replaced to prevent seepage and spills. On-site wastewater systems shall be pumped, maintained and when necessary modified or replaced to prevent spills.

(2) Spills from private sewer laterals and on-site wastewater systems shall be contained and cleaned-up in a manner that minimizes any release of pollutants to the stormwater conveyance system or receiving waters.

(3) Any release from a private sewer lateral that enters the stormwater conveyance system or receiving waters shall be immediately reported to the County.

(4) Failed on-site wastewater systems shall be repaired or replaced.

(Added by Ord. No. 9424 (N.S.), effective 2-20-02; amended by Ord. No. 9589 (N.S.), effective 9-5-03; amended by Ord. No. 9926 (N.S), effective 4-11-08)

SEC. 67.808. ADDITIONAL MINIMUM BEST MANAGEMENT PRACTICE REQUIREMENTS FOR BUSINESS ACTIVITIES .

The following requirements apply to all business activities:

(a) The owner or operator shall install, implement, and maintain BMPs appropriate to the activity, as specified in the following areas and manner:

(1) Stormwater BMP training and documentation.

(A) Provide training at least annually to all operators, employees, and workers with responsibility for activities that could result in unauthorized discharges.

(B) Maintain, on site, documented evidence of training and provide the documentation upon request of the authorized enforcement official.

(C) The following categories shall be included in training and documentation:

i. Preventive maintenance.

ii. Good housekeeping.

iii. Proper waste disposal.

iv. Non-stormwater disposal alternatives.

v. Equipment/vehicle maintenance and repair.

vi. Spill response, containment, and recovery.

vii. Recycling.

viii. BMP maintenance.

(2) Where required to implement a SWPPP, retain on site a copy of a current, complete, site-specific SWPPP and make it available for review by the authorized enforcement official, upon request.

(3) Signage.

(A) Post signs prohibiting discharges to the stormwater conveyance system or receiving waters, when required by the authorized enforcement official.

(B) Signs requiring the use of concrete washout facilities shall be installed adjacent to each concrete washout facility.

(4) Review the operations and procedures relating to protecting the stormwater conveyance system and receiving waters from pollutants at least annually. Maintain, on site, documented evidence of the annual review, and provide the documentation of the authorized enforcement official upon request.

(5) Implement pollution prevention methods or those stormwater pollution prevention practices that are generally recognized in that discharger's industry or business to eliminate or reduce pollutants in run-off to the MEP.

(6) Housekeeping.

(A) The property on which the business activity is located shall be inspected for accumulations of debris, litter, waste, organic matter, such as leaves or cut grass or other materials. Such accumulations shall be removed and disposed of in accordance with this chapter.

(B) Areas where work is being actively conducted shall be cleaned daily using dry clean-up methods such as sweeping, wiping, vacuuming, or raking. Wet clean-up methods such as hosing may only be used if precautions have been taken to prevent the discharge of wash water or other materials to the stormwater conveyance system or receiving waters.

(7) Liquid waste management

(A) Wet cleanup methods such as hosing, steaming or pressure washing is prohibited except where adequate precautions have been taken to prevent the discharge of wash water or other pollutants into the stormwater conveyance system or receiving waters. Adequate measure may include filtering all pollutants from the water prior to discharge.

(B) Cleaning by using wet methods such as hosing, steam-cleaning, pressure-washing is prohibited unless adequate precautions have been taken to prevent the entry of wash water and other contaminants into the stormwater conveyance system or receiving waters.

(C) Disposal of slurries to the stormwater conveyance system or receiving waters is prohibited.

(D) Rinse water shall be confined to a designated area such as a sanitary sewer, dead-end sump, process treatment system, or hole where water percolates or evaporates and solids are removed for collection and disposal. Rinse water and solids shall be re-used, recycled, or disposed of in accordance with this chapter.

(E) Wash water shall be directed to an approved sanitary sewer or landscaped locations.

(F) Wash racks.

i. Wash rack areas shall have perimeter control and be properly sloped to a grated floor drain.

ii. Wash rack areas shall drain to the sanitary sewer or to a holding tank, except that wash racks for animals may drain to the ground in accordance with this chapter.

(G) Disposal of wastewater to the stormwater conveyance system, receiving waters, or the ground, is prohibited.

(H) If provided, pump-out services for boats, portable toilets, or other holding tanks shall be conducted in a manner that prevents the release of sewage to the stormwater conveyance system or receiving waters.

(I) Wastewater shall be disposed to the sanitary sewer at the job site or to a holding tank. Disposal of wastewater contained in holding tanks shall be disposed of to the sanitary sewer at the business's company headquarters or at an approved location.

(J) Discharging backwash wastewater to the stormwater conveyance system or receiving waters is prohibited. Backwash wastewater may be disposed to the sanitary sewer; to a holding tank or settling pond; or where allowed by this chapter, by infiltration to the soil.

(K) Pool, spa, and fountain water intended for discharge to the stormwater conveyance system shall contain a concentration of zero ppm chlorine or bromine prior to discharge.

(L) Pool, spa, and fountain water discharged after acid washing shall be neutralized to a pH of 7.2 - 8.0.

(M) If rinse water from the cleaning of portable sanitary toilet closets cannot be properly disposed of to the sanitary sewer at a job site, it shall be contained prior to disposal at the service facility or other approved facility.

(N) Wash and rinse water from building and pavement washing that cannot be properly disposed of at the job site shall be collected and contained for recycling, reuse, or proper disposal.

(O) Where irrigation tail-water return ponds are used, the ponds shall be designed with the appropriate vertical separation between the base of the pond and the seasonal high groundwater mark and must be lined or managed to prevent the movement of water-soluble chemicals to the groundwater and to stormwater flows.

(8) Materials and waste management.

(A) Spill prevention and response.

i. Materials and equipment necessary for spill response shall be maintained and kept readily accessible.

ii. All operators, employees, and workers conducting potential discharge activities shall be trained in their proper use.

iii. Spills and leaks shall be promptly cleaned up and the generated waste disposed of in accordance with the applicable federal, state and local laws and regulations.

(B) Hazardous materials and hazardous wastes.

i. Hazardous materials and wastes shall be stored, managed, and disposed in accordance with applicable federal, state and local laws and regulations.

ii. Hazardous materials and wastes shall be stored above the ground. Where practicable, provide overhead coverage for all outside hazardous materials or waste storage areas. If overhead coverage is not available, stored materials shall be covered with an impervious material such as a tarp or other similar method.

iii. Paints, coatings, thinners, and other materials shall be disposed of in accordance with this chapter.

iv. Secondary containment of hazardous waste shall be provided around storage areas from which a significant potential exists to discharge materials or wastes to the stormwater conveyance system or receiving waters.

v. Hazardous waste storage areas shall be inspected by the owner or operator, at least once prior to the rainy season and monthly during the rainy season.

vi. Pesticides and other chemical products shall be used, stored, and disposed of in accordance with applicable federal, state, and local laws and regulations.

vii. The outdoor application of fertilizers and pesticides is prohibited during rainfall.

viii. Pesticide use shall be reduced to the MEP in areas where recurring applications of pesticides are performed.

(C) Solid, non-hazardous waste.

i. Trash storage and disposal areas shall be kept clean and free of debris.

ii. Dumpsters, grease bins, and other containers shall be maintained in a clean and leak proof condition and shall be kept securely closed when not in use.

iii. Materials and equipment necessary for the clean-up of trash and debris shall be maintained and kept readily accessible.

iv. Loose aggregate, mortar, and dust shall be routinely cleaned up using dry cleanup methods such as sweeping or vacuuming. Wet methods may be used only if necessary to adequately clean equipment for reuse, or where water must be used to lubricate and flush a cut, but only if performed in accordance with this chapter.

v. All areas where livestock, horses or other large animals are confined shall be bermed or curbed in a manner that avoids a discharge to the stormwater conveyance system or receiving water. If berms or curbs are not practicable, manure shall be cleaned up at least twice weekly and must be composted or properly stored prior to disposal.

(D) Loading and unloading.

i. Storm drain inlets located within or down-gradient of loading or unloading areas shall be covered or otherwise protected during loading and unloading activities to prevent the entry of pollutants into the stormwater conveyance system or receiving waters.

ii. Equipment and supplies stored in loading and unloading areas shall be properly maintained to prevent leaks and spills to the stormwater conveyance system or receiving waters, and to prevent their contact with rainfall and run-on.

(E) Storage.

i. Outdoor storage areas of materials and equipment shall be configured using berms, dikes, or other diversion structures or other measures that elevate stored materials and equipment from site surfaces.

ii. Containers shall be kept in a leak-proof condition, securely closed when not in use, and stored in a manner that protects them from contact with stormwater.

iii. Storage of cement and masonry materials shall be above ground and covered.

iv. Placement of stock piles within any drainage system is prohibited.

v. Stockpiles and bulk materials, such as soil, fertilizer, and potting mixture shall be covered during windy and rainy conditions where practicable. Prior to the onset of predicted rain, stockpiles shall be covered and bermed to prevent contact with stormwater.

(9) Vehicles and equipment.

(A) All vehicles and equipment shall be properly maintained and inspected to ensure their proper functioning.

(B) Vehicles and equipment shall not be washed in areas where wash water or rinse water will drain to the stormwater conveyance system or receiving waters.

(C) Infiltration of wash or rinse water to pervious surfaces is allowed with a minimum of 10 feet separation between the groundwater and the pervious surface, except that wash or rinse water generated from cleaning engines, mechanical parts, or heavy equipment shall not infiltrate a pervious surface.

(D) The use of hose-off or single-use engine degreasing chemicals is prohibited, unless captured and properly disposed.

(E) Maintenance and repair equipment shall be kept clean to avoid the build up of grease and oil.

(F) Fluids shall be drained from any retired vehicles or equipment stored on site.

(G) Vehicle and equipment maintenance and repair work such as body work shall be conducted indoors or under cover, where practicable. If work cannot be conducted indoors or under cover, other BMPs shall be implemented to prevent the discharge of pollutants into the stormwater conveyance system or receiving waters.

(H) Major repair and maintenance work on boats over or in the water is prohibited. Touch-up painting, tune ups, or other similar activities are not considered major repair or maintenance work, but may only be conducted over or in the water if adequate precautions have been taken to prevent the entry of pollutants into the water.

(10) Outdoor areas--housekeeping and grounds keeping practices.

(A) Storm drain inlets located within or down gradient of the activity shall be covered or otherwise protected from the entry of pollutants during hours of operation.

(B) Landscaping and grounds keeping.

i. Exposed slopes shall be stabilized as soon as possible.

ii. Paved surfaces such as sidewalks shall be cleaned regularly using dry clean-up methods such as sweeping or vacuuming. Hosing is permissible only after surfaces have previously been cleaned using dry methods, and only if precautions have been taken to prevent the discharge of run-off to the storm drain.

(C) Parking lots and vehicle storage areas.

i. Wet clean-up methods may only be used where adequate precautions have been taken to prevent the entry of wash water and other contaminants into the stormwater conveyance system or receiving waters.

ii. Vehicle maintenance and repair operations with the potential to release pollutants are prohibited at commercial parking lots and storage facilities.

(D) Rooftops.

i. Materials which may contaminate stormwater shall not be stored on rooftops unless adequate precautions have been taken to prevent their contact with stormwater.

ii. Equipment such as emergency generators, HVAC systems and other similar items located on rooftops shall be inspected and preventive maintenance conducted to prevent leaks and spills.

iii. Substances such as bird droppings, grease, leaves, that have accumulated on rooftops shall be removed, as practicable, to prevent or reduce the discharge of contaminants directly or indirectly to the stormwater conveyance system or receiving waters.

iv. Where feasible, roof downspouts shall be routed away from work areas and toward pervious areas such as lawns, except where required under section 67.812.

(b) Other requirements.

(1) Any business activity operating under the statewide General Industrial permit shall provide the following documents for on-site review by the authorized enforcement official:

(A) The Notice of Intent letter or a Waste Discharge Identification Number issued by the SWRCB.

(B) A SWPPP satisfying the requirements of the General Industrial permit.

(C) A monitoring program satisfying the requirements of the General Industrial permit.

(D) Training records satisfying the requirements of the General Industrial permit.

(2) Any business activity identified in section D.3.b.1(c) of the California Regional Water Quality Control Board, San Diego Region Order No. R9-2007-0001, NPDES No. CAS0108758 and is tributary to an impaired water body segment or ESA, as defined in Section 303(d) of the Clean Water Act, shall perform the following:

(A) Prepare and submit a SWPPP for approval.

(B) Prepare and submit, for approval, a site-specific spill response plan that describes the areas where spills are likely to occur, the location of on-site storm drains and discharge points, the type and location of spill-response materials to be used, and the person(s) responsible for spill containment and cleanup.

(C) Install, implement, and maintain the additional BMPs in accordance with the approved SWPPP.

(D) Conduct sampling, testing, monitoring, and reporting as described in section 67.806(h)(3).

(Added by Ord. No. 9424 (N.S.), effective 2-20-02; amended by Ord. No. 9518 (N.S.), effective 1-10-03; amended by Ord. No. 9926 (N.S), effective 4-11-08)

SEC. 67.809. MINIMUM BEST MANAGEMENT PRACTICE REQUIREMENTS FOR MUNICIPAL AND COUNTY OF SAN DIEGO ACTIVITIES AND FACILITIES.

(a) Stormwater Standards Manual. The Stormwater Standards Manual is a guidance document addressing the use of pollution prevention practices and BMPs for specific activities or facilities, connections for, and disposal of stormwater.

(b) Low Impact Development Handbook. The Low Impact Development Handbook is a guidance document that provides a comprehensive list of LID planning and stormwater management techniques that emphasize conservation and the use of on-site natural features integrated with engineered, small scale hydrologic controls to more closely reflect pre-development hydrologic functions.

(Added by Ord. No. 9424 (N.S.), effective 2-20-02; amended by Ord. No. 9926 (N.S), effective 4-11-08)

SEC. 67.810. COUNTY STORMWATER STANDARDS MANUALS.

(a) Stormwater Standards Manual. The Stormwater Standards Manual is a guidance document addressing the use of pollution prevention practices and BMPs for specific activities or facilities, connections for, and disposal of stormwater.

(b) Low Impact Development Handbook. The Low Impact Development Handbook is a guidance document that provides a comprehensive list of LID planning and stormwater management techniques that emphasize conservation and the use of on-site natural features integrated with engineered, small scale hydrologic controls to more closely reflect pre-development hydrologic functions.

(Added by Ord. No. 9424 (N.S.), effective 2-20-02; amended by Ord. No. 9926 (N.S), effective 4-11-08)

SEC. 67.811. ADDITIONAL REQUIREMENTS FOR LAND DISTURBANCE ACTIVITIES.

(a) The following requirements apply to all persons performing land disturbance activities and the owners of land on which land disturbance activities are performed, except that a local government or public authority is not a discharger for purposes of land disturbance activities conducted by others in public rights-of-way.

(b) Where applicable to the project, the following additional BMPs shall be installed, implemented and maintained:

(1) Erosion control or prevention of sedimentation of run-off from flat areas.

(2) Protection of the grading site perimeter, all environmentally sensitive areas, all watercourses and all operational internal inlets to the storm drain system.

(3) Show drainage flows on a site plan and how drainage will not be negatively impacted by any development activities.

(4) Reduction of run-off velocity.

(5) Offsite sediment tracking control.

(6) Waste Management.

(7) Vehicle and equipment management.

(8) Water conservation.

(9) Structure construction and painting.

(10) Paving operations.

(11) Dewatering operations.

(12) Planned construction operations.

(13) Downstream erosion control.

(14) Prevention of non-stormwater discharges.

(15) Protection of ground water.

(16) Well development.

(17) Hydromodification management requirements.

(18) Low impact development.

(19) Stabilize temporary channel crossings.

(20) Advanced treatment for sediment at construction sites that pose an exceptional threat to water quality.

(A) For purposes of section 67.817(b)(20), exceptional threat to water quality shall be defined as a site which meets all of the following criteria:

i. All or part of the site is within 200 feet of waters named on the CWA Section 303(d) list of Water Quality Limited Segments as impaired for sedimentation and/or turbidity;

ii. The disturbance area is greater than five acres, including all phases of the development;

iii. The disturbed slopes are steeper than 4:1 with at least 10 feet of relief, and drain toward a Section 303(d) listed receiving water for sedimentation or turbidity;

iv. The site contains a predominance of soils with USDA-NRCS Erosion factors k_f greater than or equal to 0.4.

(B) Advanced treatment may be required on sites that do not meet all four of the criteria for exceptional threat to water quality listed above at the discretion of the Director of the Department of Public Works based on a record of non-compliance.

(C) As an alternative to advanced treatment, an applicant may perform a MUSLE, RUSLE2, or similar analysis to establish that advanced treatment is not necessary at the proposed project site and submit it to the Director of the Department of Public Works, who, in his sole discretion, may determine that advanced treatment is not necessary.

(D) Treatment effluent water quality shall meet or exceed the water quality objectives for sediment, turbidity, pH, and toxicity as listed in the Water Quality Control Plan for the San Diego Basin (9) for inland surface waters and lagoons and estuaries for the appropriate hydrologic unit.

(E) Prior to obtaining a grading permit, the applicant shall submit, to the satisfaction of the Director of the Department of Public Works, the following:

i. An operations and maintenance schedule for all proposed work deemed necessary to achieve project water quality goals.

ii. A monitoring plan for all required BMPs and water quality for all proposed work deemed necessary to achieve project water quality goals.

iii. A written training plan for certification and documentation of necessary training and refreshers of staff.

(c) BMPs shall be inspected routinely by the person performing the land disturbance activity and the property owner to ensure the BMPs are maintained and continue to function as intended, especially before and following predicted rain events.

(Added by Ord. No. 9424 (N.S.), effective 2-20-02; amended by Ord. No. 9518 (N.S.), effective 1-10-03; amended by Ord. No. 9926 (N.S), effective 4-11-08)

SEC. 67.812. ADDITIONAL PLANNING, DESIGN AND POST-CONSTRUCTION REQUIREMENTS FOR PRIORITY DEVELOPMENT PROJECTS.

All priority development projects shall install, implement and maintain the following BMPs:

(a) Low impact development. All priority development projects shall install, implement and maintain the following low impact development BMPs, where feasible:

(1) Minimize directly connected impervious surfaces.

(2) If developed with landscaped or other pervious areas, drain a portion of impervious areas such as rooftops, parking lots, sidewalks, walkways, and patios into pervious areas prior to discharge to the stormwater conveyance system. The amount of run-off from impervious areas that drains to pervious areas shall correspond with the total capacity of the project's pervious areas to infiltrate or treat run-off, taking into consideration the pervious areas' soil conditions, slope, and other pertinent factors.

(3) If developed with landscaped or other pervious areas, properly design and construct the pervious areas to effectively receive and infiltrate or treat run-off from impervious areas, taking into consideration the pervious areas' soil conditions, slope, and other pertinent factors.

(4) If developed with low traffic areas and appropriate soil conditions, construct a portion of walkways, trails, overflow parking lots, alleys, or other low-traffic areas with permeable surfaces, such as pervious concrete, porous asphalt, unit pavers, and granular materials.

(5) Conserve natural areas, including existing trees, other vegetation, and soils, where feasible.

(6) Construct streets, sidewalks, or parking lot aisles to the minimum widths necessary, provided that public safety and a walkable environment for pedestrians are not compromised, where feasible.

(7) Minimize the impervious footprint of the project, where feasible.

(8) Minimize soil compaction, where feasible.

(9) Minimize disturbances to natural drainages, such as natural swales, or topographic depressions, where feasible.

(10) Implement buffer zones for natural water bodies, where feasible.

(b) Hydromodification management.

(1) Post-construction peak run-off flow rates and velocities from the project site shall be maintained at levels that will not cause a significant increase in downstream erosion.

(2) Measures to control flow rates and velocities shall not disrupt flows and flow patterns that are necessary to support downstream wetlands or riparian habitats. Diversion of run-off to regional facilities shall not be allowed to deprive immediate downstream habitats of the necessary natural low flows levels experienced during the dry weather season or over-bank flow events.

(3) Hardening natural downstream areas to prevent erosion is prohibited, except where pre-development conditions are shown, to the satisfaction of the County, to be so erosive that hardening would be required even in the absence of the proposed development.

(4) Interim hydromodification criteria for priority development projects disturbing 50 or more acres.

(A) Estimated post-project run-off durations and peak flows shall not exceed pre-project durations and peak flows.

(B) The project proponent must use a continuous simulation hydrologic computer model such as US EPA's Hydrograph Simulation Program-Fortran (HSPF) to simulate pre-project and post-project run-off, including the effect of proposed BMPs, detention basins, or other stormwater management facilities utilizing the entire rainfall record, and shall show the following criteria are met:

i. For flow rates from 20% of the pre-project 5-year run-off event (0.2Q5) to the pre-project 10-year run-off event (Q10), the post-project discharge rates and durations shall not deviate above the pre-project rates and durations by more than 10% over more than 10% of the length of the flow duration curve.

ii. For flow rates from 0.2Q5 to Q5, the post-project peak flows shall not exceed pre-project peak flows. For flow rates from Q5 to Q10, post-project peak flows may exceed pre-project flows by up to 10% for a 1-year frequency interval. For example, post-project flows could exceed pre-project flows by up to 10% for the interval from Q9 to Q10 or from Q5.5 to Q6.5, but not from Q8 to Q10.

(C) Priority development projects disturbing 50 acres or more are exempt from the requirements of section 67.812(b)(4) if:

i. The project would discharge into channels that are concrete-lined or significantly hardened, such as with rip-rap or sackcrete, downstream to their outfall in bays or the ocean.

ii. The project would discharge into underground storm drains discharging directly to bays or the ocean.

iii. The project would discharge to a channel where the watershed areas below the project's discharge points are highly impervious (>70%).

iv. The project proponent conducts an assessment incorporating sediment transport modeling across the range of geomorphically- significant flows that demonstrates to the County's satisfaction that the project flows and sediment reductions will not detrimentally affect the receiving water.

(c) Treatment control BMPs.

(1) All treatment control BMPs shall be designed to meet the design storm criteria required under the California Regional Water Quality Control Board, San Diego Region Order No. R9-2007-0001, NPDES Permit No. CAS 108758.

(2) One or more structural treatment BMPs may be used for a single project or combination of projects. Any such shared BMPs shall be operational prior to the use of any dependent development or phase of development. The shared BMPs shall only be required to treat the dependent developments or phases of development that are in use. Interim stormwater BMPs that provide equivalent or greater treatment than is required by this chapter may be implemented by a dependent development until each shared BMP is operational. If interim BMPs are utilized, the BMPs shall remain in use until permanent BMPs are operational.

(d) Whether or not a County permit or approval is required, and whether or not a post- construction stormwater management plan is required to be submitted, all dischargers engaged in land development or significant redevelopment activities shall implement post-construction BMPs in the following areas, if applicable, to the project:

(1) These BMPs can include structures to convey run-off safely from the tops of slopes, vegetation or alternative stabilization of all disturbed slopes, the use of natural drainage systems to the MEP, flow and velocity controls upstream of sites; and stabilization or permanent channel crossings, unless the crossing is not publicly accessible and is not frequently used.

(2) BMPs to control flows, velocity and erosion may include the use of energy dissipaters, such as riprap, at the outlets of storm drains, culverts, conduits, or lined channels that enter unlined channels to minimize erosion; installation of retention or equalization basins; or other measures. Flow control and downstream erosion protection measures shall prevent any significant increase in downstream erosion as a result of the new development, but shall not prevent flows needed to sustain downstream riparian habitats or wetlands.

(3) Stabilize permanent channel crossings.

(e) Structural BMPs to treat or to infiltrate stormwater where a development project would otherwise cause or contribute to a violation of water quality standards in receiving waters. Off-site structural BMPs may be used for treatment and infiltration necessary to meet water quality standards only if the conveyance of run-off to those facilities prior to treatment will not cause or contribute to an exceedance of water quality standards, or deprive wetlands or riparian habitats of needed flows.

(f) When an infiltration BMP is used, the following requirements apply:

(1) Infiltration BMPs shall not cause or contribute to an exceedance of applicable groundwater quality objectives as set out in the RWQCB "Basin Plan" for the San Diego area.

(2) Infiltration BMPs shall be designed to protect groundwater by providing 10 feet of vertical separation between the base of the infiltration BMP and the seasonal high groundwater mark, unless otherwise authorized by the RWQCB.

(3) Infiltration BMPs shall be setback horizontally 100 feet from any water supply wells and 100 feet from septic systems.

(4) Infiltration BMPs must be designed to completely drain within 72 hours after a storm. If the infiltration rates of the underlying soils are slow, depth and footprint of the infiltration BMP must be adjusted to achieve this standard.

(5) Restrictions to infiltration BMPs shall be in compliance with Section D.1.d.(12) of the California Regional Water Quality Control Board, San Diego Region Order No. R9-2007-0001, NPDES Permit No. CAS0108758.

(g) The authorized enforcement official with responsibility for the principal permits or approvals sought for a priority development project, may waive the requirements of section 67.812(a), if compliance would be infeasible. A waiver shall only be granted if all available structural treatment BMPs have been considered and rejected as infeasible. If a waiver is granted, the authorized enforcement official may impose alternative, feasible run-off treatment requirements, or may impose other conditions consistent with state law and County ordinances to facilitate the construction of a shared treatment facility in the future.

(Added by Ord. No. 9424 (N.S.), effective 2-20-02; amended by Ord. No. 9518 (N.S.), effective 1-10-03; amended by Ord. No. 9926 (N.S), effective 4-11-08)

SEC. 67.813. MAINTENANCE OF BMPs.

(a) All existing and new development shall maintain the construction and permanent BMPs relied upon to achieve and maintain compliance with this chapter. BMPs shall remain effective and function in the manner intended.

(b) The owners and occupants of lands on which structural post-construction BMPs have been installed to meet the requirements of this chapter shall ensure the maintenance of those BMPs, and shall themselves maintain those BMPs if other persons or entities who are also obliged to maintain those BMPs fail to do so.

(c) Primary responsibility to maintain a BMP may be transferred through a contract or other agreement. If that contract provides that it will be submitted to the County pursuant to this chapter as part of a development permit application, and if that contract is so submitted, the person or entity accepting a maintenance obligation in such a contact or agreement will also be legally obliged to maintain that BMP pursuant to this chapter.

(d) For purposes of County enforcement, no contract or other agreement imposing an obligation to maintain a BMP can relieve a person or entity of any obligation to maintain a BMP imposed by this chapter.

(e) Any developer who transfers ownership of land on which a BMP is located or will be located, or who otherwise transfers ownership of a BMP or responsibility for the maintenance of a BMP to another person or entity, shall provide clear written notice of the maintenance obligations associated with that BMP to the new or additional responsible party prior to that transfer.

(f) The proponents of any land disturbance activity described in sections 67.803(c)(1) and 67.803(c)(2) shall provide to the County

for review and approval prior to issuance of such permit, a plan for maintenance of all post-construction structural BMPs associated with the project. The plan shall specify the persons or entities responsible for maintenance activity, the persons or entities responsible for funding, schedules and procedures for inspection and maintenance of the BMPs, worker training requirements, and any other activities necessary to ensure BMP maintenance. The plan shall provide for servicing of all post-construction structural BMPs at least annually, and for the retention of inspection and maintenance records for at least three years.

(g) The proponents of any development project that requires a discretionary County permit shall provide to the County for review and approval prior to issuance of such permit, an executed, permanent easement onto the land on which post-construction BMPs will be located, and across other lands as necessary for access, to allow inspection and maintenance of those BMPs.

(h) Except as allowed in section 67.813(i), the proponents of any project that requires a discretionary County permit shall provide to the County prior to issuance of such permit, proof of a mechanism acceptable to the County which will ensure ongoing long-term maintenance of all post-construction BMPs associated with the proposed project. The proponents shall be responsible for maintenance, repair and replacement of BMPs unless and until an alternative mechanism for ensuring maintenance is accepted by the County and becomes effective.

(i) The County or another public entity may accept responsibility for maintenance of any BMP, under such conditions as the County or other public entity determines are appropriate. Where a maintenance obligation is proposed to be accepted by a public entity other than the County, the County shall be involved in the negotiations with that agency, and in negotiations with the resource agencies responsible for issuing permits for the construction or maintenance of the BMP. The County must be identified as a third party beneficiary empowered to enforce any such maintenance agreement.

(Added by Ord. No. 9424 (N.S.), effective 2-20-02; amended by Ord. No. 9518 (N.S.), effective 1-10-03; amended by Ord. No. 9926 (N.S), effective 4-11-08)

SEC. 67.814. INSPECTION/SAMPLING.

(a) Authorized enforcement officials may inspect facilities, activities and residences subject to this chapter at reasonable times and in a reasonable manner to carry out the purposes of this chapter. If entry for a regulatory inspection is refused by the owner or operator, or by the occupant of a residence, an inspection warrant shall be obtained prior to inspection.

(b) When any new structural BMP is installed on private property as part of a project that requires a County permit, in order to comply with this chapter, the property owner shall grant to the County an easement to enter the property at reasonable times and in a reasonable manner to ensure that the BMP is working properly. This includes the right to enter the property without prior notice once per year for routine inspections, to enter as needed for additional inspections when the County has a reasonable basis to believe that the BMP is not working properly, to enter for any needed follow-up inspections, and to enter when necessary for abatement of a nuisance or correction of a violation of this chapter.

(c) Inspections may include all actions necessary to determine whether any illegal discharges or illicit connections exist, whether the BMPs installed and implemented are adequate to comply with this chapter, whether those BMPs are being properly maintained, and whether the facility or activity complies with the other requirements of this chapter. This may include but may not be limited to sampling, metering, visual inspections, and records review. Where samples are collected the owner or operator may request and receive split samples. Records, reports, analyses, or other information required under this chapter may be inspected and copied, and photographs taken to document a condition and/or a violation of this chapter.

(Added by Ord. No. 9424 (N.S.), effective 2-20-02; amended by Ord. No. 9589 (N.S.), effective 9-5-03; amended by Ord. No. 9926 (N.S), effective 4-11-08)

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APPENDIX 6.5-D – DRAFT STORMWATER MANAGEMENT PLAN

Draft Storm Water Management Plan
For Priority Projects (SWMP)

ORANGE GROVE PROJECT

Submitted by

ORANGE GROVE ENERGY, L.P.
1900 East Golf Road, Suite 1030
Schaumburg, IL 60173

June 2008

Storm Water Management Plan
For Priority Projects
(Major SWMP)

Project Name:	Orange Grove Project
Permit Number (Land Development Projects):	
Work Authorization Number (CIP):	
Applicant:	Orange Grove Energy, LP.
Applicant's Address:	1900 East Golf Road, Suite 1030, Schaumburg, IL 60173
Plan Prepare By (*Leave blank if same as applicant*):	Sega, 16041 Foster, P.O. Box 1000, Stilwell, KS, 65085
Date:	August 10, 2007
Revision Date (If applicable):	June 2008

The County of San Diego Watershed Protection, Storm Water Management, and Discharge Control Ordinance (WPO) (Ordinance No. 9424) requires all applications for a permit or approval associated with a Land Disturbance Activity must be accompanied by a Storm Water Management Plan (SWMP) (section 67.804.f). The purpose of the SWMP is to describe how the project will minimize the short and long-term impacts on receiving water quality. Projects that meet the criteria for a priority project are required to prepare a Major SWMP.

Since the SWMP is a living document, revisions may be necessary during various stages of approval by the County. Please provide the approval information requested below.

Project Review Stage	Does the SWMP need revisions?		If YES, Provide Revision Date
	YES	NO	
DRAFT		X	

Instructions for a Major SWMP can be downloaded at http://www.co.san-diego.ca.us/dpw/stormwater/susmp.html.

Completion of the following checklist and attachments will fulfill the requirements of a Major SWMP for the project listed above.

PROJECT DESCRIPTION

Please provide a brief description of the project in the following box. For example:
The 50-acre RC Ranch project is located on the south side of San Miguel Road in the County of San Diego (See Attachment 1). The project is approximately 1.0 mile east of the intersection of San Miguel Avenue and San Miguel Road and 1 mile south of the Sweetwater Reservoir. This project will consist of a planned residential community comprising of 45 single-family homes 72 and multi-unit dwellings.

The power plant site is located in north San Diego County, approximately 3.5 (air) miles

of I-15 on SR-76, approximately two miles west of the community of Pala. The approximately 8.5 acre site is situated within an approximately 202-acre property owned by SDG&E.
The site is located on disturbed lands formerly used as a citrus grove, but the grove has not been maintained in at least five years. The existing SDG&E Pala substation is located on a contiguous SDG&E parcel south of the site. The transmission line interconnection will be installed in a trench that will primarily be located within the roadbed or shoulder of Pala Del Norte Road and the paved driveway of the substation. The gas pipeline has been designed to minimize new ground disturbance to the extent practical. The pipeline will be approximately 2 miles long.
The Orange Grove project objective is to respond to the SDG&E request for offers for new local electric capacity in an environmentally responsible and economically feasible manner. The purpose of this project is to assure reliable electric power for the public.

PRIORITY PROJECT DETERMINATION

Please check the box that best describes the project. Does the project meet one of the following criteria?

PRIORITY PROJECT	YES	NO
Redevelopment within the County Urban Area that creates or adds at least 5,000 net square feet of additional impervious surface area		X
Residential development of more than 10 units		X
Commercial developments with a land area for development of greater than 100,000 square feet		X
Automotive repair shops		X
Restaurants, where the land area for development is greater than 5.000 square feet		X
Hillside development, in an area with known erosive soil conditions, where there will be grading on any natural slope that is twenty-five percent or greater, if the development creates 5,000 square feet or more of impervious surface		X(1)
Environmentally Sensitive Areas: All development and redevelopment located within or directly adjacent to or discharging directly to an environmentally sensitive area (where discharges from the development or redevelopment will enter receiving waters within the environmentally sensitive area), which either creates 2,500 square feet of impervious surface on a proposed project site or increases the area of imperviousness of a proposed project site to 10% or more of its naturally occurring condition.		X
Parking Lots 5,000 square feet or more or with 15 parking spaces or more and potentially exposed to urban runoff		X
Streets, roads, highways, and freeways which would create a new paved surface that is 5,000 square feet or greater		X

Limited Exclusion: Trenching and resurfacing work associated with utility projects are not considered priority projects. Parking lots, buildings and other structures associated with utility projects are subject to SUSMP requirements if one or more of the criteria above are met.

If you answered **NO** to all the questions, then **STOP**. Please complete a Minor SWMP for your project.

(1)The site slopes are 10% and the potential pollutants are similar to the selected hillside category.

If you answered **YES** to any of the questions, please continue.

The following questions provide a guide to collecting information relevant to project stormwater quality issues. Please provide a description of the findings in text box below.

	QUESTIONS	COMPLETED	NA
1.	Describe the topography of the project area.	X	
2.	Describe the local land use within the project area and adjacent areas.	X	
3.	Evaluate the presence of dry weather flow.	X	
4.	Determine the receiving waters that may be affected by the project throughout the project life cycle (i.e., construction, maintenance and operation).	X	
5.	For the project limits, list the 303(d) impaired receiving water bodies and their constituents of concern.	X	
6.	Determine if there are any High Risk Areas (municipal or domestic water supply reservoirs or groundwater percolation facilities) within the project limits.	X	
7.	Determine the Regional Board special requirements, including TMDLs, effluent limits, etc.	X	
8.	Determine the general climate of the project area. Identify annual rainfall and rainfall intensity curves.	X	
9.	If considering Treatment BMPs, determine the soil classification, permeability, erodibility, and depth to groundwater.	X	
10.	Determine contaminated or hazardous soils within the project area.	X	

Please provide a description of the findings in the following box. For example:
The project is located in the San Diego Hydrologic unit. The area is characterized by rolling grassy hills and shrubs. Runoff from the project drains into a MS4 that eventually drains to Los Coches Creek. Within the project limit there are no 303(d) impaired receiving water and no Regional Board special requirements.

The site occurs on an alluvial fan surface that slopes southward at an average grade of approximately 10 percent. The project site will be constructed on lands that have already been disturbed by agriculture. The transmission line interconnection facilities for the project will also be located in areas that are already disturbed,so the result in no new ground disturbance. The gas pipeline will be installed in previously disturbed areas and undisturbed areas. The maximum (construction) project disturbance is approximately 37 acres.
(CONTINUED ON PAGE 3A)

Complete the checklist below to determine if Treatment Best Management Practices (BMPs) are required for the project.

No.	CRITERIA	YES	NO	INFORMATION
1.	Is this an emergency project		X	If YES, go to 6. If NO, continue to 2.
2.	Have TMDLs been established		X	If YES, go to 5.

(CONTINUED FROM PAGE 3)

The Site area is relatively dry with precipitation mostly occurring between December and March. There are no dry weather flows on the property. Average annual rainfall within the Hydrologic Unit ranges from approximately 11 inches at low elevations near the coast, to more than 45 inches in the highest elevations of the headwaters. The Site is situated on a gentle, relatively featureless slope that has a small up-gradient watershed and dispersing sheet flow. Surface drainage from the power plant will flow to an onsite detention basin designed to contain storm water from storms with a recurrence interval of up to 100 years, and will thereby reduce erosion and sediment transport from the site compared to existing conditions. The discharge from the detention basin will be directed to sheet flow south off of the property. Surface drainage north of the site will be diverted around the site by a conveyance channel and discharge into the west drainage.

The San Luis Rey River runs south of SR 76. Near the Site, the San Luis Rey River was diverted southward by mining operations and is now confined to a diked channel located approximately 0.5 mile south of SR 76. In the project vicinity, flow in the San Luis Rey River is intermittent, responding to seasonal precipitation. The closest perennial surface waters to the Site are ponds that occur in the riverbed where past mining has exposed the water table in the alluvial aquifer.

There are no high risk areas, or known contaminated soil areas, or special Regional Board requirements within the project limits. The San Luis Rey River is down gradient of the site and is a 303(d) listed water body for Total Dissolved Solids and Chloride.

No.	CRITERIA	YES	NO	INFORMATION
	for surface waters within the project limit?			If NO, continue to 3.
3.	Will the project directly discharge to a 303(d) impaired receiving water body?		x	If YES, go to 5. If NO, continue to 4.
4.	Is this project within the urban and environmentally sensitive areas as defined on the maps in Appendix B of the *County of San Diego Standard Urban Storm Water Mitigation Plan for Land Development and Public Improvement Projects*?		x	If YES, continue to 5. If NO, go to 6.
5.	Consider approved Treatment BMPs for the project.	x		If YES, go to 7.
6.	Project is not required to consider Treatment BMPs			Document for Project Files by referencing this checklist.
7.	End	x		

Now that the need for a treatment BMPs has been determined, other information is needed to complete the SWMP.

WATERSHED

Please check the watershed(s) for the project.

☐ San Juan ☐ Santa Margarita ☒ San Luis Rey ☐ Carlsbad
☐ San Dieguito ☐ Penasquitos ☐ San Diego ☐ Pueblo San Diego
☐ Sweetwater ☐ Otay ☐ Tijuana

Please provide the hydrologic sub-area and number(s)

Number	Name
903.20	Monserate Hydrologic Area
3.21	Pala Hydrologic Sub Area

Please provide the beneficial uses for Inland Surface Waters and Ground Waters. Beneficial Uses can be obtained from the Water Quality Control Plan For The San Diego Basin, which is available at the Regional Board office or at http://www.swrcb.ca.gov/rwqcb9/programs/basinplan.html.

SURFACE WATERS	Hydrologic Unit Basin Number	MUN	AGR	IND	PROC	GWR	FRESH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
Inland Surface Waters	3.21	x	x	x					x	x		x	x	x		x
Ground Waters	3.21	x	x	x												

X Existing Beneficial Use
0 Potential Beneficial Use
* Excepted from Municipal

POLLUTANTS OF CONCERN

Using Table 1, identify pollutants that are anticipated to be generated from the proposed priority project categories. Pollutants associated with any hazardous material sites that have been remediated or are not threatened by the proposed project are not considered a pollutant of concern.

Table 1. Anticipated and Potential Pollutants Generated by Land Use Type

	General Pollutant Categories								
Priority Project Categories	Sediments	Nutrients	Heavy Metals	Organic Compounds	Trash & Debris	Oxygen Demanding Substances	Oil & Grease	Bacteria & Viruses	Pesticides
Detached Residential Development	X	X			X	X	X	X	X
Attached Residential Development	X	X			X	P(1)	P(2)	P	X
Commercial Development >100,000 ft^2	P(1)	P(1)		P(2)	X	P(5)	X	P(3)	P(5)
Automotive Repair Shops			X	X(4)(5)	X		X		
Restaurants					X	X	X	X	
(1) Hillside Development >5,000 ft^2	X	X			X	X	X		X

(1)The site slopes are 10% and the potential pollutants are similar to the selected hillside category.

	General Pollutant Categories								
Priority Project Categories	Sediments	Nutrients	Heavy Metals	Organic Compounds	Trash & Debris	Oxygen Demanding Substances	Oil & Grease	Bacteria & Viruses	Pesticides
Parking Lots	P(1)	P(1)	X		X	P(1)	X		P(1)
Streets, Highways & Freeways	X	P(1)	X	X(4)	X	P(5)	X		

X = anticipated
P = potential
(1) A potential pollutant if landscaping exists on-site.
(2) A potential pollutant if the project includes uncovered parking areas.
(3) A potential pollutant if land use involves food or animal waste products.
(4) Including petroleum hydrocarbons.
(5) Including solvents.

Note: If other monitoring data that is relevant to the project is available. Please include as Attachment C.

CONSTRUCTION BMPs

Please check the construction BMPs that may be used. The BMPs selected are those that will be implemented during construction of the project. The applicant is responsible for the placement and maintenance of the BMPs selected.

- ☒ Silt Fence
- ☒ Fiber Rolls
- ☐ Street Sweeping and Vacuuming
- ☒ Storm Drain Inlet Protection
- ☒ Stockpile Management
- ☒ Solid Waste Management
- ☒ Stabilized Construction Entrance/Exit
- ☐ Dewatering Operations
- ☒ Vehicle and Equipment Maintenance
- ☒ Desilting Basin
- ☒ Gravel Bag Berm
- ☒ Sandbag Barrier
- ☒ Material Delivery and Storage
- ☒ Spill Prevention and Control
- ☒ Concrete Waste Management
- ☒ Water Conservation Practices
- ☐ Paving and Grinding Operations
- ☒ Any minor slopes created incidental to construction and not subject to a major or minor grading permit shall be protected by covering with plastic or tarp prior to a rain event, and shall have vegetative cover reestablished within 180 days of completion of the slope and prior to final building approval.

SITE DESIGN

To minimize stormwater impacts, site design measures must be addressed. The following checklist provides options for avoiding or reducing potential impacts during project planning. If

YES is checked, it is assumed that the measure was used for this project. If NO is checked, please provide a brief explanation why the option was not selected in the text box below.

	OPTIONS		YES	NO	N/A
1.	Can the project be relocated or realigned to avoid/reduce impacts to receiving waters or to increase the preservation of critical (or problematic) areas such as floodplains, steep slopes, wetlands, and areas with erosive or unstable soil conditions?			x	
2.	Can the project be designed to minimize impervious footprint?		x		
3.	Conserve natural areas where feasible?		x		
4.	Where landscape is proposed, can rooftops, impervious sidewalks, walkways, trails and patios be drained into adjacent landscaping?				x
5.	For roadway projects, can structures and bridges be designed or located to reduce work in live streams and minimize construction impacts?		x		
6.	Can any of the following methods be utilized to minimize erosion from slopes:		x		
	6.a.	Disturbing existing slopes only when necessary?	x		
	6.b.	Minimize cut and fill areas to reduce slope lengths?	x		
	6.c.	Incorporating retaining walls to reduce steepness of slopes or to shorten slopes?	x		
	6.d.	Providing benches or terraces on high cut and fill slopes to reduce concentration of flows?	x		
	6.e.	Rounding and shaping slopes to reduce concentrated flow?	x		
	6.f.	Collecting concentrated flows in stabilized drains and channels?	x		

Please provide a brief explanation for each option that was checked N/A or NO in the following box.

1. NO - The project is sited to produce and supply power to a surrounding area during periods of high demand. The project site cannot be moved.
4. N/A - This is an industrial facility and there is no proposed landscaping near the structures.

If the project includes work in channels, then complete the following checklist. Information shall be obtained from the project drainage report. N/A This project does not include work in channels.

No.	CRITERIA	YES	NO	N/A	COMMENTS
1.	Will the project increase velocity or volume of downstream flow?		x		If YES go to 5.
2.	Will the project discharge to unlined channels?		x		If YES go to 5.
3.	Will the project increase potential sediment load		x		If YES go to 5.

No.	CRITERIA	YES	NO	N/A	COMMENTS
	of downstream flow?				
4.	Will the project encroach, cross, realign, or cause other hydraulic changes to a stream that may affect upstream and/or downstream channel stability?		x		If YES go to 7.
5.	Review channel lining materials and design for stream bank erosion.	x			Continue to 6.
6.	Consider channel erosion control measures within the project limits as well as downstream. Consider scour velocity.	x			Continue to 7.
7.	Include, where appropriate, energy dissipation devices at culverts.	x			Continue to 8.
8.	Ensure all transitions between culvert outlets/headwalls/wingwalls and channels are smooth to reduce turbulence and scour.	x			Continue to 9.
9.	Include, if appropriate, detention facilities to reduce peak discharges.	x			
10.	"Hardening" natural downstream areas to prevent erosion is not an acceptable technique for protecting channel slopes, unless pre-development conditions are determined to be so erosive that hardening would be required even in the absence of the proposed development.	x			Continue to 11.
11.	Provide other design principles that are comparable and equally effective.	x			Continue to 12.
12.	End	x			

SOURCE CONTROL

Please complete the following checklist for Source Control BMPs. If the BMP is not applicable for this project, then check N/A only at the main category.

BMP			YES	NO	N/A
1.	**Provide Storm Drain System Stenciling and Signage**				
	1.a.	All storm drain inlets and catch basins within the project area shall have a stencil or tile placed with prohibitive language (such as: "NO DUMPING – DRAINS TO _____") and/or graphical icons to discourage illegal dumping.	x		
	1.b.	Signs and prohibitive language and/or graphical icons, which prohibit illegal dumping, must be posted at public access points along channels and creeks within the project area.	x		
2.	**Design Outdoors Material Storage Areas to Reduce Pollution Introduction**				
	2.a.	This is a detached single-family residential project. Therefore, personal storage areas are exempt from this requirement.			x

BMP			YES	NO	N/A
	2.b.	Hazardous materials with the potential to contaminate urban runoff shall either be: (1) placed in an enclosure such as, but not limited to, a cabinet, shed, or similar structure that prevents contact with runoff or spillage to the storm water conveyance system; or (2) protected by secondary containment structures such as berms, dikes, or curbs.	x		
	2.c.	The storage area shall be paved and sufficiently impervious to contain leaks and spills.	x		
	2.d.	The storage area shall have a roof or awning to minimize direct precipitation within the secondary containment area.	x		
3.	**Design Trash Storage Areas to Reduce Pollution Introduction**				
	3.a.	Paved with an impervious surface, designed not to allow run-on from adjoining areas, screened or walled to prevent off-site transport of trash; or,	x		
	3.b.	Provide attached lids on all trash containers that exclude rain, or roof or awning to minimize direct precipitation.	x		
4.	**Use Efficient Irrigation Systems & Landscape Design**				
	The following methods to reduce excessive irrigation runoff shall be considered, and incorporated and implemented where determined applicable and feasible.				
	4.a.	Employing rain shutoff devices to prevent irrigation after precipitation.	x		
	4.b.	Designing irrigation systems to each landscape area's specific water requirements.	x		
	4.c.	Using flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines.	x		
	4.d.	Employing other comparable, equally effective, methods to reduce irrigation water runoff.	x		
5.	**Private Roads**				
	The design of private roadway drainage shall use at least one of the following				
	5.a.	Rural swale system: street sheet flows to vegetated swale or gravel shoulder, curbs at street corners, culverts under driveways and street crossings.	x		
	5.b.	Urban curb/swale system: street slopes to curb, periodic swale inlets drain to vegetated swale/biofilter.			x
	5.c.	Dual drainage system: First flush captured in street catch basins and discharged to adjacent vegetated swale or gravel shoulder, high flows connect directly to storm water conveyance system.			x
	5.d.	Other methods that are comparable and equally effective within the project.	x		
6.	**Residential Driveways & Guest Parking**				x
	The design of driveways and private residential parking areas shall use one at least of the following features.				
	6.a.	Design driveways with shared access, flared (single lane at street) or wheelstrips (paving only under tires); or, drain into landscaping prior to discharging to the storm water conveyance system.			
	6.b.	Uncovered temporary or guest parking on private residential lots may be: paved with a permeable surface; or, designed to drain into landscaping prior to discharging to the storm water conveyance system.			
	6.c.	Other features which are comparable and equally effective.			
7.	**Dock Areas**				x

BMP			YES	NO	N/A
	Loading/unloading dock areas shall include the following.				
	7.a.	Cover loading dock areas, or design drainage to preclude urban run-on and runoff.			
	7.b.	Direct connections to storm drains from depressed loading docks (truck wells) are prohibited.			
	7.c.	Other features which are comparable and equally effective.			
8.	**Maintenance Bays**				x
	Maintenance bays shall include the following.				
	8.a.	Repair/maintenance bays shall be indoors; or, designed to preclude urban run-on and runoff.			
	8.b.	Design a repair/maintenance bay drainage system to capture all wash water, leaks and spills. Connect drains to a sump for collection and disposal. Direct connection of the repair/maintenance bays to the storm drain system is prohibited. If required by local jurisdiction, obtain an Industrial Waste Discharge Permit.			
	8.c.	Other features which are comparable and equally effective.			
9.	**Vehicle Wash Areas**				x
	Priority projects that include areas for washing/steam cleaning of vehicles shall use the following.				
	9.a.	Self-contained; or covered with a roof or overhang.			
	9.b.	Equipped with a clarifier or other pretreatment facility.			
	9.c.	Properly connected to a sanitary sewer.			
	9.d.	Other features which are comparable and equally effective.			
10.	**Outdoor Processing Areas**				x
	Outdoor process equipment operations, such as rock grinding or crushing, painting or coating, grinding or sanding, degreasing or parts cleaning, waste piles, and wastewater and solid waste treatment and disposal, and other operations determined to be a potential threat to water quality by the County shall adhere to the following requirements.				
	10.a.	Cover or enclose areas that would be the most significant source of pollutants; or, slope the area toward a dead-end sump; or, discharge to the sanitary sewer system following appropriate treatment in accordance with conditions established by the applicable sewer agency.			
	10.b.	Grade or berm area to prevent run-on from surrounding areas.			
	10.c.	Installation of storm drains in areas of equipment repair is prohibited.			
	10.d.	Other features which are comparable or equally effective.			
11.	**Equipment Wash Areas**				x
	Outdoor equipment/accessory washing and steam cleaning activities shall be.				
	11.a.	Be self-contained; or covered with a roof or overhang.			
	11.b.	Be equipped with a clarifier, grease trap or other pretreatment facility, as appropriate			
	11.c.	Be properly connected to a sanitary sewer.			
	11.d.	Other features which are comparable or equally effective.			
12.	**Parking Areas**				
	The following design concepts shall be considered, and incorporated and implemented where determined applicable and feasible by the County.				
	12.a.	Where landscaping is proposed in parking areas, incorporate landscape areas into the drainage design.	x		

BMP			YES	NO	N/A
	12.b.	Overflow parking (parking stalls provided in excess of the County's minimum parking requirements) may be constructed with permeable paving.	x		
	12.c.	Other design concepts that are comparable and equally effective.	x		
13.	**Fueling Area**				x
	Non-retail fuel dispensing areas shall contain the following.				
	13.a.	Overhanging roof structure or canopy. The cover's minimum dimensions must be equal to or greater than the area within the grade break. The cover must not drain onto the fuel dispensing area and the downspouts must be routed to prevent drainage across the fueling area. The fueling area shall drain to the project's treatment control BMP(s) prior to discharging to the storm water conveyance system.			
	13.b.	Paved with Portland cement concrete (or equivalent smooth impervious surface). The use of asphalt concrete shall be prohibited.			
	13.c.	Have an appropriate slope to prevent ponding, and must be separated from the rest of the site by a grade break that prevents run-on of urban runoff.			
	13.d.	At a minimum, the concrete fuel dispensing area must extend 6.5 feet (2.0 meters) from the corner of each fuel dispenser, or the length at which the hose and nozzle assembly may be operated plus 1 foot (0.3 meter), whichever is less.			

Please list other project specific Source Control BMPs in the following box. Write **N/A** if there are none and briefly explain.

Diversion Trench - Trench install to divert run-on storm water around the plant site and away from industrial use areas.

TREATMENT CONTROL

To select a structural treatment BMP using Treatment Control BMP Selection Matrix (Table 2), each priority project shall compare the list of pollutants for which the downstream receiving waters are impaired (if any), with the pollutants anticipated to be generated by the project (as identified in Table 1). Any pollutants identified by Table 1, which are also causing a Clean Water Act section 303(d) impairment of the receiving waters of the project, shall be considered primary pollutants of concern. Priority projects that are anticipated to generate a primary pollutant of concern shall select a single or combination of stormwater BMPs from Table 2, which **maximizes pollutant removal** for the particular primary pollutant(s) of concern.

Priority projects that are **not** anticipated to generate a pollutant for which the receiving water is Clean Water Act Section 303(d) impaired shall select a single or combination of stormwater BMPs from Table 2, which are effective for pollutant removal of the identified secondary pollutants of concern, consistent with the "maximum extent practicable" standard.

Table 2. Treatment Control BMP Selection Matrix

Pollutant of Concern	*Treatment Control BMP Categories*						
	Biofilters	Detention Basins	Infiltration Basins(2)	Wet Ponds or Wetlands	Drainage Inserts	Filtration	Hydrodynamic Separator Systems(3)
Sediment	M	H	H	H	L	H	M
Nutrients	L	M	M	M	L	M	L
Heavy Metals	M	M	M	H	L	H	L
Organic Compounds	U	U	U	M	L	M	L
Trash & Debris	L	H	U	H	M	H	M
Oxygen Demanding Substances	L	M	M	M	L	M	L
Bacteria	U	U	H	H	L	M	L
Oil & Grease	M	M	U	U	L	H	L
Pesticides	U	U	U	L	L	U	L

(1) Copermittees are encouraged to periodically assess the performance characteristics of many of these BMPs to update this table.
(2) Including trenches and porous pavement.
(3) Also known as hydrodynamic devices and baffle boxes.

L: Low removal efficiency:
M: Medium removal efficiency:
H: High removal efficiency:
U: Unknown removal efficiency

Sources: *Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters* (1993), *National Stormwater Best Management Practices Database* (2001), *Guide for BMP Selection in Urban Developed Areas* (2001), *and Caltrans New Technology Report (2001).*

A Treatment BMP must address runoff from developed areas. Please provide the post-construction water quality values for the project. Label outfalls on the BMP map. Q_{WQ} is dependent on the type of treatment BMP selected for the project.

Outfall	**Tributary Area (acres)**	**Q_{100} (cfs)**	**Q_{WQ} (cfs)**	
1	5.2	11.28	27.86	Detention basin
2	3.0	12.75	N/A	North drainage channel

Please check the box(s) that best describes the Treatment BMP(s) selected for this project.

Biofilters

☐ Grass swale
☐ Grass strip
☐ Wetland vegetation swale
☐ Bioretention

Detention Basins

☒ Extended/dry detention basin with grass lining
☐ Extended/dry detention basin with impervious lining

Infiltration Basins
☐ Infiltration basin
☐ Infiltration trench
☐ Porous asphalt
☐ Porous concrete
☐ Porous modular concrete block
Wet Ponds or Wetlands
☐ Wet pond/basin (permanent pool)
☐ Constructed wetland
Drainage Inserts (See note below)
☐ Oil/Water separator
☐ Catch basin insert
☐ Storm drain inserts
☐ Catch basin screens
Filtration
☐ Media filtration
☐ Sand filtration
Hydrodynamic Separator Systems
☐ Swirl Concentrator
☐ Cyclone Separator
☐ Baffle Separator
☐ Gross Solids Removal Device
☐ Linear Radial Device

Note: Catch basin inserts and storm drain inserts are excluded from use on County maintained right-of-way and easements.

Include Treatment Datasheet as Attachment E. The datasheet should include the following:	**COMPLETED**	**NO**
1. Description of how treatment BMP was designed. Provide a description for each type of treatment BMP.	x	
2. Engineering calculations for the BMP(s)	X	

Please describe why the selected treatment BMP(s) was selected for this project. For projects utilizing a low performing BMP, please provide a detailed explanation and justification.

The treatment BMP selected for this site is detention basin. The BMP was selected because it will provide high removal efficiency for sediment, which is the main pollutant of concern for the site, and will control downstream flow intensity. In addition, the BMP has been sized so that the structure will control the water discharge to below pre-construction flow up to a 100 year storm event. Surface drainage from north of the site will be directed to sheet flow in the east drainage. Discharge from the detention basin will be discharged as sheet flow over the east access road. Residual water retained in the detention basin will be evaporated or infiltrated into the soil.

MAINTENANCE

Please check the box that best describes the maintenance mechanism(s) for this project.

CATEGORY	SELECTED	
	YES	NO
First		X
Second	X	
Third		X
Fourth		X

Please briefly describe the long-term fiscal resources for the selected maintenance mechanism(s).

The owner of the power plan facility will be responsible for maintenance of the treatment BMP. The estimated cost for maintenance of the BMP is included in attachment F. Attachment E contains the specification information for the treatment BMP and the maintenance requirements.
(CONTINUED ON PAGE 14A and 14B)

ATTACHMENTS

Please include the following attachments.

ATTACHMENT		COMPLETED	N/A
A	Project Location Map	X	
B	Site Map	X	
C	Relevant Monitoring Data	X	
D	Treatment BMP Location Map	X	
E	Treatment BMP Datasheets	X	
F	Operation and Maintenance Program for Treatment BMPs	X	
G	Engineer's Certification Sheet	X	

Note: Attachments A and B may be combined.

(CONTINUED FROM PAGE 14)

LONG-TERM FISCAL RESOURCES FOR MAINTENANCE
The following information is excerpted from the SUSMP manual to describe how the treatment BMP (detention basin) will be maintained through a financial mechanism that provides long term funding for the activities.

SECOND CATEGORY:
The County needs to assure ongoing maintenance. The nature of the proposed BMPs indicates that it is appropriate for property owners to be given primary responsibility for maintenance, on a perpetual basis (unless a stormwater utility is eventually formed). However, the County (in a "backup" role) needs to be able to step in and perform the maintenance if property owner fails, and needs to have security to provide funding for such backup maintenance. Security for "backup" maintenance after the interim period (5 years) would not be provided, however primary owner maintenance responsibility would remain. IF a stormwater utility or other permanent mechanism is put into place, it could assume either a primary or backup maintenance role.

Project BMP
- Detention Basin

Mechanisms to Assure Maintenance:

1. Stormwater Ordinance Requirement: The WPO requires this ongoing maintenance. In the event that the mechanisms below prove ineffective, or in addition to enforcing those mechanisms, civil action, criminal action or administrative citation could also be pursued for violations of the ordinance.
2. Public Nuisance Abatement: Under the WPO failure to maintain a BMP would constitute a public nuisance, which may be abated under the enforcement mechanism additional to the above, and would allow costs of maintenance to be billed to the owner, a lien placed on the property, and the tax collection process to be used.
3. Notice to Purchasers: Section 67.819(e) of the WPO requires developers to provide clear written notification to persons acquiring land upon which a BMP is located, or others assuming a BMP maintenance obligation, of the maintenance duty.
4. Conditions in Ongoing Land Use Permits: For those applications (listed in WPO Section 67.804) upon whose approval ongoing conditions may be imposed, a condition will be added which requires the owner of the land upon which the stormwater facility is located to maintain that facility in accordance with the requirements specified in the SMP. Failure to perform maintenance may then be addressed as a violation of the permit, under the ordinance governing that permit process.
5. Subdivision Public Report: Tentative Map and Tentative Parcel Map approvals will be conditioned to require that, prior to approval of a Final or Parcel Map, the subdivider shall provide evidence to the Director of Public Works, that the

subdivider has requested the California Department of Real Estate to include in the public report to be issued for the sales of lots within the subdivision, a notification regarding the maintenance requirement. (The requirement for this condition would not be applicable to subdivisions which are exempt from regulation under the Subdivided Lands Act, or for which no public report will be issued.)

6. BMP Maintenance Agreement with Easement and Covenant: An agreement will be entered into with the County, which will function three ways:
    a. It will commit the land to being used only for purposed of the BMP;
    b. It will include an agreement by the landowner, to maintain the facilities in accordance with the SMP(this obligation would be passed on to future purchasers or successors of the landowner, as a covenant); and
    c. It will include an easement giving the County the right to enter onto the land (and any necessary adjacent land needed for access) to maintain the BMPs.

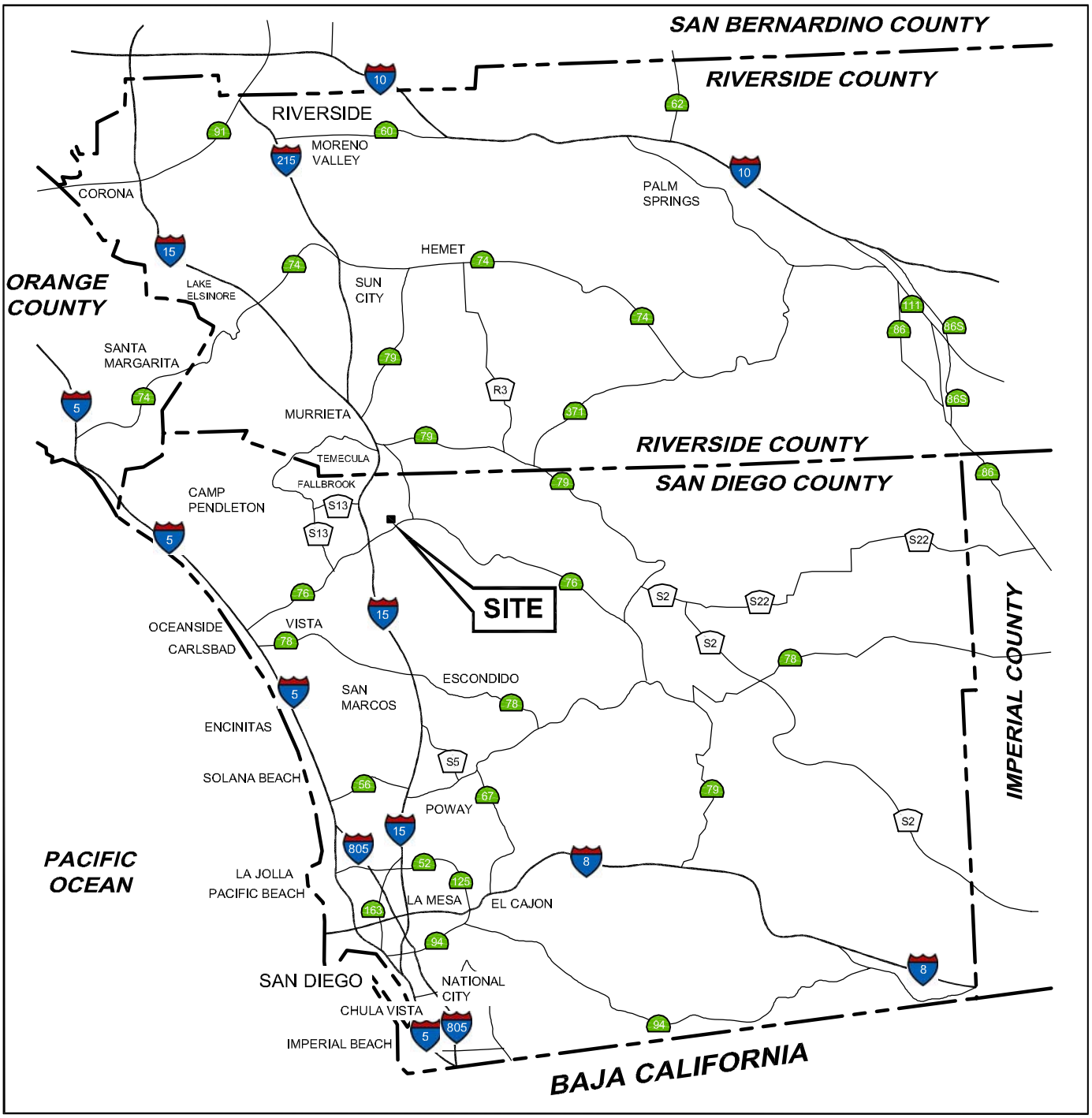
This would be required o all applications listed in WPO Section 67.804. In the case of subdivisions, this easement and covenant would be recorded on or prior to the Final or Parcel Map.

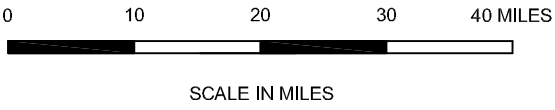
Funding:

Developer would provide the County with security to substantiate the maintenance agreement, which would remain in place for an interim period of 5 years. The amount of the security would equal the estimated cost of 2 years of maintenance activities. The security can be a Cash Deposit, Letter of Credit or other form acceptable to the County.

ATTACHMENT A

LOCATION MAP





TRC

PROJECT: 125158

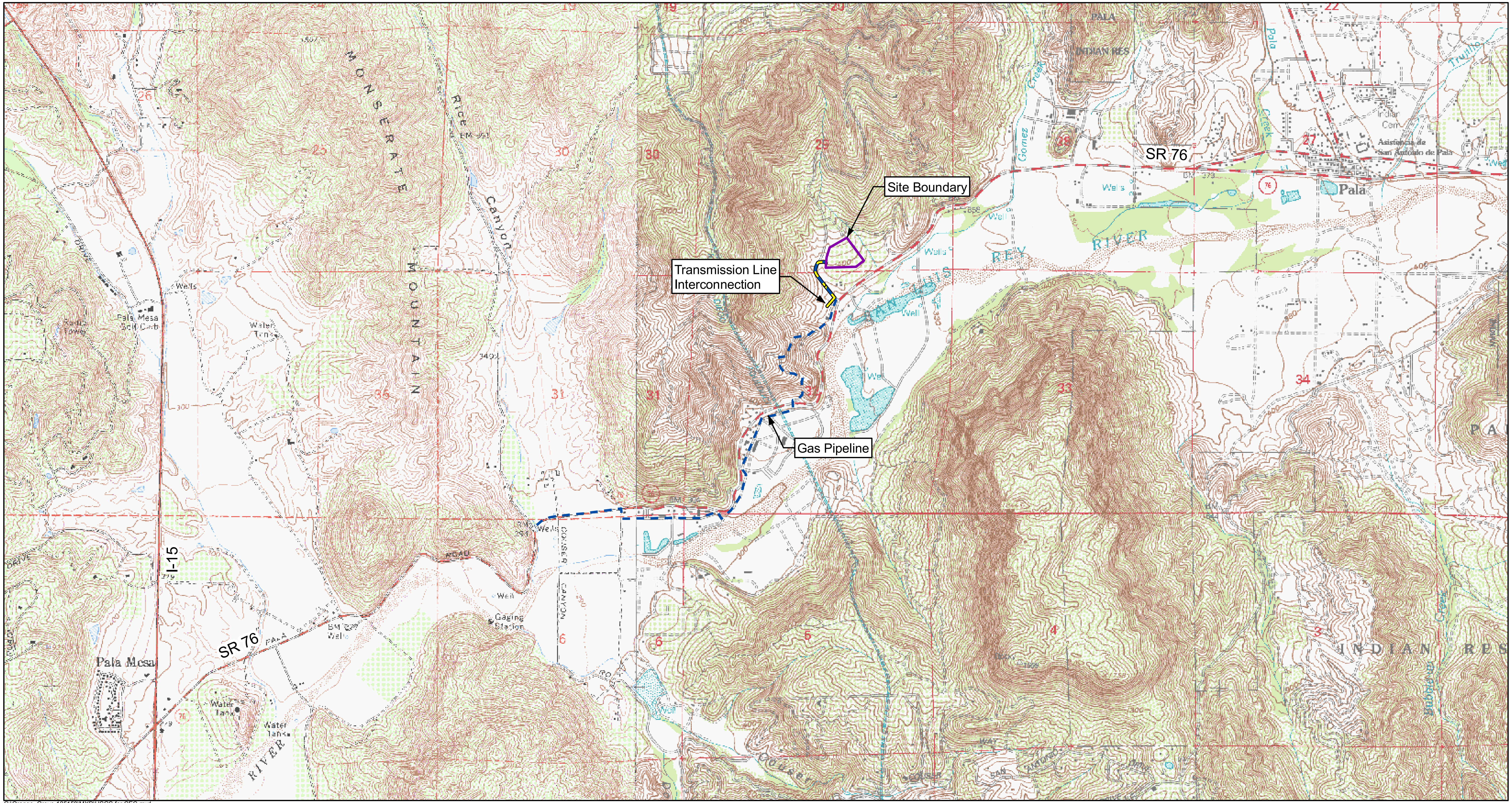
FACILITY:

ORANGE GROVE PROJECT
SAN DIEGO COUNTY, CALIFORNIA

SITE LOCATION MAP

FIGURE 2.2-1

MS=1:1 L:□Graphics□ProjectsByNumber□29-xxxx□29-0319□AFC (125158)□AFC-Location.dwg May 01, 2008 - 1:09pm Rcollins



G:\Orange_Grove-125158\MXD\USGS for CEC.mxd

Figure 2.2-2

Vicinity Map

Orange Grove Project

San Diego County, CA

N

W E

S

1" = 2,000'

2,000 1,000 0 2,000 4,000 6,000 Feet

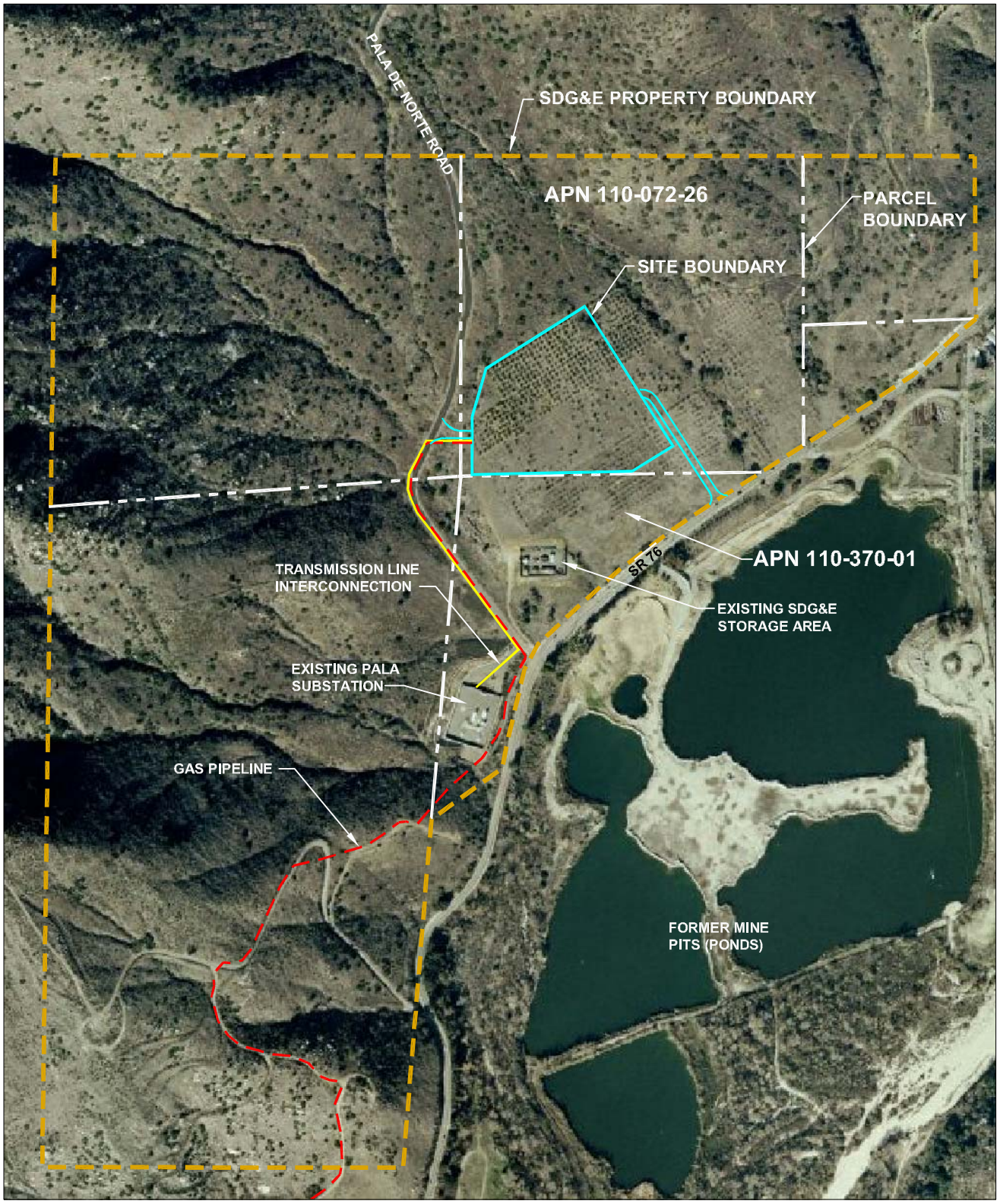
Source:

USGS Topographical Quardrangles:
Pala, Bonsall

TRC

ATTACHMENT B

PROJECT SITE MAP



SOURCE:

Virtual Earth, 2006.

APPROXIMATE SCALE (FEET)

0 600 1200

PROJECT: 125158

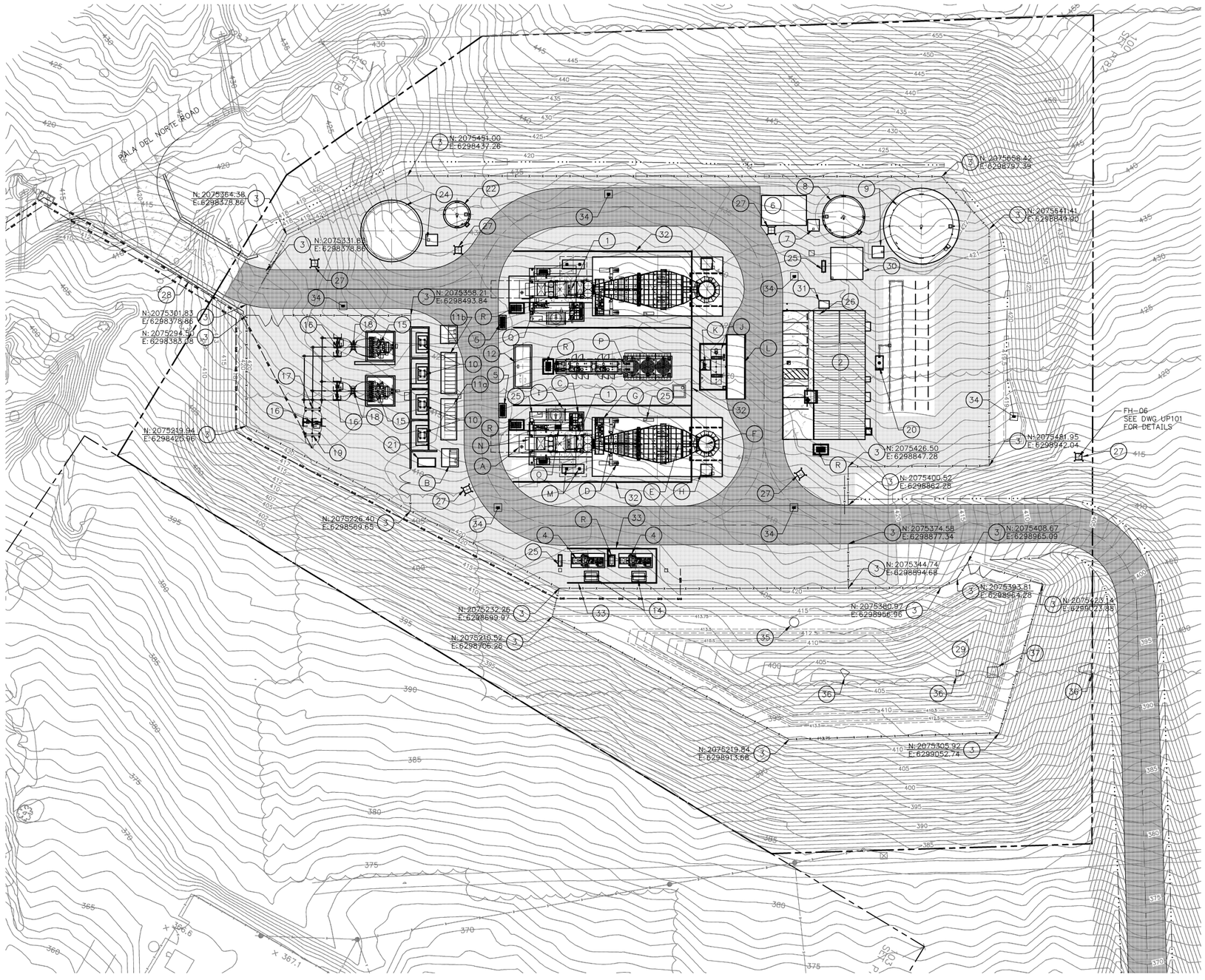
FACILITY:

ORANGE GROVE PROJECT
SAN DIEGO COUNTY, CALIFORNIA

SITE AND PROPERTY BOUNDARY

FIGURE 2.2-3

PS=1:1 L:□Graphics□ProjectsByNumber□29-xxxx□29-0319□AFC (125158)□AFC-SITE AERIAL.dwg May 01, 2008 - 4:41pm Rcollins



SITE LAYOUT PLAN

PLAN NORTH IS 29°55'46" CCW OF TRUE NORTH

40 0 40 80

SCALE IN FEET

EMISSION COORDINATES SYMBOL		
DESCRIPTION	NORTHING	EASTING
COMBUSTION TURBINE #1 (NORTH)	2075491	6298683
COMBUSTION TURBINE #2 (SOUTH)	2075387	6298743
DIESEL FIRE PUMP (±2')	2075517	6298766
BLACK START GENERATOR (±2')	2075379	6298582

KEYNOTES:

1. COMBUSTION TURBINE (CT), GENERATOR, AND AUXILIARY EQUIPMENT. (FOR EACH UNIT): (HEIGHT = 43' AT THE TOP OF VBV DUCT).
   - A MAIN TURBINE GENERATOR SKID ENCLOSURE.
   - B 13.8KV ELECTRICAL SWITCHGEAR.
   - C CT AUXILIARY EQUIPMENT SKID.
   - D TEMPERING AIR FANS (2).
   - E EMISSION CONTROL SYSTEM–SCR (HEIGHT = ±33').
   - F STACK (HEIGHT = 80').
   - G AMMONIA VAPORIZATION SKID.
   - H CEMS ENCLOSURE WITH TRANSFORMER AND CALIBRATION GAS STORAGE.
   - I CT LUBE OIL COOLER.
   - J AMMONIA STORAGE TANK (COMMON TO BOTH CT UNITS).
   - K AMMONIA FORWARDING PUMP SKID (COMMON TO BOTH CT UNITS).
   - L AMMONIA UNLOADING PAD, SPILL CONTAINMENT (COMMON TO BOTH CT UNITS).
   - M TURBINE REMOVAL SUPPORTS.
   - N AIR INLET FILTER (HEIGHT = 34').
   - O SPRINT SKID.
   - P INLET AIR CHILLER AND COOLING TOWER (COMMON TO BOTH CT UNITS) (HEIGHT = 30').
   - Q WATER INJECTION SKID.
   - R OILY DRAIN TANK.
2. SERVICE BUILDING FOR CONTROL ROOM, ELECTRICAL EQUIPMENT, FIRE PUMPS, COMPRESSED AIR. (HEIGHT = 18').
3. SITE SECURITY CHAINLINK FENCE AND GATES.
4. FUEL GAS COMPRESSORS.
5. GAS COALESCING FILTER SKID.
6. CONCRETE PAD FOR TEMPORARY WATER TREATMENT TRAILER.
7. DEMIN. WATER PUMP SKID AND RELATED EQUIPMENT.
8. DEMIN. WATER STORAGE TANK (HEIGHT = 24').
9. RAW WATER/FIREWATER STORAGE TANK & PUMP SKID (HEIGHT = 44').
10. AUXILIARY TRANSFORMERS.
11a. 4160V ELECTRICAL SWITCHGEAR.
11b. 480V ELECTRICAL SWITCHGEAR.
12. BLACKSTART GENERATOR.
13. NOT USED.
14. FUEL GAS COMPRESSOR RECYCLE FIN–FAN COOLER.
15. 13.8KV–69KV GENERATOR STEP–UP TRANSFORMER (GSU).
16. 69KV DISCONNECT SWITCH AND SUPPORTS.
17. 69KV CT/VT METERING UNIT.
18. 69KV CIRCUIT BREAKER.
19. 69KV TRANSITION STRUCTURE & POTHEAD.
20. UNDERGROUND SANITARY SYSTEM.
21. TRANSFORMER DELUGE VALVE ENCLOSURE.
22. WASTEWATER STORAGE TANK (HEIGHT = 24').
23. NOT USED.
24. COOLING TOWER MAKEUP TANK AND PUMP SKID (HEIGHT = 36').
25. 480V MCC.
26. DIESEL FIRE PUMP ROOM.
27. YARD FIRE HYDRANTS WITH HYDRANT MOUNT FIRE MONITORS.
28. BRIDGE.
29. STORMWATER DETENTION BASIN.
30. RO WATER TREATMENT AREA.
31. DIESEL STORAGE TANK – DIESEL FIRE PUMP.
32. GAS TURBINE SOUND WALL (HEIGHT = 48').
33. GAS COMPRESSOR SOUND WALL (HEIGHT = 24').
34. AREA INLET.
35. STORM MANHOLE.

KEYNOTES CONT.:

36. STORM END SECTION.
37. STORMWATER OUTLET CONTROL STRUCTURE.

REV.	DATE	DESCRIPTION	DWN	CHK
A	10–23–07	ISSUED FOR REVIEW	BGG	WHR
B	10–30–07	ISSUED FOR REVIEW	BGG	WHR
C	11–8–07	ISSUED FOR WESTPOWER APPROVAL	BGG	WHR
D	11–19–07	ISSUED FOR AIR MODEL	BGG	WHR
E	11–29–07	RE–ISSUED FOR AIR MODEL	BGG	WHR
F	11–30–07	ISSUED FOR MILESTONE 4	BGG	WHR
G	12–19–07	ISSUED FOR AMENDED SPPE APPLICATION	BGG	WHR
H	12–28–07	RE–ISSUED FOR MILESTONE 4	BGG	WHR
J	1–17–08	ISSUED PER FPP COMMENTS	BGG	MJB
K	02–29–08	FINAL ISSUE FOR APPROVAL	BGG	WHR
L	6–2–08	ISSUED FOR AFC PERMIT	BGG	MJB

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Stilwell, Kansas 66085–1000

ORANGE GROVE ENERGY L.P.
Schaumburg, IL

ORANGE GROVE POWER PLANT

SITE LAYOUT PLAN

DESIGN BY: B. ROMINES	CHECKED BY: J. BONDANK
DRAWN BY: B. GASPERS	DATE: 9–12–07
CLIENT I.D. ICC00101	SEGA PROJECT NO. 07–201

CADD FILE NAME: 07201–C100.dwg

DRAWING NO. C100 REV. L

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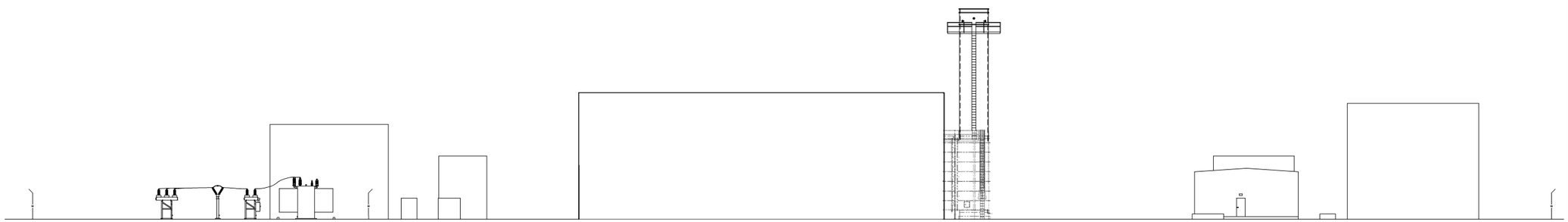

SITE ELEVATION
LOOKING NORTH

20 0 20 40
SCALE IN FEET

REV.	DATE	DESCRIPTION	DWN	CHK
A	6-18-07	PRELIMINARY	RLK	JKB
B	12-12-07	ISSUED FOR SPPE	RLK	JKB
C	12-19-07	ISSUED FOR AMENDED SPPE APPLICATION	BGG	JKB
D	2-29-08	FINAL ISSUE FOR APPROVAL	BGG	JKB
E	05-31-08	ISSUED FOR AFC PERMIT	BGG	MJB

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Schaumburg, IL

ORANGE GROVE POWER PLANT

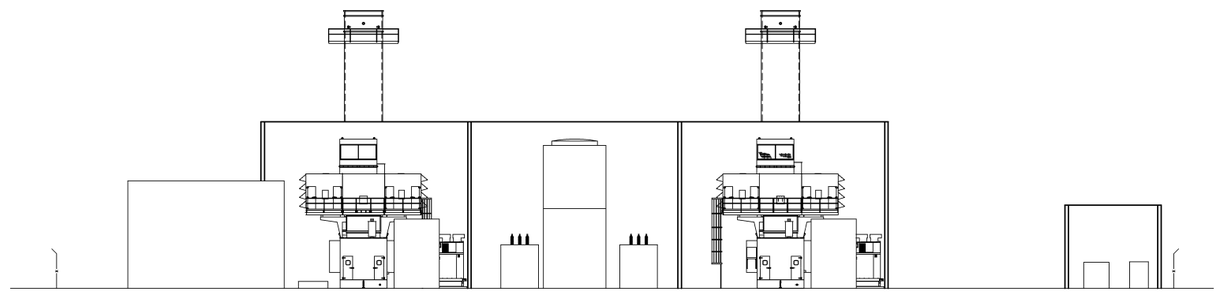
ELEVATION
LOOKING NORTH

DESIGN BY: J. BONDANK	CHECKED BY: J. BONDANK
DRAWN BY: R. KUHNS	DATE: 6-18-07
CLIENT I.D. ICC00101	SEGA PROJECT NO. 07-201

CADD FILE NAME: 07201-GA100.dwg

DRAWING NO. GA100 REV. E

N:\2007\07201\dwgs\ee\07201-GA100.dwg 6/2/08 2:36pm bgaspers



SITE ELEVATION
LOOKING EAST

20 0 20 40
SCALE IN FEET

REV.	DATE	DESCRIPTION	DWN	CHK
A	6-18-07	PRELIMINARY	RLK	JKB
B	12-12-07	ISSUED FOR SPPE	RLK	JKB
C	12-19-07	ISSUED FOR AMENDED SPPE APPLICATION	BGG	JKB
D	2-29-08	FINAL ISSUE FOR APPROVAL	BGG	JKB
E	05-31-08	ISSUED FOR AFC PERMIT	BGG	MJB

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Schaumburg, IL

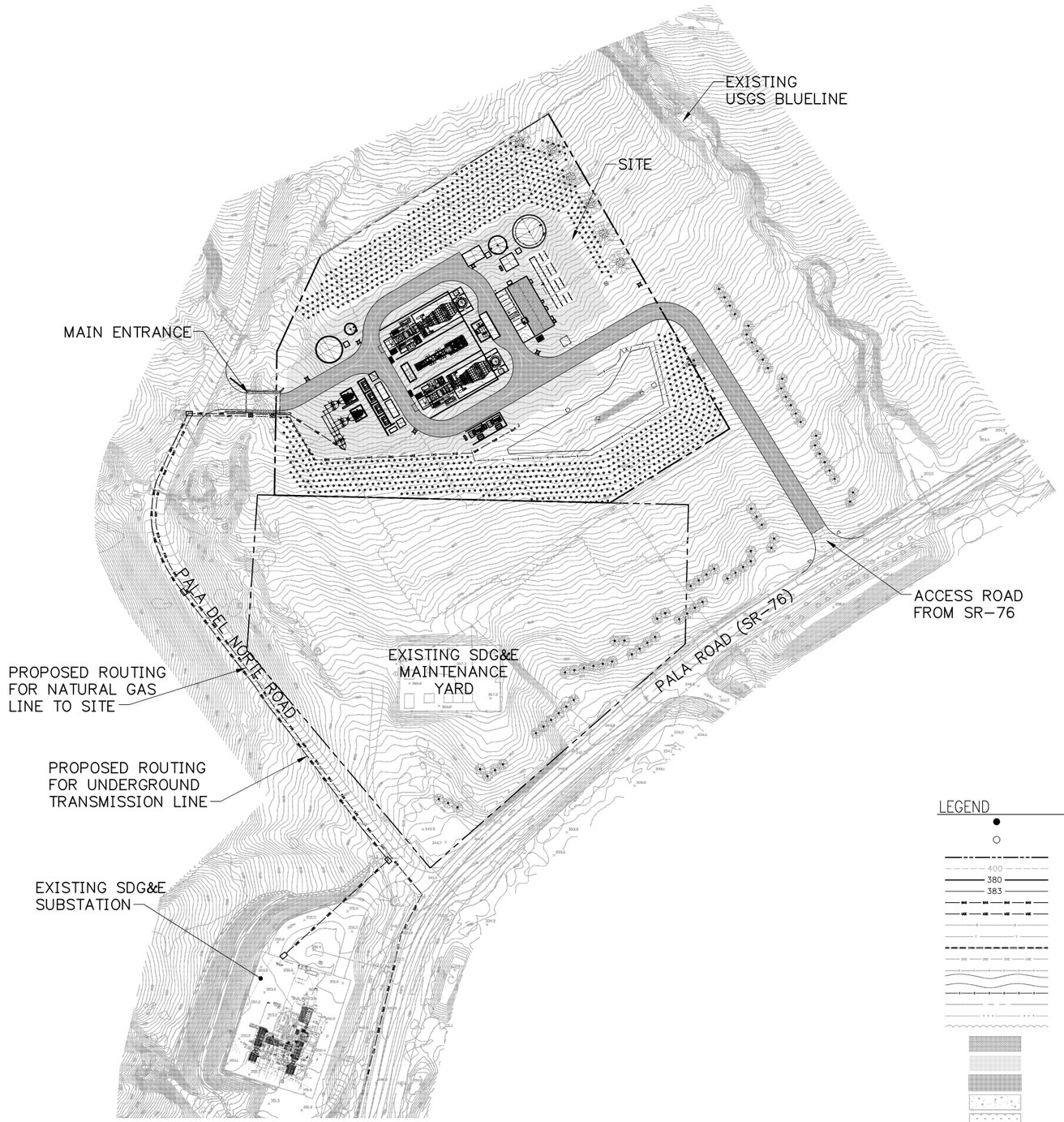
ORANGE GROVE POWER PLANT

ELEVATION
LOOKING EAST

DESIGN BY:	CHECKED BY:
J. BONDANK	J. BONDANK
DRAWN BY:	DATE:
R. KUHNS	6-18-07
CLIENT I.D.	SEGA PROJECT NO.
ICC00101	07-201

CADD FILE NAME: 07201-GA101.dwg

DRAWING NO.	REV.
GA101	E



GENERAL NOTES:

1. THE LOCATION OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO BEGINNING CONSTRUCTION IN ORDER TO PROVIDE FOR NON–INTERRUPTION OF SERVICE AND TO ENSURE PROPER CLEARANCES.
2. WHERE THE NEW IMPROVEMENTS ABUT EXISTING IMPROVEMENTS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR MATCHING THE ELEVATION OF THE EXISTING IMPROVEMENTS.
3. ALL CONSTRUCTION PERFORMED ON THIS PROJECT SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF SAN DIEGO COUNTY, CALIFORNIA. WHERE DISCREPANCIES EXIST BETWEEN THE PROJECT SPECIFICATIONS AND COUNTY STANDARDS, THE CONTRACTOR SHALL ABIDE BY THE GREATER OR MORE RESTRICTIVE REQUIREMENTS.
4. PLACEMENT OF CONCRETE AND REINFORCEMENT SHALL COMPLY WITH THE REQUIREMENTS OF ACI 301. DETAILING AND FABRICATION OF REINFORCEMENT SHALL COMPLY WITH THE CRSI MANUAL OF STANDARD PRACTICE, LATEST EDITION.
5. PRECAST AND CAST–IN–PLACE CONCRETE FOR PAVING AND SITE STRUCTURES SHALL BE CLASS 'Z' PORTLAND CEMENT CONCRETE, WITH THE FOLLOWING PROPERTIES:

28–DAY COMPRESSIVE STRENGTH MIN.	MIN. 4,500 PSI
WATER/CEMENT RATIO	0.45
MAXIMUM AGGREGATE SIZE	0.75"
SLUMP	3" +/– 1"

6. ALL WELDED WIRE FABRIC (W.W.F.) SHALL CONFORM TO A185. NO ALUMINUM SHALL BE EMBEDDED IN ANY CONCRETE.
7. CONTRACTOR SHALL PROVIDE FOR CONTROL OF SURFACE EROSION DURING CONSTRUCTION AND UNTIL THE OWNER ACCEPTS THE WORK AS COMPLETE. THE CONTRACTOR SHALL PROVIDE BERMS, SILT FENCE, STRAW BALES, SILT BASINS, OR OTHER MEANS TO PREVENT EROSION FROM REACHING THE PUBLIC RIGHT–OF–WAY OR ADJACENT PROPERTY. IN THE EVENT THE PREVENTION MEASURES ARE NOT EFFECTIVE, THE CONTRACTOR SHALL REMOVE ANY DEBRIS AND EROSION AND RESTORE THE RIGHT–OF–WAY AND ADJACENT PROPERTY TO ORIGINAL OR BETTER CONDITION.
8. CONTRACTOR SHALL, BY HIS OWN INVESTIGATION AND PRIOR TO COMMENCING WORK, SATISFY HIMSELF AS TO THE SURFACE AND SUBSURFACE CONDITIONS TO BE ENCOUNTERED.
9. A TOPOGRAPHIC SURVEY WAS PREPARED BY PSOMAS SURVEYING DATED OCTOBER 2007. THE ENGINEER WILL NOT BE RESPONSIBLE FOR THE COMPLETENESS OR ACCURACY OF THE DATA AND NO EXPRESSED OR IMPLIED GUARANTEE IS GIVEN OF THE INTERPRETATION THEREOF.
10. THE OWNER SHALL EMPLOY AN INDEPENDENT ENGINEERING TESTING AGENCY TO VERIFY SOIL COMPACTION AND PAVEMENT MATERIAL PROPERTIES. THE CONTRACTOR SHALL ALLOW THE TESTING AGENCY TO PERFORM TESTING AND RETESTING AS NECESSARY TO VERIFY COMPLIANCE WITH THE PROJECT SPECIFICATIONS.
11. REFERENCE IS MADE TO THE REVISED GEOTECHNICAL EXPLORATION REPORT BY PSI AND DATED DECEMBER 2007. NEITHER THE OWNER NOR THE ENGINEER WILL BE RESPONSIBLE FOR THE COMPLETENESS OR ACCURACY, NOR THE INTERPRETATION THEREOF. ALL SITE PREPARATION AND EARTHWORK CONSTRUCTION SHALL BE IN CONFORMANCE WITH THE GEOTECHNICAL RECOMMENDATIONS AND THEIR "STANDARD GUIDELINES FOR GRADING PROJECTS."
12. FOUNDATION DESIGNS ARE BASED ON THE GEOTECHNICAL ENGINEERING REPORT. ALL FOOTINGS AND PIERS SHALL BEAR AT THE ELEVATIONS SHOWN ON THE PLANS, DETAILS, SECTIONS, AND SCHEDULES. ALL SITE PREPARATION, REQUIREMENTS FOR EXCAVATIONS AND SLOPE STABILITY, STRUCTURAL FILL AND TRENCH BACKFILL, FOUNDATIONS, AND SUBGRADE PREPARATION FOR BUILDING FLOOR SLABS SHALL BE IN ACCORDANCE WITH THE PSI GEOTECHNICAL ENGINEERING REPORT.
13. TOPSOIL AND ALL ORGANIC MATTER SHALL BE REMOVED FROM THE LOCATION OF PROPOSED IMPROVEMENTS. UNSTABLE OR SPONGY AREAS SHALL BE OVEREXCAVATED AND REPLACED WITH COMPACTED FILL IN ACCORDANCE WITH THE PSI GEOTECHNICAL REPORT.
14. SUBGRADE SHALL BE SCARIFIED A MINIMUM OF 12", MOISTURE CONDITIONED TO WITHIN ±2% OF OPTIMUM MOISTURE CONTENT (BASED ON ASTM D1557 TEST) AND ROLLED WITH A HEAVY ROLLER TO ACHIEVE A MINIMUM OF 95% RELATIVE COMPACTION PRIOR TO BACKFILLING.
15. COMPACTED FILL SHALL NOT CONTAIN ROCK LARGER THAN 3 INCHES. FILL SLOPES SHALL BE BENCHED INTO NATIVE MATERIAL OR AS REQUIRED BY THE PSI GEOTECHNICAL REPORT.
16. COMPACTED FILL SHALL BE PLACED IN NO GREATER THAN 8 INCH LOOSE LIFTS AND COMPACTED TO AT LEAST 95% OF MAXIMUM DRY DENSITY AT ± 2% OPTIMUM MOISTURE CONTENT (BASED ON ASTM D1557 TEST). FIELD DENSITY TESTS SHALL BE TAKEN AT A FREQUENCY OF AT LEAST ONE TEST FOR EACH 2500 SQUARE FEET OF FILL LIFT. IN PAVEMENT AREAS, THE TESTING FREQUENCY MAY BE ONE FIELD DENSITY TEST FOR EACH 5000 SQUARE FEET OF FILL LIFT, BUT NO LESS THAN 3 TESTS PER LIFT.
17. IF CUT/FILL TRANSITIONS ARE ENCOUNTERED ACROSS A PROPOSED STRUCTURE FOOT PRINT, THE ENTIRE CUT PORTION WITHIN THAT FOOT PRINT AND FIVE FEET OUT LATERALLY SHALL BE OVER–EXCAVATED TO A MINIMUM DEPTH OF TWO FEET BELOW THE BOTTOM OF THE DEEPEST PROPOSED FOUNDATION OR A MINIMUM OF ONE HALF THE DEPTH OF THE DEEPEST FILL IN THE STRUCTURE FOOT PRINT, WHICHEVER IS DEEPER. OVER–EXCAVATIONS SHALL EXTEND LATERALLY IN ALL DIRECTIONS A MINIMUM OF FIVE FEET FROM THE PROPOSED STRUCTURE FOOTPRINT.
18. SUBGRADE BELOW PROPOSED CRUSHED ROCK PAVEMENT SHALL BE OVER–EXCAVATED TO A MINIMUM DEPTH OF 24" MOISTURE CONDITIONED TO SLIGHTLY OVER OPTIMUM MOISTURE CONTENT, AND COMPACTED TO A MINIMUM OF 95% TO 98% OF RELATIVE COMPACTION (BASED ON ASTM D1557).
19. CRUSHED ROCK PAVEMENT (ALSO CALLED CRUSHED ROCK BASE OR CRUSHED ROCK SURFACE) SHALL BE COMPACTED WELL GRADED, CLASS II AGGREGATE ROAD BASE AND MEET THE REQUIREMENTS FOR THE COUNTY OF SAN DIEGO, IT SHALL BE PLACED IN LIFTS NO GREATER THAN 9" AND COMPACTED TO A MINIMUM 95% RELATIVE COMPACTION (BASED ON ASTM TEST METHOD D1557).
20. ALL SITE STRUCTURES SHALL BE DESIGNED FOR HS–20 LOADING.
21. ON ALL ELECTRICAL DRAWING LAYOUT PLANS, THE LOCATIONS OF SOME EQUIPMENT, GROUNDING, AND UNDERGROUND CONDUITS, AND DEVICES AT WHICH CONDUIT CIRCUITS TERMINATE ARE APPROXIMATE. THE CONTRACTOR SHALL INSTALL EACH CONDUIT CIRCUIT TO THE INTENDED EQUIPMENT TERMINATION POINT WITHOUT ADDITIONAL CHARGE TO THE OWNER, ALTHOUGH ITS FINAL LOCATION MAY SHIFT SOMEWHAT FROM THAT WHICH IS SHOWN.

LEGEND

- FOUND MONUMENT AS NOTED
- SET 1" IRON PIPE WITH "PSOMAS" PLUG UNLESS NOTED OTHERWISE
- PROPERTY LINE
- 400 EXISTING CONTOUR
- 380 PROPOSED MAJOR CONTOUR
- 383 PROPOSED MINOR CONTOUR
- PROPOSED GAS LINE
- PROPOSED UNDERGROUND ELECTRICAL
- EXISTING ELECTRIC LINE
- EXISTING TELEPHONE (COMMUNICATIONS) LINE
- PROPOSED RCP STORMWATER PIPE
- EXISTING T&D LINE
- EXISTING FENCE
- EXISTING ROAD
- PROPOSED FENCE
- PARCEL LINE
- DRAINAGE PATH (FLOWLINE)
- EXISTING ORCHARD LINE
- PROPOSED RIPRAP
- PROPOSED CRUSHED ROCK SURFACE
- PROPOSED CRUSHED ROCK PAVEMENT
- PROPOSED CONCRETE
- PROPOSED NATIVE GROUND COVER
- PROPOSED LANDSCAPING
- EXISTING USGS BLUELINE

REV.	DATE	DESCRIPTION	DWN	CHK
A	11–30–07	ISSUED FOR MILESTONE 4	BGG	WHR
B	12–19–07	ISSUED FOR AMENDED SPPE APPLICATION	BGG	WHR
C	12–28–07	RE–ISSUED FOR MILESTONE 4	BGG	WHR
D	1–17–08	ISSUED PER FPP COMMENTS	BGG	MJB
E	02–29–08	FINAL ISSUE FOR APPROVAL	BGG	WHR
F	6–2–08	ISSUED FOR AFC PERMIT	BGG	WHR

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P.O. Box 1000
Stilwell, Kansas 66085–1000

ORANGE GROVE ENERGY L.P.
Schaumburg, IL

ORANGE GROVE POWER PLANT

YARD LAYOUT PLAN

DESIGN BY: B. ROMINES	CHECKED BY: J. BONDANK
DRAWN BY: B. GASPERS	DATE: 9–12–07
CLIENT I.D. ICC00101	SEGA PROJECT NO. 07–201

CADD FILE NAME: 07201–Y100.dwg

DRAWING NO. Y100 — REV. F

N:\2007\07201\dwgs\ce\07201–Y100.dwg 6/2/08 1:24pm bgaspers

SITE LANDSCAPING PLAN

PLAN NORTH IS 29°55'46" CCW OF TRUE NORTH

60 0 60 120

SCALE IN FEET

KEYNOTES:

1. FUEL MODIFICATION ZONE A (DEFENSIBLE SPACE): 50' AROUND ALL SIDES OF ALL EQUIPMENT OR STRUCTURES. PLEASE REFERENCE THE FIRE PROTECTION PLAN FOR DETAILS.
2. FUEL MODIFICATION ZONE B: 50' TO 125' AROUND ALL SIDES OF EQUIPMENT OR STRUCTURES EXCEPT FOR SPECIAL PROVISIONS AT WEST SIDE OF FACILITY AS NEEDED TO MINIMIZE DISTURBANCE TO SENSITIVE HABITAT. PLEASE REFERENCE THE FIRE PROTECTION PLAN FOR DETAILS.
3. ROADWAY FUEL MODIFICATION ZONE: FROM EDGE OF ROADWAY TO 50' OUTSIDE EDGE OF ROADWAYS. PLEASE REFERENCE THE FIRE PROTECTION PLAN FOR DETAILS.
4. ROADWAY FUEL MODIFICATION ZONE: FROM EDGE OF ROADWAY TO 30' OUTSIDE EDGE OF ROADWAYS. PLEASE REFERENCE THE FIRE PROTECTION PLAN FOR DETAILS.

SITE SCREENING LEGEND:

- COAST LIVE OAK — POTENTIAL MATURE SIZE
- ENGELMANN OAK — POTENTIAL MATURE SIZE
- TOYON — POTENTIAL MATURE SIZE
- SHRUBS OF AT LEAST 1 GALLON MIN. SIZE OR TREES OF A 5 GALLON MIN. SIZE PER SECTION 87.417(B) OF THE COUNTY OF SAN DIEGO GRADING ORDINANCES.

NOTES:

1. THIS DRAWING IS A CONCEPTUAL LANDSCAPING PLAN. A CALIFORNIA REGISTERED LANDSCAPING ARCHITECT WILL PROVIDE A FINAL LANDSCAPING PLAN, BASED ON THE CONCEPTUAL LAYOUT. THE FINAL LANDSCAPING PLAN MAY INCLUDE ADDITIONAL USE OF CEC AND FIRE MARSHALL APPROVED NATIVE SPECIES FOR IMPROVED VISUAL SCREENING.

LEGEND

- FOUND MONUMENT AS NOTED
- SET 1" IRON PIPE WITH "PSOMAS" PLUG UNLESS NOTED OTHERWISE
- PROPERTY LINE
- 400 — EXISTING CONTOUR
- 380 — PROPOSED MAJOR CONTOUR
- 383 — PROPOSED MINOR CONTOUR
- GAS — PROPOSED GAS LINE
- UGE — PROPOSED UNDERGROUND ELECTRICAL
- E — EXISTING ELECTRIC LINE
- T — EXISTING TELEPHONE (COMMUNICATIONS) LINE
- PROPOSED RCP STORMWATER PIPE
- OHE — EXISTING T&D LINE
- X — EXISTING FENCE
- EXISTING ROAD
- X — PROPOSED FENCE
- PARCEL LINE
- DRAINAGE PATH (FLOWLINE)
- EXISTING ORCHARD LINE
- PROPOSED RIPRAP
- PROPOSED CRUSHED ROCK SURFACE
- PROPOSED CRUSHED ROCK PAVEMENT
- PROPOSED CONCRETE
- PROPOSED NATIVE GROUND COVER
- FUEL MODIFICATION ZONE A
- FUEL MODIFICATION ZONE B
- ROADWAY FUEL MODIFICATION ZONE
- LIMIT OF DISTURBED AREA

REV.	DATE	DESCRIPTION	DWN	CHK
A	11-30-07	ISSUED FOR MILESTONE 4	BGG	WHR
B	12-11-07	ISSUED FOR TRC COMMENTS	BGG	WHR
C	12-17-07	ISSUED FOR FPP	BGG	WHR
D	12-18-07	ISSUED PER TRC COMMENTS	BGG	MJB
E	12-19-07	ISSUED FOR AMENDED SPPE APPLICATION	BGG	WHR
F	12-20-07	RE-ISSUED FOR AMENDED SPPE APPLICATION	BGG	WHR
G	12-28-07	RE-ISSUED FOR MILESTONE 4	BGG	WHR
H	1-17-08	ISSUED PER FPP COMMENTS	BGG	MJB
J	02-29-08	FINAL ISSUE FOR APPROVAL	BGG	WHR
K	5-9-08	ISSUED FOR REVIEW	BGG	MJB
L	6-2-08	ISSUED FOR AFC PERMIT	BGG	MJB

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Stilwell, Kansas 66085-1000

ORANGE GROVE ENERGY L.P.
Schaumburg, IL

ORANGE GROVE POWER PLANT

LANDSCAPING PLAN

DESIGN BY: M. BLAKE	CHECKED BY: B. ROMINES
DRAWN BY: B. GASPERS	DATE: 9-12-07
CLIENT I.D. ICC00101	SEGA PROJECT NO. 07-201

CADD FILE NAME: 07201-L100.dwg

DRAWING NO. L100 — REV. L

ATTACHMENT C

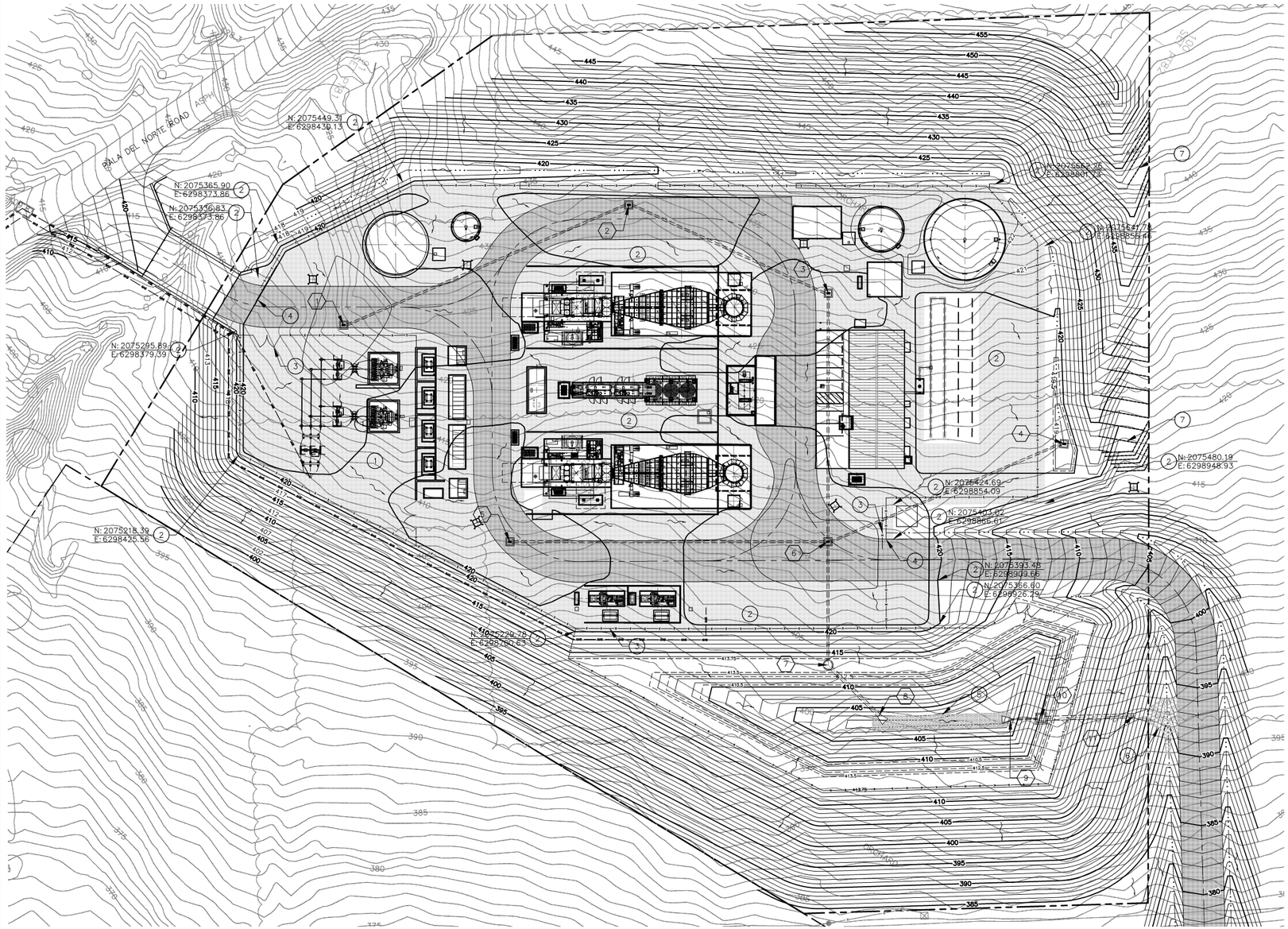
RELEVANT MONITORING DATA

*(**NOTE:** PROVIDE RELEVANT WATER QUALITY MONITORING DATA IF AVAILABLE.)*

NO MONITORING DATA AVAILABLE

ATTACHMENT D

TREATMENT BMP LOCATION MAP



GRADING AND DRAINAGE PLAN

PLAN NORTH IS 29°55'46" CCW OF TRUE NORTH

40 0 40 80

SCALE IN FEET

CIVIL KEYNOTES:

1. INSTALL 6" CRUSHED ROCK SURFACE INSIDE SUBSTATION FENCE.
2. INSTALL 6" CRUSHED ROCK SURFACE INSIDE COMBUSTION TURBINE AREA FENCE.
3. INSTALL SITE SECURITY CHAINLINK FENCE WITH 30' MANUAL SLIDE GATES, SEE SITE DETAILS DWG. C801.
4. INSTALL 30' SLIDE GATE WITH GATE OPERATOR AND LOOP DETECTOR. COORDINATE WITH OWNER'S SECURITY CONSULTANT.
5. INSTALL MIN. 2.3' 1/2 TON STONE RIPRAP.
6. INSTALL MIN. 3.0' 1 TON STONE RIPRAP.
7. FILL AREA EAST OF LANDSCAPING BERM FOR EXCESS CUT, MIN. 3' FROM PROPERTY LINE.

GRADING NOTES:

1. ALL CONSTRUCTION SHALL MEET THE STANDARDS AND SPECIFICATIONS OF THE COUNTY OF SAN DIEGO, CALIFORNIA, LATEST EDITION.
2. ALL STORM SEWER LINES SHALL BE CLASS III RCP.
3. PIPE LENGTHS EXCLUDE END SECTIONS AND ARE MEASURED ALONG CENTERLINE OF PIPE FROM CENTER OF INSIDE FACE TO CENTER OF INSIDE FACE OF STRUCTURES.
4. MATCH GRADES AT EXISTING IMPROVEMENTS.
5. SLOPES SHALL BE MADE AT 3:1 MAXIMUM GRADE.
6. EROSION CONTROL STRUCTURES (SEE EROSION CONTROL PLAN DWGS. C500 & C502) SHALL BE CONSTRUCTED PRIOR TO GRADING ACTIVITIES.
7. DRAINAGE CHANNELS SHALL BE MINIMUM 3' FLAT BOTTOM AND SHALL HAVE 3:1 SIDE SLOPES.
8. NORTHING AND EASTING COORDINATES FOR MANHOLES, AREA INLETS, FIELD INLETS, AND JUNCTION BOXES ARE MEASURED TO CENTER OF STRUCTURE.
9. NORTHING AND EASTING COORDINATES FOR END SECTIONS ARE MEASURED TO FARTHEST EDGE OF THE END SECTION AT PIPE CENTERLINE.

STORM DRAINAGE NOTES:

1. N:2075338.34
E:6298444.48
INSTALL 4X4 AREA INLET
TOP EL. = 418.4'
FLOWLINE OUT (N) = 412.4
INSTALL 220 L.F. 15" DIA.
CLASS III RCP @ 0.5% SL.
TO STRUCTURE 2

2. N:2075516.99
E:6298579.87
INSTALL 4X4 AREA INLET
TOP EL. = 419.0'
FLOWLINE IN (S) = 411.3
FLOWLINE OUT (E) = 410.8
INSTALL 154 L.F. 18" DIA.
CLASS III RCP @ 0.5% SL.
TO STRUCTURE 3

3. N:2075533.88
E:6298737.01
INSTALL 4X4 AREA INLET
TOP EL. = 419.25'
FLOWLINE IN (W) = 410.0
FLOWLINE OUT (SE) = 409.5
INSTALL 175 L.F. 18" DIA.
CLASS III RCP @ 1.5% SL.
TO STRUCTURE 6

4. N:2075524.83
E:6298939.55
INSTALL 4X4 AREA INLET
TOP EL. = 418.75'
FLOWLINE OUT (SW) = 412.25
INSTALL 181 L.F. 15" DIA.
CLASS III RCP @ 0.5% SL.
TO STRUCTURE 6

5. N:2075262.68
E:6298627.25
INSTALL 4X4 AREA INLET
TOP EL. = 419.0'
FLOWLINE OUT (NE) = 412.5'
INSTALL 225 L.F. 15" DIA.
CLASS III RCP @ 0.5% SL.
TO STRUCTURE 6

6. N:2075377.85
E:6298826.72
INSTALL 4X4 AREA INLET
TOP EL. = 418.25'
FLOWLINE IN (W) = 411.35'
FLOWLINE IN (NE) = 411.35'
FLOWLINE IN (NW) = 406.85'
FLOWLINE OUT (SE) = 406.35'
INSTALL 84 L.F. 24" DIA.
CLASS III RCP @ 2.0% SL.
TO STRUCTURE 7

7. N:2075300.64
E:6298871.50
INSTALL STD. 6' DIA. MANHOLE TOP
EL. 413.75'
FLOWLINE IN (NW) = 404.6'
FLOWLINE OUT (SE) = 404.0'
INSTALL 49 L.F. 30" DIA
CLASS III RCP @ 2.5% SL.
TO STRUCTURE 8

8. N:2075287.29
E:6298921.76
INSTALL TO DETENTION BASIN
CLASS III RCP FLARED END SECTION
FLOWLINE OUT (SE) = 403.0'

9. N:2075332.50
E:6299005.70
INSTALL DETENTION BASIN OUTLET FLARED END SECTION
FLOWLINE IN (E) = 403.0'
INSTALL 20 L.F. 12" DIA
CLASS III RCP @ 1.0% SL.
TO STRUCTURE 10

10. N:2075344.26
E:6299024.69
INSTALL STORMWATER OUTLET CONTROL STRUCTURE TOP EL. 414.0'
100 YR INLET EL. 412.5'
FLOWLINE IN (E) = 402.80'
FLOWLINE OUT (W) = 400.00'
INSTALL 64 L.F. 36" DIA
CLASS III RCP @ 1.0% SL.
TO STRUCTURE 11

11. N:2075379.51
E:6299081.66
INSTALL CLASS III RCP FLARED END SECTION
FLOWLINE OUT (W) = 398.35'

LEGEND

- FOUND MONUMENT AS NOTED
- SET 1" IRON PIPE WITH "PSOMAS" PLUG UNLESS NOTED OTHERWISE
- PROPERTY LINE
- 400 EXISTING CONTOUR
- 380 PROPOSED MAJOR CONTOUR
- 383 PROPOSED MINOR CONTOUR
- PROPOSED GAS LINE
- PROPOSED UNDERGROUND ELECTRICAL
- EXISTING ELECTRIC LINE
- EXISTING TELEPHONE (COMMUNICATIONS) LINE
- PROPOSED RCP STORMWATER PIPE
- EXISTING T&D LINE
- EXISTING FENCE
- EXISTING ROAD
- PROPOSED FENCE
- PARCEL LINE
- DRAINAGE PATH (FLOWLINE)
- EXISTING ORCHARD LINE
- PROPOSED RIPRAP
- PROPOSED CRUSHED ROCK SURFACE
- PROPOSED CRUSHED ROCK PAVEMENT
- PROPOSED CONCRETE
- PROPOSED NATIVE GROUND COVER
- PROPOSED LANDSCAPING
- DIRECTION OF FLOW
- EXISTING WINDMILL
- EXISTING OVERHEAD ELECTRICAL LINES

REV.	DATE	DESCRIPTION	DWN	CHK
A	10-11-07	ISSUED PRELIMINARY TO PSWSI	BGG	WHR
B	10-19-07	ISSUED FOR REVIEW	BGG	WHR
C	11-26-07	RE-ISSUED FOR REVIEW	BGG	WHR
D	11-30-07	ISSUED FOR MILESTONE 4	BGG	WHR
E	12-19-07	ISSUED FOR AMENDED SPPE APPLICATION	BGG	WHR
F	12-28-07	RE-ISSUED FOR MILESTONE 4	BGG	WHR
G	02-29-08	FINAL ISSUE FOR APPROVAL	BGG	WHR
H	6-2-08	ISSUED FOR AFC PERMIT	BGG	MJB

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P.O. Box 1000
Stilwell, Kansas 66085-1000

ORANGE GROVE ENERGY L.P.
Schaumburg, IL

ORANGE GROVE POWER PLANT

GRADING AND DRAINAGE PLAN

DESIGN BY: J. LANGEL	CHECKED BY: B. ROMINES
DRAWN BY: B. GASPERS	DATE: 9-12-07
CLIENT I.D. ICC00101	SEGA PROJECT NO. 07-201

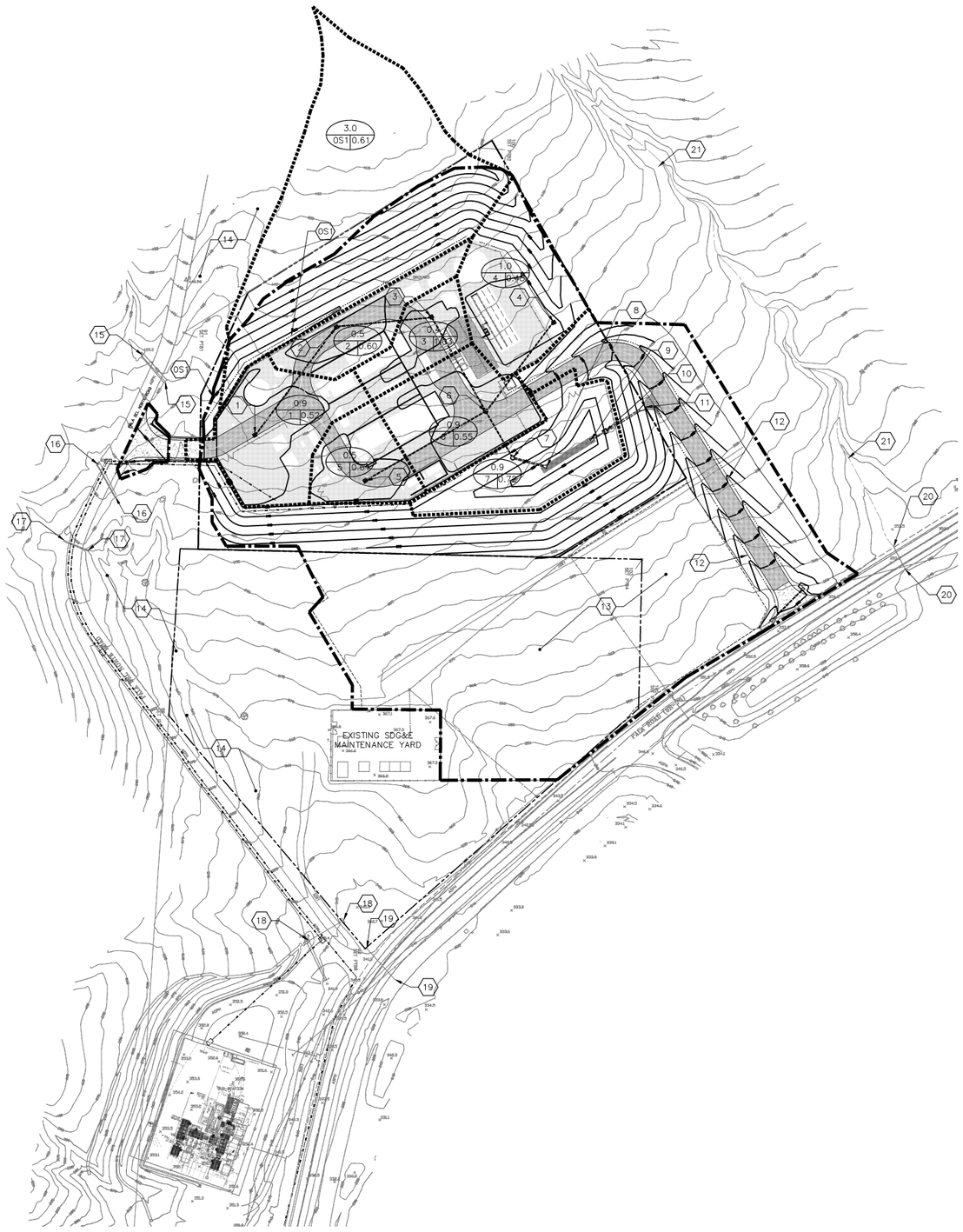
CADD FILE NAME: 07201-C300.dwg

DRAWING NO. C300 REV. H

ATTACHMENT E

TREATMENT BMP DATASHEET

*(**NOTE:** POSSIBLE SOURCE FOR DATASHEETS CAN BE FOUND AT WWW.CABMPHANDBOOKS.COM. INCLUDE ENGINEERING CALCULATIONS FOR SIZING THE TREATMENT BMP.)*



DRAINAGE AREA MAP

N

100 0 100 200

SCALE IN FEET

KEY:

(EX)	–	EXISTING STRUCTURES
CI	–	CURB INLET
SI	–	CURB INLET IN SUMP
DI	–	SINGLE DROP INLET
DI-2	–	DOUBLE DROP INLET
ES	–	PREFABRICATED END SECTION
JB	–	JUNCTION BOX
YI	–	YARD INLET
AI	–	AREA INLET
MH	–	MANHOLE
R	–	REDUCER
FI	–	FIELD INLET
BEND	–	PREFABRICATED VERTICAL BEND
T.D.	–	TRENCH DRAIN
G.I.	–	GRATE INLET
O.C.	–	DETENTION OUTLET CONTROL STRUCTURE
RCP	–	REINFORCED CONCRETE PIPE
CMP	–	CORREGATED METAL PIPE (STEEL)
CP	–	CULVERT PIPE

DESIGN NOTES:

(a) TIME OF CONCENTRATION
15 MINUTES MAX.
5 MINUTES MIN.

(b) PIPE LENGTHS EXCLUDE END SECTIONS AND ARE MEASURED ALONG CENTERLINE OF PIPE FROM CENTER OF INSIDE FACE TO CENTER OF INSIDE FACE OF STRUCTURES.

(c) MANNING'S ROUGHNESS COEFFICIENT = 0.013 (CONCRETE)

LEGEND

- FOUND MONUMENT AS NOTED
- SET 1" IRON PIPE WITH "PSOMAS" PLUG UNLESS NOTED OTHERWISE
- PROPERTY LINE
- 400 EXISTING CONTOUR
- 380 PROPOSED MAJOR CONTOUR
- 383 PROPOSED MINOR CONTOUR
- PROPOSED GAS LINE
- PROPOSED UNDERGROUND ELECTRICAL
- EXISTING ELECTRIC LINE
- EXISTING TELEPHONE (COMMUNICATIONS) LINE
- PROPOSED RCP STORMWATER PIPE
- EXISTING T&D LINE
- EXISTING FENCE
- EXISTING ROAD
- PROPOSED FENCE
- PARCEL LINE
- DRAINAGE PATH (FLOWLINE)
- EXISTING ORCHARD LINE
- PROPOSED RIPRAP
- PROPOSED CRUSHED ROCK SURFACE
- PROPOSED CRUSHED ROCK PAVEMENT
- PROPOSED CONCRETE
- PROPOSED NATIVE GROUND COVER
- PROPOSED LANDSCAPING
- A / B C — A = AREA IN ACRES; B = BASIN DESIGNATION; C = COMPOSITE RUNOFF COEFFICIENT
- D — D = DESIGN POINT DESIGNATION
- DRAINAGE AREA LIMITS
- PROPOSED DISTURBED AREA
- EXISTING USGS BLUELINE

DRAINAGE AREA NOTES:

OS1 DRAINAGE WILL BE ROUTED AROUND SITE BY NORTH DITCH DRAINAGE CHANNEL.

OFF-SITE DRAINAGE-NORTH CHANNEL

DEVELOPMENT STAGE	STORM DRAINAGE AREA (ACRES)	PEAK RUNOFF RATE Q (CFS)	RUNOFF COEF. C.	AVERAGE CHANNEL VELOCITY V (FT/S)	AVERAGE DEPTH ELEVATION (FT.)
50 YEAR DESIGN STORM					
PRE-DEV.	3.0	6.75	0.3	2.75	420.77
PRE-DEV.	3.0	11.25	0.5	3.10	420.95±
100 YEAR DESIGN STORM					
PRE-DEV.	3.0	7.65	0.3	2.87	420.16±
POST-DEV.	3.0	12.75	0.5	3.20	421.00±

1. INLET FOR DRAINAGE AREA.
2. INLET FOR DRAINAGE AREA.
3. INLET FOR DRAINAGE AREA.
4. INLET FOR DRAINAGE AREA.
5. INLET FOR DRAINAGE AREA.
6. INLET FOR DRAINAGE AREA. DRAINAGE FROM AREAS 1, 2, 3, 4, AND 5 WILL BE ROUTED VIA STORM DRAIN.
7. STORMWATER MANHOLE.
8. STORM DRAIN OUTLET AND DETENTION BASIN INLET STRUCTURE.
9. DETENTION BASIN OUTLET CONTROL STRUCTURE.
10. DETENTION BASIN EMERGENCY OUTLET STRUCTURE.
11. STORMWATER OUTLET.
12. SECONDARY ACCESS ROAD DITCHES.
13. AREAS SOUTH OF PARCEL LINE AND WITHIN "PROPOSED DISTURBED AREA" LINE ARE AREAS FOR "TEMPORARY CONSTRUCTION PARKING AND LAYDOWN."
14. EXISTING NATURAL WEST DRAINAGE CHANNEL.
15. EXISTING OFF-SITE CULVERT PIPES.
16. EXISTING OFF-SITE CULVERT PIPES.
17. EXISTING OFF-SITE CULVERT PIPES.
18. EXISTING OFF-SITE CULVERT PIPE.
19. EXISTING OFF-SITE CULVERT PIPE.
20. EXISTING OFF-SITE CULVERT PIPE.
21. EXISTING USGS BLUELINE OR NATURAL EAST DRAINAGE CHANNEL.

ON-SITE STORMWATER DETENTION BASIN

DEVELOPMENT STAGE	STORM DRAINAGE AREA (ACRES)	PEAK RUNOFF RATE Q (CFS)	RUNOFF CURVE. C.	DETENTION VOLUME V(FT³)	DESIGNED WATER SURFACE VOLUME (FT³)	WATER SURFACE ELEVATION (FT.)
50 YEAR DESIGN STORM						
PRE-DEV.	5.2	11.00	N/A	N/A	N/A	N/A
POST-DEV.	5.2	24.58	N/A	85,700	76,300	410.5(±)
100 YEAR DESIGN STORM						
PRE-DEV.	5.2	12.68	N/A	N/A	N/A	N/A
POST-DEV.	5.2	27.86	N/A	85,700	85,000	412.4(±)

NOTE: WATER SURFACE VOLUME DOES NOT INCLUDE ONE FOOT OF FREEBOARD.

SUMMARY OF AREAS (ACRES):

1. IMPERVIOUS AREA (INCLUDES CONCRETE ENTRANCE SECTION) – 1.00
2. CRUSHED ROCK SURFACE AREA (INCLUDES VEHICULAR AREA) – 3.22
3. DETENTION BASIN DRAINAGE AREA – 5.20
4. VEHICULAR AREA – 1.47
5. TEMPORARY CONSTRUCTION PARKING AREA AND LAYDOWN – 5.73
6. DISTURBED AREA – 14.83

50 YEAR DESIGN (PROPOSED CONSTRUCTION)

STRUCTURE		DIRECT RUNOFF						TOTAL RUNOFF	PIPE						
STRUCT NO. (Area No.)	TYPE	AREA (acres) A	RUNOFF COEF. C	C x A	K	i (in/hr)	Q (cfs)	TOTAL Q (CFS)	PIPE NO.	PIPE SIZE DIA. (inches)	PIPE SLOPE %	PIPE LENGTH (LF)	PIPE CAP. (CFS)	VELOCITY (ft/sec)	DEPTH OF FLOW (inches)
1	AI	0.90	0.52	0.47	1.1	7.5	3.86								
								3.86	1	15	0.5	220	4.91	4.17	10.58
2	AI	0.50	0.60	0.30	1.1	7.5	2.48								
								6.34	2	18	0.5	154	7.99	4.72	12.79
3	AI	0.46	0.59	0.27	1.1	7.5	2.24								
								8.58	3	18	1.5	175	13.84	7.79	10.75
4	AI	1.00	0.48	0.48	1.1	7.5	3.96								
								3.96	4	15	0.5	160	4.91	4.19	10.79
5	AI	0.52	0.61	0.32	1.1	7.5	2.62								
								2.62	5	15	0.5	225	4.91	3.85	8.14
6	AI	0.90	0.55	0.50	1.1	7.5	4.08								
								19.24	6	24	2	84	34.41	10.65	13.42
7	MH	NA	NA	NA	NA	NA	NA								
								19.24	7	30	2.5	49	69.76	11.52	11.20
8	OC	0.90	0.72	0.65	1.1	7.5	5.35								
								24.58							
9	OC	NA	NA	NA	NA	NA	NA								
								12.68 MAX	10	12	0.5	52	11.65	14.83	FULL
10	MH	NA	NA	NA	NA	NA	NA								
								SEE D.C.	10	36	1.0	240	71.74	7.09	10.19
11	MH	NA	NA	NA	NA	NA	NA								
								SEE D.C.	12	36	1.0	280	71.74	7.09	10.19

REV.	DATE	DESCRIPTION	DWN	CHK
A	11-30-07	ISSUED FOR MILESTONE 4	BGG	WHR
B	12-28-07	RE-ISSUED FOR MILESTONE 4	BGG	WHR
C	02-29-08	FINAL ISSUE FOR APPROVAL	BGG	WHR
D	6-2-08	ISSUED FOR AFC PERMIT	BGG	MJB

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ORANGE GROVE ENERGY L.P.
Schaumburg, IL

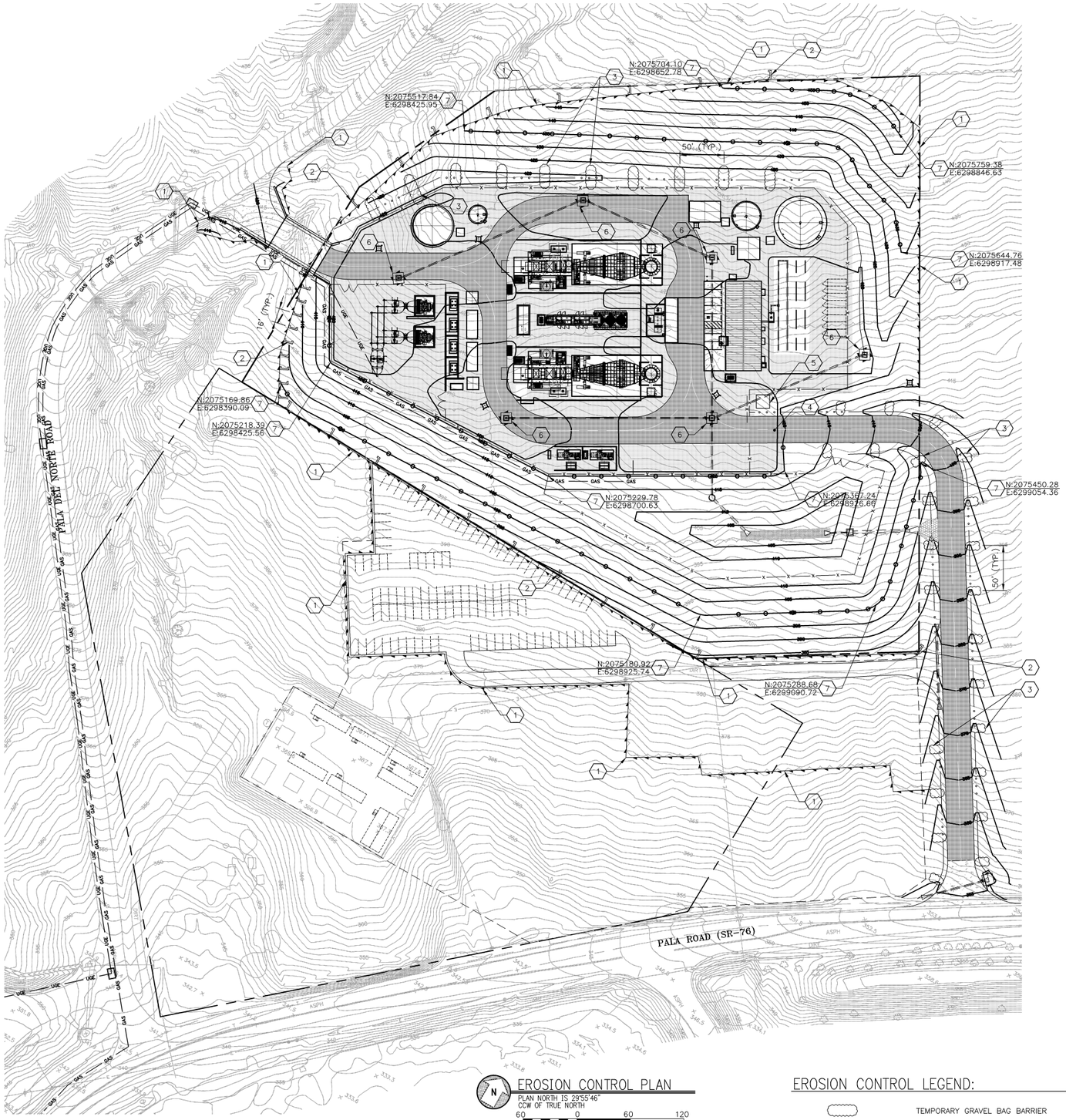
ORANGE GROVE POWER PLANT

DRAINAGE AREA MAP

DESIGN BY: J. LANGEL	CHECKED BY: B. ROMINES
DRAWN BY: B. GASPERS	DATE: 9-12-07
CLIENT I.D. ICC00101	SEGA PROJECT NO. 07-201

CADD FILE NAME: 07201-C400.dwg

DRAWING NO. C400 — REV. D



EROSION CONTROL PLAN

PLAN NORTH IS 29°55'46" CCW OF TRUE NORTH

60 0 60 120

SCALE IN FEET

EROSION CONTROL LEGEND:

- TEMPORARY GRAVEL BAG BARRIER
- SILT FENCE CROSS BARRIER
- PROPOSED SILT FENCE EROSION CONTROL
- FIBER ROLLS

EROSION CONTROL KEYNOTES:

1. INSTALL TEMPORARY LINEAR SEDIMENT BARRIER (TYP. SILT FENCE), SEE DETAIL DWG C501.
2. INSTALL CROSS BARRIER (SAND BAGS), SEE DETAIL DWG. C501
3. INSTALL TEMPORARY GRAVEL BAG BARRIER, SEE DETAIL DWG C501.
4. INSTALL TIRE WASH, SEE DETAIL DWG C501.
5. INSTALL CONCRETE WASHOUT FACILITY, SEE DETAIL DWG C502.
6. INSTALL DROP INLET PROTECTION, SEE DETAIL DWG C502.
7. INSTALL TEMPORARY FIBER ROLL, SEE DETAIL DWG C502.

EROSION CONTROL NOTES:

1. SILT FENCE SHALL BE CLEANED AND REPAIRED WHEN SILT BUILD-UP REACHES 1/3 SILT FENCE HEIGHT.
2. CLEARING AND GRUBBING WORK SHALL COMPLY WITH THE COUNTY OF SAN DIEGO, CALIFORNIA STANDARDS AND SPECIFICATIONS LATEST EDITION.
3. NO VEGETATION OR CONSTRUCTION DEBRIS SHALL BE BURIED ON SITE. NO BURNING PITS SHALL BE ALLOWED.
4. ALL DISTURBED AREAS THAT REMAIN ACTIVE FOR MORE THAN 21 DAYS SHALL BE STABILIZED BY SEEDING, SODDING, MULCHING, COVERING OR BY OTHER EQUIVALENT EROSION CONTROL MEASURES AS SOON AS PRACTICAL, BUT IN NO CASE MORE THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED.
5. PRIOR TO ANY GRADING, STRIPPING, EXCAVATING, FILLING OR ANY OTHER DISTURBANCE OF THE NATURAL GROUND COVER, THE CONTRACTOR SHALL INSTALL ALL EROSION AND SEDIMENT CONTROL MEASURES. THE CONTRACTOR SHALL MAINTAIN THESE DEVICES THROUGHOUT THE DURATION OF THE PROJECT AND UNTIL PERMANENT VEGETATION IS PROPERLY ESTABLISHED.
6. STOCKPILES SHALL BE LOCATED AWAY FROM SLOPES AND TRAFFIC ROUTES AND BE TEMPORARILY SEEDED AS SOON AS POSSIBLE, NO MORE THAN 30 WORKING DAYS OR 120 CALENDAR DAYS AFTER FORMATION OF THE STOCKPILE. SILT FENCE SHALL BE PLACED APPROPRIATELY AROUND THE STOCKPILE TO CONTROL EROSION.
7. THE SITE SHALL HAVE GRADED ROADS AND ACCESS DRIVES TO PARKING AREAS OF SUFFICIENT WIDTH AND LENGTH TO PREVENT SEDIMENT FROM BEING TRACKED ON TO PUBLIC ROADWAYS. ANY SEDIMENT REACHING A PUBLIC OR PRIVATE ROAD SHALL BE REMOVED. BULK CLEARING OF ACCUMULATED SEDIMENT SHALL BE RETURNED TO THE POINT OF LIKELY ORIGIN OR OTHER SUITABLE LOCATION BEFORE THE END OF EACH WORK DAY. CONSTRUCTION ENTRANCES SHALL BE ROCKED PRIOR TO ANY OTHER SITE WORK.
8. EROSION AND SEDIMENTATION CONTROLS AND SEEDING SHALL MEET THE STANDARDS AND SPECIFICATIONS OF SAN DIEGO COUNTY, CALIFORNIA.
9. PROPOSED MINOR GRADES ARE NOT SHOWN FOR CLARITY. PLEASE REFERENCE THE GRADING AND DRAINAGE PLAN FOR DETAILS.

SAN DIEGO COUNTY EROSION CONTROL NOTES:

1. ALL BUILDING PADS TO BE DIKED AND THE DIKES MAINTAINED TO PREVENT WATER FROM FLOWING FROM THE PAD UNTIL THE STREETS AND DRIVEWAYS ARE PAVED AND WATER CAN FLOW FROM THE PADS WITHOUT CAUSING EROSION, OR CONSTRUCT DRAINAGE FACILITIES TO THE SATISFACTION OF THE COUNTY DEPARTMENT OF PUBLIC WORKS THAT WILL ALLOW WATER TO DRAIN FROM THE PAD WITHOUT CAUSING EROSION.
2. TOPS OF ALL SLOPES TO BE DIKED OR TRENCHED TO PREVENT WATER FROM FLOWING OVER THE CREST OF SLOPES.
3. MANUFACTURED SLOPES AND PADS SHALL BE ROUNDED VERTICALLY AND HORIZONTALLY AS APPROPRIATE TO BLEND WITH THE SURROUNDING TOPOGRAPHY.
4. AS SOON AS CUTS OR EMBANKMENTS ARE COMPLETED, BUT NOT LATER THAN OCTOBER 1 ALL CUT AND FILL SLOPES SHALL BE STABILIZED WITH A HYDROMULCH MIXTURE OR AN EQUAL TREATMENT APPROVED BY THE COUNTY DEPARTMENT OF PUBLIC WORKS BETWEEN OCTOBER 1 AND APRIL 15. APPROVED SLOPE PROTECTION MEASURES SHALL PROCEED IMMEDIATELY BEHIND THE EXPOSURE OF CUT SLOPES AND/OR THE CREATION OF EMBANKMENT SLOPES.
5. CATCH BASINS, DESILTING BASINS AND STORM DRAIN SYSTEM SHALL BE INSTALLED TO THE SATISFACTION OF SAN DIEGO COUNTY DEPARTMENT OF PUBLIC WORKS.
6. SAND BAG CHECK DAMS TO BE PLACED IN A MANNER APPROVED BY THE COUNTY DEPARTMENT OF PUBLIC WORKS IN UNPAVED STREETS WITH GRADIENTS IN EXCESS OF 2% AND ON OR IN OTHER GRADED OR EXCAVATED AREAS AS REQUIRED BY THE COUNTY DEPARTMENT OF PUBLIC WORKS.
7. THE DEVELOPER TO MAINTAIN THE PLANTING AND EROSION CONTROL MEASURES DESCRIBED ABOVE UNTIL RELIEVED OF THE SAME BY THE COUNTY DEPARTMENT OF PUBLIC WORKS. THE DEVELOPER TO REMOVE ALL SOIL INTERCEPTED BY THE SAND BAGS, CATCH BASINS AND DESILTING BASINS AND KEEP THESE FACILITIES CLEAN AND FREE OF SILT AND SAND AS DIRECTED BY THE COUNTY DEPARTMENT OF PUBLIC WORKS. THE DEVELOPER SHALL REPAIR ANY ERODED SLOPES AS DIRECTED BY THE COUNTY DEPARTMENT OF PUBLIC WORKS.

LEGEND

- FOUND MONUMENT AS NOTED
- SET 1" IRON PIPE WITH "PSOMAS" PLUG UNLESS NOTED OTHERWISE
- PROPERTY LINE
- 400 EXISTING CONTOUR
- 380 PROPOSED MAJOR CONTOUR
- 383 PROPOSED MINOR CONTOUR
- GAS PROPOSED GAS LINE
- UGE PROPOSED UNDERGROUND ELECTRICAL
- E EXISTING ELECTRIC LINE
- T EXISTING TELEPHONE (COMMUNICATIONS) LINE
- PROPOSED RCP STORMWATER PIPE
- OHE EXISTING T&D LINE
- X EXISTING FENCE
- EXISTING ROAD
- X PROPOSED FENCE
- PARCEL LINE
- DRAINAGE PATH (FLOWLINE)
- EXISTING ORCHARD LINE
- PROPOSED RIPRAP
- PROPOSED CRUSHED ROCK SURFACE
- PROPOSED CRUSHED ROCK PAVEMENT
- PROPOSED CONCRETE
- PROPOSED NATIVE GROUND COVER
- PROPOSED LANDSCAPING
- TEMPORARY CONSTRUCTION STAGING AREA

REV.	DATE	DESCRIPTION	DWN	CHK
A	11-30-07	ISSUED FOR MILESTONE 4	BGG	WHR
B	12-19-07	ISSUED FOR AMENDED SPPE APPLICATION	BGG	WHR
C	12-28-07	RE-ISSUED FOR MILESTONE 4	BGG	WHR
D	02-29-08	FINAL ISSUE FOR APPROVAL	BGG	WHR
E	6-2-08	ISSUED FOR AFC PERMIT	BGG	MJB

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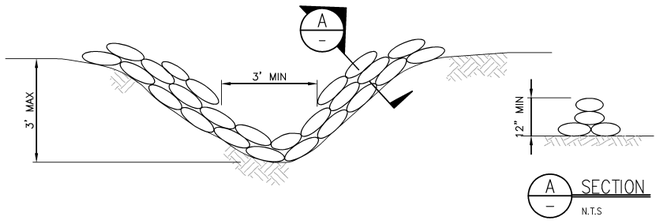
ORANGE GROVE POWER PLANT

EROSION CONTROL PLAN

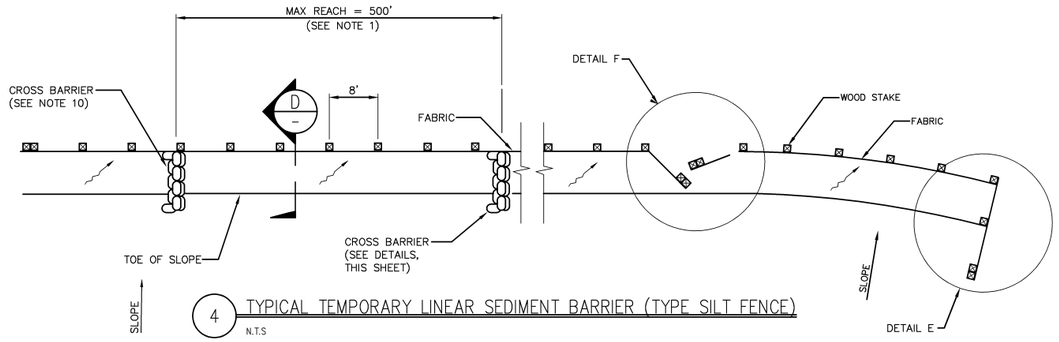
DESIGN BY: M. BLAKE	CHECKED BY: B. ROMINES
DRAWN BY: B. GASPERS	DATE: 9-12-07
CLIENT I.D. ICC00101	SEGA PROJECT NO. 07-201

CADD FILE NAME: 07201-C500.dwg

DRAWING NO. C500 — REV. E

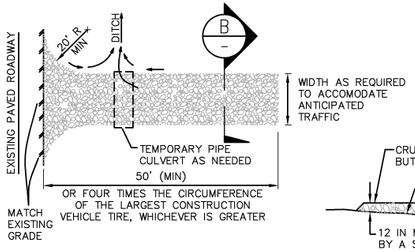


1 TYPICAL TEMPORARY GRAVEL BAG BARRIER (BMP SE-6)
N.T.S

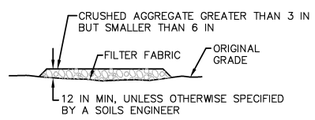


4 TYPICAL TEMPORARY LINEAR SEDIMENT BARRIER (TYPE SILT FENCE)
N.T.S

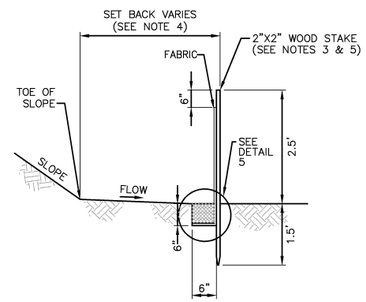
NOTE:
CONSTRUCT SEDIMENT BARRIER
AND CHANNELIZE RUNOFF TO
SEDIMENT TRAPPING DEVICE



2 TYPICAL TIRE WASH (BMP TC-1)
N.T.S



B SECTION
N.T.S.



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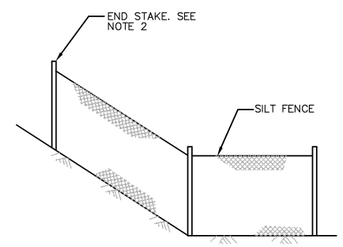
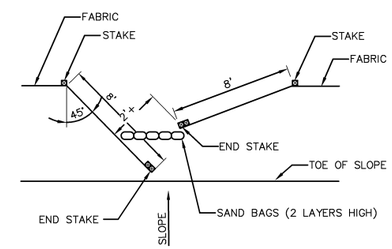
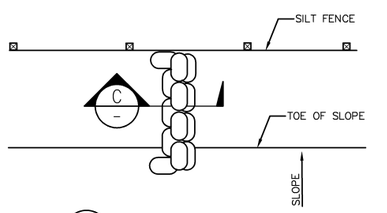


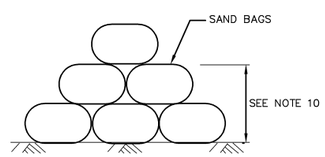
E END DETAIL
N.T.S



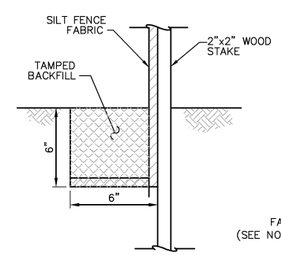
F OPTIONAL MAINTENANCE OPENING DETAIL
N.T.S.
(SEE NOTE 11)



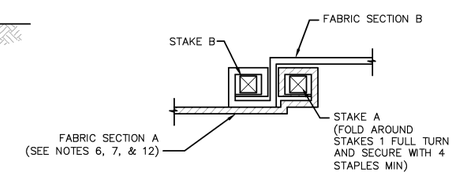
3 TYPICAL CROSS BARRIER DETAIL
N.T.S



C SECTION
N.T.S.



5 DETAIL
N.T.S



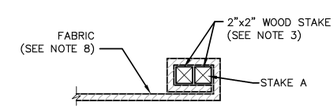
6 JOINING SECTION DETAIL (TOP VIEW)
N.T.S

NOTES

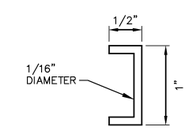
1. CONSTRUCT THE LENGTH OF EACH REACH SO THAT THE CHANGE IN BASE ELEVATION ALONG THE REACH DOES NOT EXCEED 1/3 THE HEIGHT OF THE LINEAR BARRIER, IN NO CASE SHALL THE REACH LENGTH EXCEED 500 FEET.
2. THE LAST 8 FEET OF FENCE SHALL BE TURNED UP SLOPE.
3. STAKE DIMENSIONS ARE NOMINAL.
4. DIMENSIONS MAY VARY TO FIT FIELD CONDITION.
5. STAKES SHALL BE SPACED AT 8 FOOT MAXIMUM, AND SHALL BE POSITIONED ON DOWNSTREAM SIDE OF FENCE.
6. STAKES TO OVERLAP AND FENCE FABRIC TO FOLD AROUND EACH STAKE ONE FULL TURN. SECURE TO STAKE WITH 4 STAPLES.
7. STAKES SHALL BE DRIVEN TIGHTLY TOGETHER TO PREVENT POTENTIAL FLOW-THROUGH OF SEDIMENT AT JOINT. THE TOPS OF THE STAKES SHALL BE SECURED WITH WIRE.
8. FOR END STAKES, FENCE FABRIC SHALL BE FOLDED AROUND TWO STAKES ONE FULL TURN AND SECURED WITH 4 STAPLES.
9. MINIMUM 4 STAPLES PER STAKE. DIMENSIONS SHOWN ARE TYPICAL.
10. CROSS BARRIERS SHALL BE A MINIMUM OF 1/3, AND A MAXIMUM OF 1/2 THE HEIGHT OF THE LINER BARRIER.
11. MAINTENANCE OPENINGS SHALL BE CONSTRUCTED IN A MANNER TO ENSURE SEDIMENT REMAINS BEHIND SILT FENCE.
12. JOINING SECTIONS SHALL NOT BE PLACED AT SUMP LOCATIONS.
13. SANDBAG ROWS AND LAYERS SHALL BE OFFSET TO ELIMINATE GAPS.

LEGEND

TAMPED BACKFILL
SLOPE DIRECTION
DIRECTION OF FLOW



7 END STAKE DETAIL (TOP VIEW)
N.T.S



8 STAPLE DETAIL (SEE NOTE 9)
N.T.S

TYPICAL TEMPORARY SILT FENCE (BMP SE-1)
N.T.S.

REV.	DATE	DESCRIPTION	DWN	CHK
A	11-30-07	ISSUED FOR MILESTONE 4	BGG	WHR
B	12-19-07	ISSUED FOR AMENDED SPPE APPLICATION	BGG	WHR
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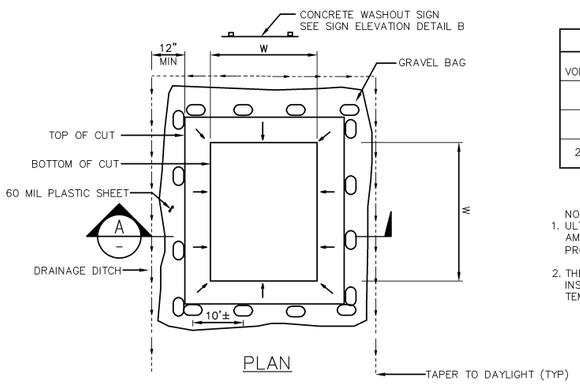
Schaumburg, IL

ORANGE GROVE POWER PLANT
EROSION CONTROL PLAN
DETAILS

DESIGN BY: M. BLAKE	CHECKED BY: B. ROMINES
DRAWN BY: B. GASPERS	DATE: 9-12-07
CLIENT I.D. ICC00101	SEGA PROJECT NO. 07-201

CADD FILE NAME: 07201-C501.dwg

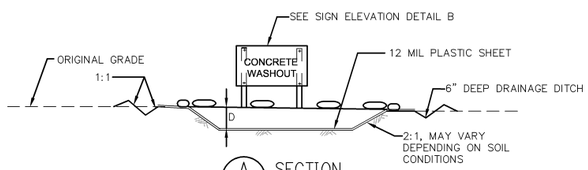
DRAWING NO. C501 — REV. E



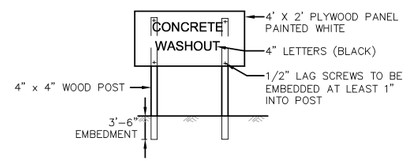
PLAN

PIT SIZING CHART		
APPROX. VOLUME OF SPOILS	MIN. WIDTH (W)	DEPTH (D)
5 CY OR LESS	3'	1.0'
5 TO 20 CY	10'	1.0'
20 CY OR MORE	15'	1.5'

NOTES:
1. ULTIMATE WASHOUT SIZE DETERMINED BY AMOUNT OF CONCRETE REQUIRED FOR PROJECT AREA AND/OR POUR LOCATION.
2. THE CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 20 FEET OF THE TEMPORARY CONCRETE WASHOUT

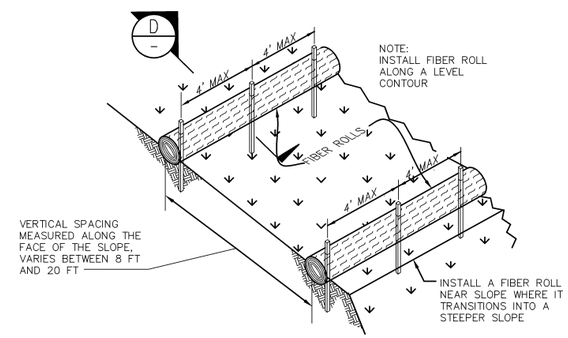


A SECTION
N.T.S.

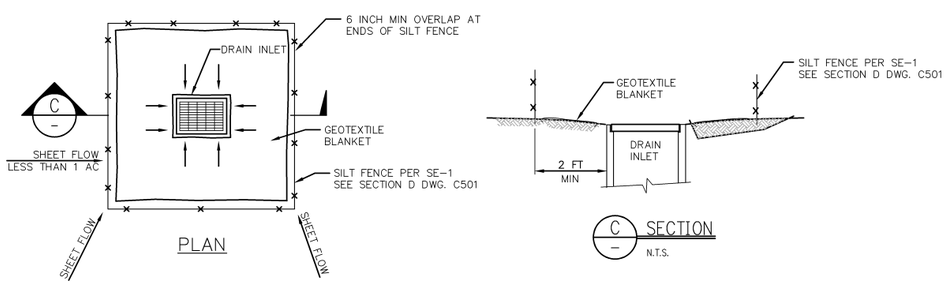


B SIGN ELEVATION DETAIL
N.T.S

1 TEMPORARY CONCRETE WASHOUT FACILITY (BMP WM-8)
(BELOW GRADE)
N.T.S



3 TYPICAL FIBER ROLL INSTALLATION (BMP SE-5)
N.T.S

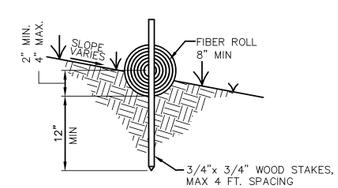


PLAN

C SECTION
N.T.S.

2 TYPICAL DROP INLET PROTECTION DETAIL (BMP SE-10)
N.T.S

NOTES:
1. FOR USE IN AREAS WHERE GRADING HAS BEEN COMPLETED AND FINAL SOIL STABILIZATION AND SEEDING ARE PENDING.
2. NOT APPLICABLE IN PAVED AREAS.
3. NOT APPLICABLE WITH CONCENTRATED FLOWS.



D ENTRENCHMENT DETAIL
N.T.S.

REV.	DATE	DESCRIPTION	DWN	CHK
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B	12-19-07	ISSUED FOR AMENDED SPPE APPLICATION	BGG	WHR
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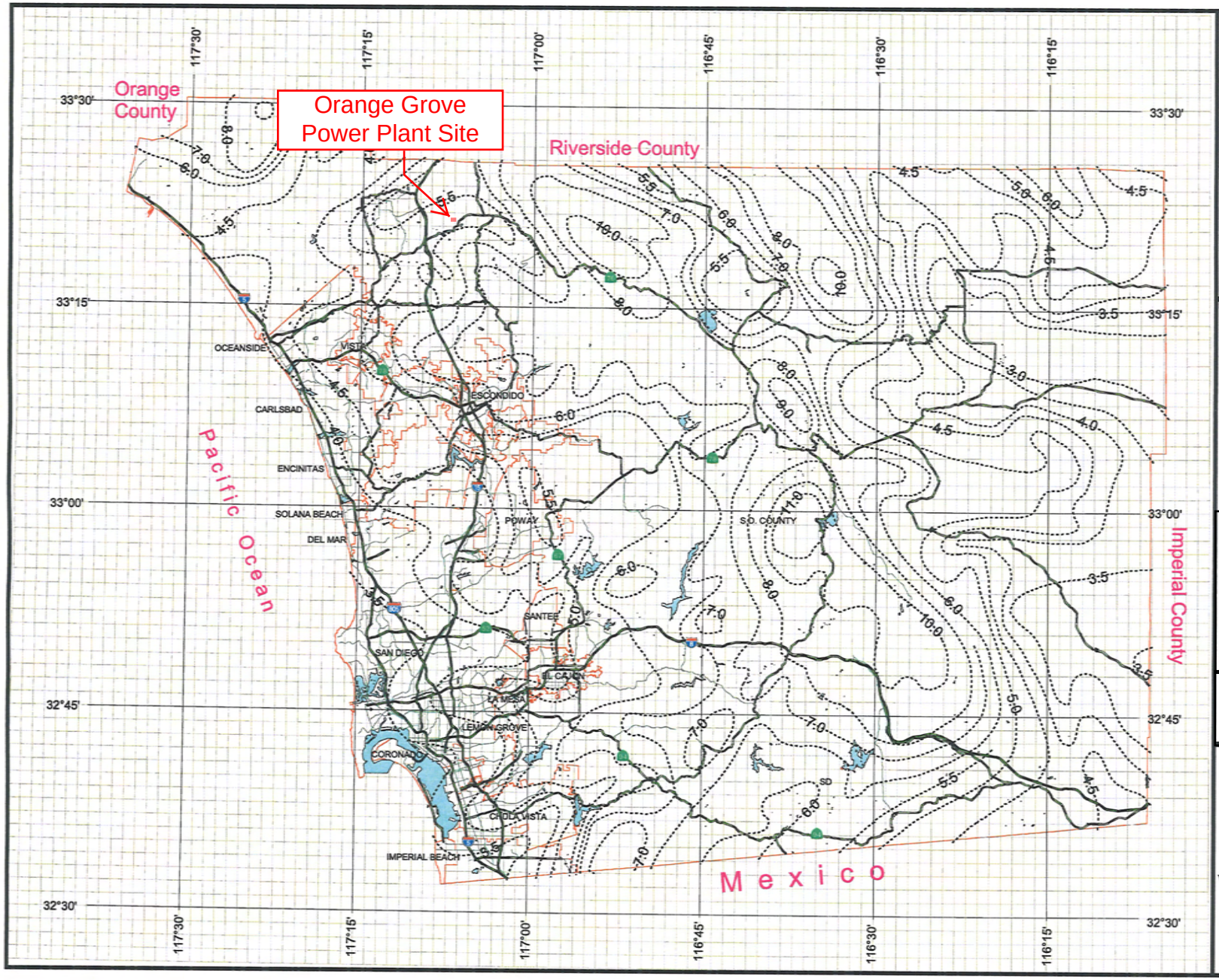
EROSION CONTROL PLAN
DETAILS

DESIGN BY: M. BLAKE	CHECKED BY: B. ROMINES
DRAWN BY: B. GASPERS	DATE: 9-12-07
CLIENT I.D. ICC00101	SEGA PROJECT NO. 07-201

CADD FILE NAME: 07201-C502.dwg

DRAWING NO. C502 REV. E



County of San Diego Hydrology Manual

Rainfall Isopluvials

50 Year Rainfall Event - 24 Hours

Isopluvial (inches)

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Schaumburg, IL

MUP 07-009

ORANGE GROVE POWER PLANT PROJECT

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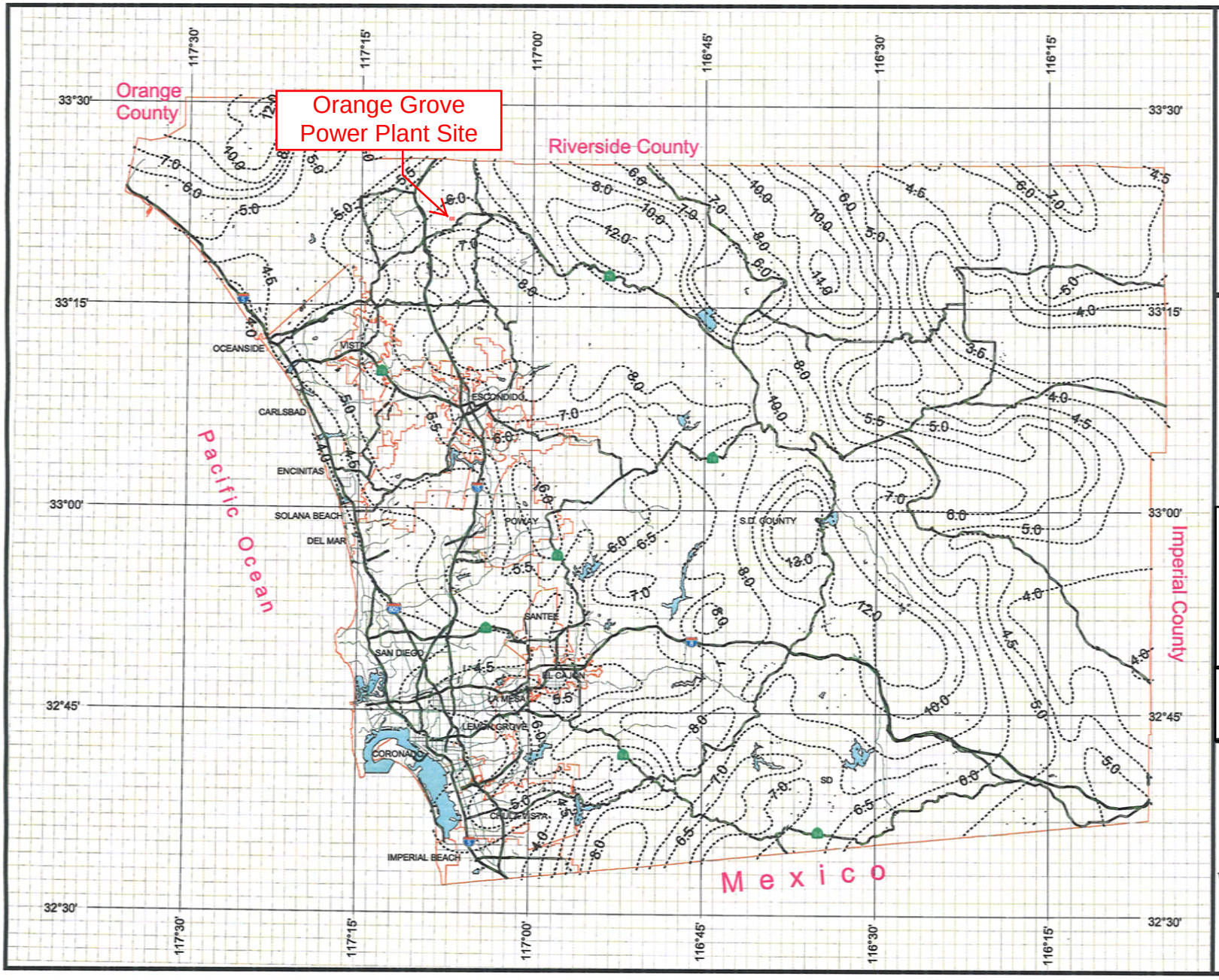
N W E S

3 0 3 Miles



County of San Diego Hydrology Manual

Rainfall Isopluvials

100 Year Rainfall Event - 24 Hours

Isopluvial (inches)

ORANGE GROVE ENERGY L.P.

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N W E S

3 0 3 Miles

F.2 Detention Basins

Detention devices are impoundments where the water quality volume is temporarily detained under quiescent conditions, allowing sediment and particulates to settle out. A conceptual schematic of a detention basin is shown in Figure 5.3.1.

Detention devices remove litter, settleable solids (debris), and total suspended solids (TSS). Pollutants, such as heavy metals, that are attached (adsorbed) to the settled particulate matter will also be removed.

Appropriate Applications and Siting Constraints

Detention devices should be considered for implementation wherever site conditions allow.

One important siting requirement is that sufficient head is available so that water stored in the device does not cause a backwater condition in the storm drain system, which would limit its capacity. A second siting requirement is that seasonally high groundwater is no higher than the bottom elevation of the device for reasons described below.

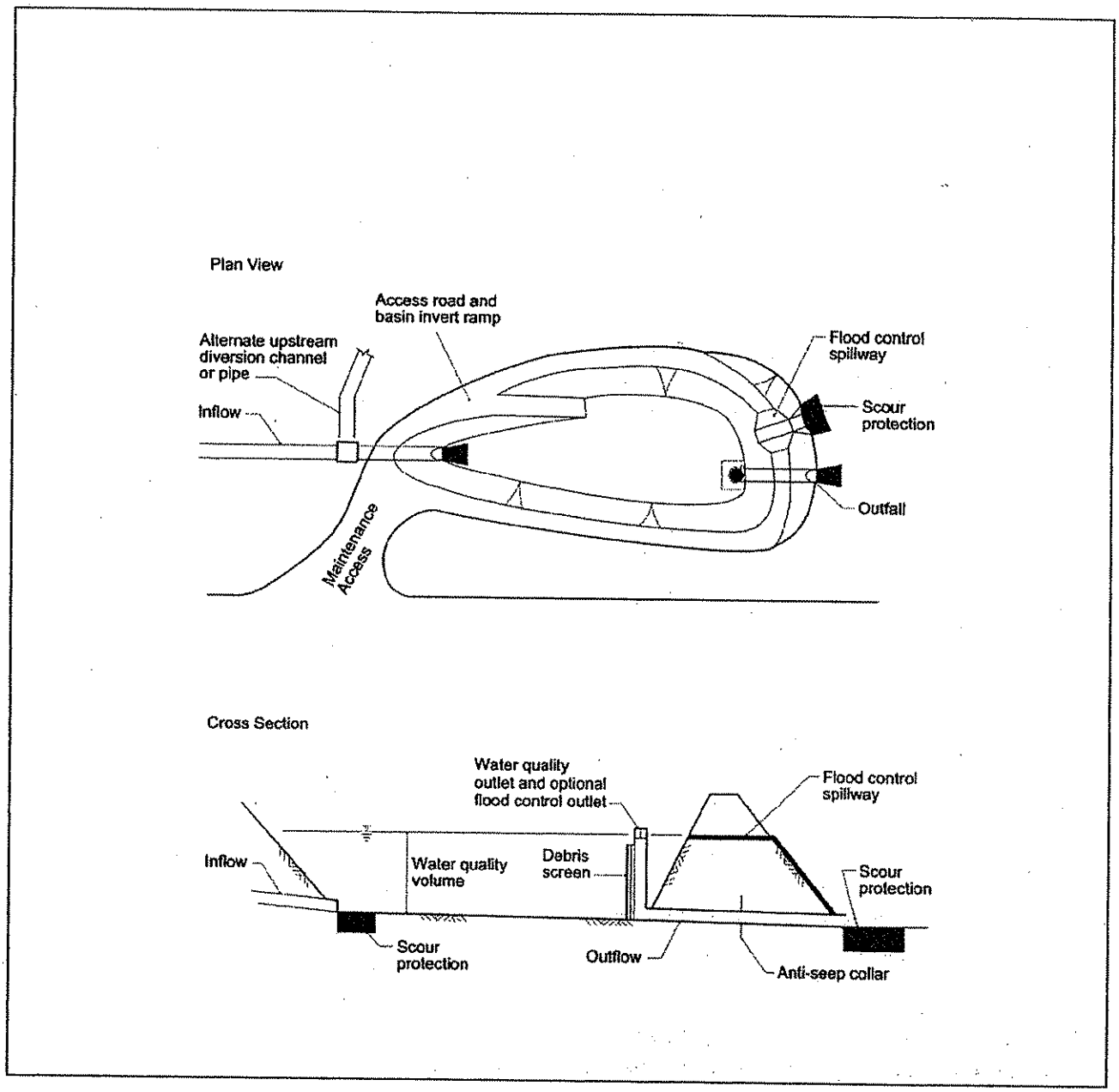

Figure F.2.1
Example of Extended Detention Basin Schematic
(Not a Standard Plan)

FACTORS AFFECTING PRELIMINARY DESIGN:

Detention devices should be designed to hold at least the 24-hour water quality volume. The maximum water level in the detention device should not cause groundwater to occur under the roadway within 0.2 m (8 inches) of the roadway subgrade. A flow-path-to-width ratio of at least 2:1 is recommended. Baffles or interior berms to accommodate the geometry of the site can accomplish this ratio.

Liners are not generally required for detention basins. Infiltration is permissible if the infiltrated water does not surface in an undesirable place off-site or threaten the stability of a slope or embankment down gradient of the basin. To protect groundwater quality and to ensure dry conditions for maintenance of unlined basins, the distance between the basin invert and seasonally high groundwater should be at least 2 m (6 ft). Where the groundwater is higher than this, the basin should be provided with an impermeable liner. In no case should the seasonally high groundwater be higher than the bottom elevation of the detention device to prevent uplift of tanks or liners.

Discharge should be accomplished through a water quality outlet. An example is shown in Figure 3.2.2. A rock pile or rock-filled gabions can serve as alternatives to the debris screen. The water quality outlet should be designed to empty the device within 24 to 72 hours. (The 24-hour limit is chosen to provide adequate settling time; the 72-hour limit is chosen to minimize the potential for mosquito breeding.) Because detention basins are not maintained for infiltration, water loss by infiltration should be disregarded when designing the hydraulic capacity of the outlet structure.

Public health and vector control authorities should be consulted to verify the acceptability of detention basins and the maximum drawdown time allowed to avoid mosquito problems.

The inlet structure of the basin should be designed to divert the peak hydraulic flow (calculated according to County procedures for flood routing and scour) when the basin is full. Alternatively, an overflow structure sized according to these criteria can be provided in one of the downstream walls or berms. A third alternative is to include a flood control outlet in the top of the water quality outlet. In this case, an additional outlet (riser or spillway) should be supplied to prevent overtopping of the walls or berms. Entering flows should be distributed uniformly at low velocity to prevent re-suspension of settled materials and to encourage quiescent conditions.

The site must have sufficient area for a perimeter maintenance road and safe access to and from the site from local roads. Basin side slopes must be shallow enough to permit tracked vehicles to access the basin bottom for maintenance. Alternatively, an access ramp should be provided. Preliminary design factors for detention basins are summarized in Table 3.2.1.

Table F.2 Summary Of Extended Detention Basin Design Factors

Description	Applications/Siting	Preliminary Design Factors
Impoundments where the water quality volume is temporarily detained Treatment Mechanisms: • Sedimentation • Infiltration (if basin unlined) Pollutants removed: • Sediment and particulates • Litter • Sorbed pollutants (heavy metals, O&G)	• Sufficient head to prevent backwater condition in the storm drain system • Seasonally high groundwater below basin invert • Consult public health and vector control authorities	• Size to capture the 24-hr water quality volume • Flow-path-to-width ratio of at least 2:1 recommended • Maximum water level should not cause groundwater to occur under the roadway within 0.2 m of the roadway subgrade • Basin invert ≥ 2 m above seasonally high groundwater or else a impermeable liner is required • Scour protection on inflow, outfall and spillway • Maintenance access (road around basin and ramp to basin invert) • Upstream diversion channel or pipe, downstream overflow structure or flood control outlet • Discharge through a water quality outlet with debris screen (or equivalent) • Outlet design to empty basin within 24 to 72 hrs • Flows should enter at low velocity

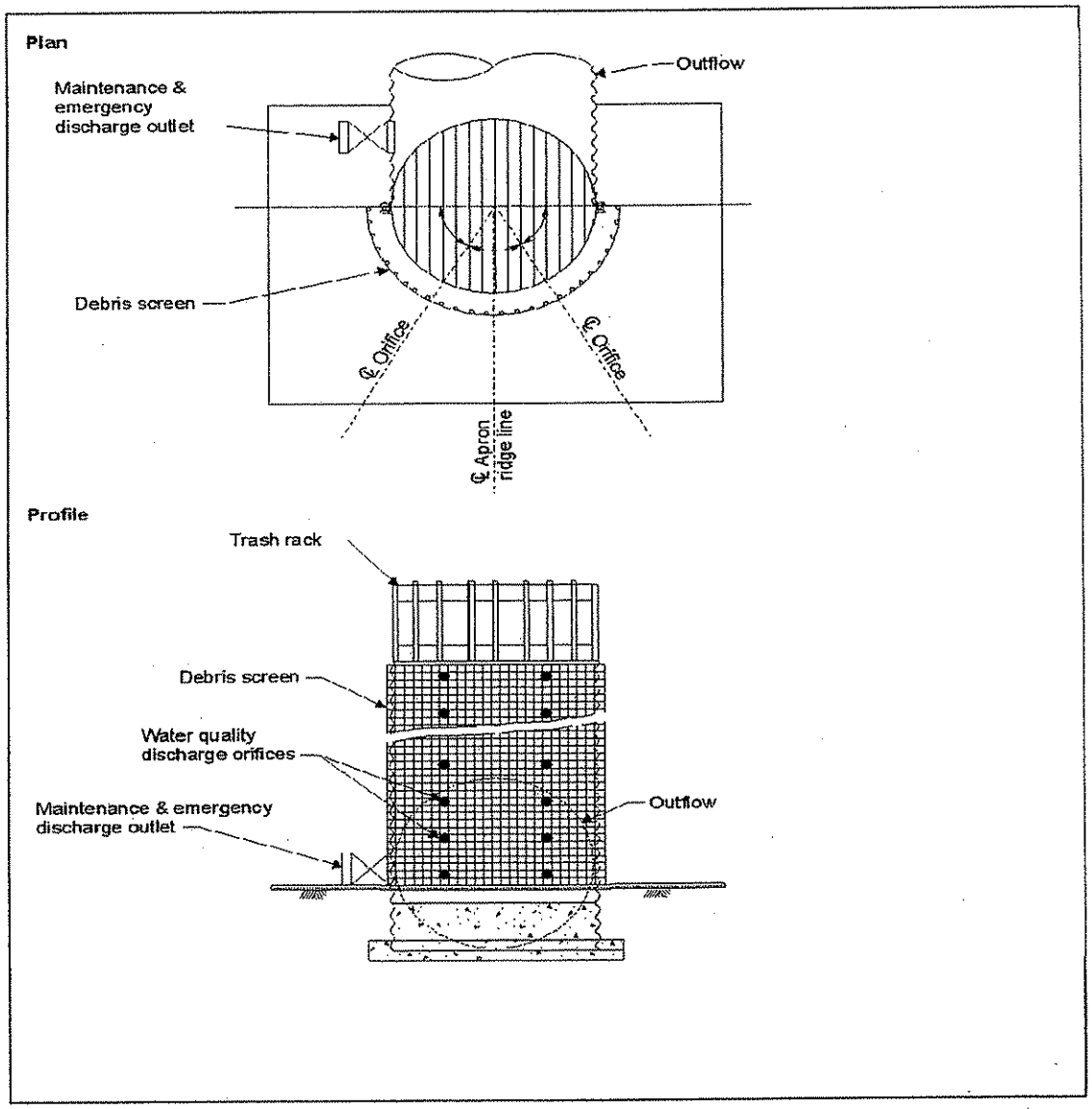

Figure F.2.2
Detention Basin Outlet Structure Schematic
(Not a Standard Plan)

Extended Detention Basin TC-22

Maintenance Concerns, Objectives, and Goals

- Vector/Pest Control
- Sediment and Trash Removal
- Vegetation/Landscape Maintenance
- Re-suspension of settled material
- Clogging of the Outlet

General Description

Dry extended detention ponds (a.k.a. dry ponds, extended detention basins, detention ponds, extended detention ponds) are basins whose outlets have been designed to detain the stormwater runoff from a water quality design storm for some minimum time (e.g., 72 hours) to allow particles and associated pollutants to settle. Unlike wet ponds, these facilities do not have a large permanent pool. They can also be used to provide flood control by including additional flood detention storage.

Inspection/Maintenance Considerations

Inspections should be conducted semi-annually and after significant storm events to identify potential problems early. Most maintenance efforts will need to be directed toward vegetation management and vector control, which may focus on basic housekeeping practices such as removal of debris accumulations and vegetation management to ensure that the basin dewaters completely (recommended 72 hour residence time or less) to prevent creating mosquito and other vector habitats.

Targeted Constituents

☑	Sediment	▲
☑	Nutrients	●
☑	Trash	■
☑	Metals	▲
☑	Bacteria	▲
☑	Oil and Grease	▲
☑	Organics	▲
☑	Oxygen Demanding	▲

Legend ***(Removal Effectiveness)***

● Low ■ High

▲ Medium

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Inspection Activities	Suggested Frequency
■ Inspect after several storm events for bank stability, vegetation growth, and to determine if the desired residence time has been achieved. ■ Inspect outlet structure for evidence of clogging or outflow release velocities that are greater than design flow.	Post construction
■ Inspect for the following issues: differential settlement, cracking; erosion of pond banks or bottom, leakage, or tree growth on the embankment; the condition of the riprap in the inlet, clogging of outlet and pilot channels; standing water, slope stability, presence of burrows; sediment accumulation in the basin, forebay, and outlet structures; trash and debris, and the vigor and density of the grass turf on the basin side slopes and floor.	Semi-annual, after significant storms, or more frequent
■ Inspect for the following issues: subsidence, damage to the emergency spillway; inadequacy of the inlet/outlet channel erosion control measures; changes in the condition of the pilot channel, accumulated sediment volume, and semi-annual inspection items.	Annual
■ During inspections, changes to the extended storage pond or the contributing watershed should be noted, as these may affect basin performance.	Annual inspection
Maintenance Activities	**Suggested Frequency**
■ If necessary, modify the outlet orifice to achieve design values if inspection indicates modifications are necessary. ■ Repair undercut or eroded areas. ■ Mow side slopes. ■ Manage pesticide and nutrients. ■ Remove litter and debris. ■ Control vectors as necessary.	As needed
■ Remove accumulated trash and debris from the basin, around the riser pipe, side slopes, embankment, emergency spillway, and outflow trash racks. The frequency of this activity may be altered to meet specific site conditions. ■ Trim vegetation at the beginning and end of the wet season to prevent establishment of woody vegetation and for aesthetic and vector reasons.	Semi-annual, or more frequent, as needed
■ Seed or sod to restore dead or damaged ground cover. ■ Repair erosion to banks and bottom as required.	Annual maintenance (as needed)
■ Supplement wetland plants if a significant portion have not been established (at least 50% of the surface area). ■ Remove nuisance plant species.	Annual maintenance (if needed)
■ Remove sediment from the forebay to reduce frequency of main basin cleaning.	3- to 5-year maintenance
■ Monitor sediment accumulation and remove accumulated sediment and regrade about every 10 years or when the accumulated sediment volume exceeds 10-20% of the basin volume, or when accumulation reaches 6 inches or if resuspension is observed. Clean in early spring so vegetation damaged during cleaning has time to re-establish.	Every 10-25 years

Additional Information

In most cases, sediment from extended detention basin does not contain toxins at levels posing a hazardous concern. Studies to date indicate that pond sediments are likely to meet toxicity limits and can be safely landfilled or disposed of onsite. Onsite sediment disposal is always preferable (if local authorities permit it) as long as the sediments are deposited away from the shoreline to prevent their re-entry into the pond.

Sediments should be tested for toxin in compliance with current disposal requirements if land uses in the catchment include commercial or industrial zones, or if visual or olfactory indications of pollution are noticed.

References

Metropolitan Council, Urban Small Sites Best Management Practices Manual. Available at: http://www.metrocouncil.org/environment/Watershed/BMP/manual.htm

U.S. Environmental Protection Agency, Post-Construction Stormwater Management in New Development & Redevelopment BMP Factsheets. Available at: cfpub.epa.gov/npdes/stormwater/menuofbmps/bmp_files.cfm

Ventura Countywide Stormwater Quality Management Program, Technical Guidance Manual for Stormwater Quality Control Measures. July, 2002.

ATTACHMENT F

OPERATION AND MAINTENANCE PROGRAM FOR TREATMENT BMP

*(**NOTE:** INFORMATION REGARDING OPERATION AND MAINTENANCE CAN BE OBTAINED FROM THE FOLLOWING WEB SITE: HTTP://WWW.SDCOUNTY.CA.GOV/DPW/WATERSHEDS/LAND_DEV/SUSMP.HTML.)*

APPENDIX H Estimated O & M Costs for BMP Project

Estimated vlaues derived from Caltrans Pilot BMP Study. This spreadsheet will change as additional data becomes available.

						Labor			Equipment				Materials		Total	Comments
						Per. Hrs	Rate	Cost	Type	Days	rate	Cost	Item	Cost	Cost	
Annual renewal of medium	End of wet season, April 30	None	Annually, in May	Remove characterize, and properly dispose of media.. Replace media before Oct 1	None	2	43.63	87.26	sedan	1	21.28	21.28	new adsorbent and testing & disposal costs	195	303.54	
TOTAL DRAIN INLET INSERTS-STREAM GUARDS						6		261.78				21.28		195	478.06	
EXTENDED DETENTION BASINS																
Preventive Maintenance and Routine Inspections																
DESIGN CRITERIA,																
ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS											
Basin side slope planted for erosion protection and planted invert	Average vegetation height greater than 12-inches, emergence of trees or woody vegetation,	Visual observation and random measurements through out the side slope area	Once during wet season, once during dry season.	Cut vegetation to an average height of 6-inches and remove trimmings. Remove any trees, or woody vegetation.		48	43.63	2094.24	one-ton truck	2	26.84	53.68	string trimmer, rake, fork, bags, safety equipment	50	2197.92	
Slope stability	Evidence of erosion	Visual observation	October each year	Reseed/revegetate barren spots prior to wet season.		0	43.63	0	one-ton truck & hydroseeder	0	48.15	0	seed	150	150	
				Contact environmental or landscape architect for appropriate seed mix.												
				Scarify surface if needed.												
				If after two applications (2 seasons) of reseeding/revegetating and growth is unsuccessful both times, an erosion blanket or equivalent protection will be installed over eroding areas. No erosion blanket will be installed in the basin invert.	NOT AN ANNUAL COST	0	43.63	0	one-ton truck	0	26.84	0	blanket	0	0	
Inspect for standing water.	Standing water for more than 72 hours	Visual observation	Annually, 72 hours after a target2 storm (0.75 in) event	☐ Drain facility	None											
				☐ Check and unclog clogged orifice.	Should be Annual Mtce.											
				Notify engineer, if immediate solution.Is not evident.												
Inspection for trash and debris	Debris/trash present	Visual observation	During routine trashing, per Districts schedule.	Remove and dispose of trash and debris	None											
Inspection for sediment management and characterization of sediment for removal	☐ Sediment depth exceeds marker on staff gage	☐ Measure depth at apparent maximum and minimum accumulation of sediment. Calculate average depth	Annually	Remove and properly dispose of sediment. Regrade if necessary.		16	43.63	698.08	4-yd dump truck, backhoe & trailer, one-ton truck & hydroseederse dan	0.4	176.5	70.6	testing and disposal	460	1228.68	once every 5 years

APPENDIX H Estimated O & M Costs for BMP Project

Estimated vlaues derived from Caltrans Pilot BMP Study. This spreadsheet will change as additional data becomes available.

						Labor			Equipment				Materials		Total	Comments
						Per. Hrs	Rate	Cost	Type	Days	rate	Cost	Item	Cost	Cost	
Inspect for burrows	Burrows, holes, mounds	Visual observation	Annually and after vegetation trimming.	☐ Where burrows cause seepage, erosion and leakage, backfill firmly.												
General Maintenance Inspection	Inlet structures, outlet structures, side slopes or other features damaged, significant erosion, emergence of trees or woody vegetation, graffiti or vandalism, fence damage, etc.	Visual observation	Semi-Annually, late wet season and late dry season Monthly	Corrective action prior to wet season. Consult engineers if immediate solution is not evident.	None	16	43.63	698.08	one-ton truck	2	26.84	53.68			751.76	
TOTAL EXTENDED BASIN						80		3490.4				177.86		660	4328.36	
INFILTRATION BASINS																
Preventive Maintenance and Routine Inspections																
DESIGN CRITERIA,																
ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS											
Vegetation of basin invert and side slopes	Vegetation height exceeds 12 inches, emergence of trees or woody vegetation,	Visual observation and random measurements through out the side slope and invert area	Once during wet season, once during dry season.	Cut vegetation to an average height of 6-inches. Remove any trees, or woody vegetation.	None	48	43.63	2094.24	two-ton truck	2	50	100	string trimmer, rake, fork, bags, safety equipment	50	2244.24	
Inspect for standing water.	Standing water for more than 72 hours	Visual observation	Annually, 72 hours after a target2 storm (0.75 in) event.	☐ Drain facility, if possible.		16	43.63	698.08	one-ton truck	4	26.84	107.36			805.44	
				☐ Notify engineer to consider:												
				☐ Remove sediment, scarify invert, and regrade if necessary.				0				0			0	covered under sediment removal
				☐ If unable to achieve acceptable infiltration rate or implement alternative solution then move to decommission				0				0			0	
				☐ If standing water can not be removed then notify VCD.	None											
Inspection for trash and debris at inlet structures	Debris/trash present	Visual observation	During routine trashing, per Districts schedule.	Remove and dispose of trash and debris	None											
Inspection for sediment accumulation	Sediment depth exceeds marker on staff gage.	Measure depth at apparent maximum and minimum accumulation of sediment. Calculate average depth	Annually	Remove, characterize and properly dispose of sediment. Regrade and revegetate bare areas.	None	4	43.63	174.52	4-yd dump truck, loader & trailer, grader, sedan, one-ton truck & hydroseeder	0.5	256.94	128.47	seed, testing & disposal	150	452.99	once every 10 years
Slope stability	Evidence of erosion.	Visual observation	October each year.	Reseed/revegetate barren spots by Nov. Scarify surface if needed.		20	43.63	872.6	one-ton truck & hydroseeder	1	48.15	48.15	seed	275	1195.75	

APPENDIX 6.5-E – FPUD WATER CHEMISTRY

2007 Consumer Confidence Report

Fallbrook Public Utility District

Fallbrook Public Utility District **Test results from calendar year 2006**

We test the drinking water quality for many constituents as required by State and Federal Regulations. This report shows the results of our monitoring for the period of January 1 - December 31, 2006.

Este informe contiene información muy importante sobre su agua potable. Tradúzcalo ó hable con alguien que lo entienda bien.

Type of water sources in use: While FPUD is a water retailer, 99% of the district's water is purchased from the San Diego County Water Authority, which purchases the water from the Metropolitan Water District of Southern California (MWD). Virtually all tap water delivered by FPUD is treated at MWD's Lake Skinner Filtration Plant in Riverside County.

Name & location of source(s): FPUD receives virtually all its water from two sources: a 242-mile-long aqueduct that brings Colorado River water from Lake Havasu to Southern California, and another 444-mile-long aqueduct that carries water from the Feather River in northern California through the Delta to State Water Project contractors throughout the state. One percent of FPUD water comes from our Capra Well.

Drinking Water Source Assessment information: Capra Well: One percent of FPUD water comes from our Capra Well. A source-water assessment was conducted on the water system in May 2004. The well is considered most vulnerable to low-density septic systems, agricultural/irrigation wells, and historic mining operations. Discussion of vulnerability: The Capra Well is in a rural area close to Red Mountain with few activities that could potentially contaminate the water supply. The only significant possible contaminating activities observed are pesticide and fertilizer use in the citrus groves in the general area surrounding the well.

Time and place of regularly scheduled board meetings for public participation: Every fourth Monday of the month at 4 p.m. in the district boardroom, located at 990 E. Mission Road.

For more information, contact: Jason Cavender, Chief Systems Operator Phone: (760) 728-1125

TERMS USED IN THIS REPORT:

Maximum Contaminant Level (MCL): The highest level of a contaminant that is allowed in drinking water. Primary MCLs are set as close to the PHGs (or MCLGs) as is economically and technologically feasible. Secondary MCLs are set to protect the odor, taste, and appearance of drinking water.

Maximum Contaminant Level Goal (MCLG): The level of a contaminant in drinking water below, which there is no known or expected risk to health. MCLGs are set by the U.S. Environmental Protection Agency (USEPA).

Public Health Goal (PHG): The level of a contaminant in drinking water below, which there is no known or expected risk to health. PHGs are set by the California Environmental Protection Agency.

Maximum Residual Disinfectant Level (MRDL): The level of a disinfectant added for water treatment that may not be exceeded at the consumer's tap.

Maximum Residual Disinfectant Level Goal (MRDLG): The level of a disinfectant added for water treatment below which there is no known or expected risk to health. MRDLGs are set by the U.S. Environmental Protection Agency.

Primary Drinking Water Standards (PDWS): MCLs or MRDLs for contaminants that affect health along with their monitoring and reporting requirements, and water treatment requirements.

Secondary Drinking Water Standards (SDWS): MCLs for contaminants that affect taste, odor, or appearance of the drinking water. Contaminants with SDWSs do not affect the health at the MCL levels.

Treatment Technique (TT): A required process intended to reduce the level of a contaminant in drinking water.

Regulatory Action Level (AL): The concentration of a contaminant, which, if exceeded, triggers treatment or other requirements, which a water system must follow.

Variances and Exemptions: Department permission to exceed an MCL or not comply with a treatment technique under certain conditions.

ND: not detectable at testing limit

SI: Saturation Index

micromhos: Measure of electrical conductance

ppm or mg/L: parts per million or milligrams per liter (mg/L)

ppb or ug/L: parts per billion or micrograms per liter (ug/L)

ppt: parts per trillion

pCi/L: picocuries per liter (a measure of radiation)

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source water include:

- *Microbial contaminants*, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- *Inorganic contaminants*, such as salts and metals, that can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- *Pesticides and herbicides*, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
- *Organic chemical contaminants*, including synthetic and volatile organic chemicals, which are byproducts of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, agricultural application, and septic systems.
- *Radioactive contaminants*, which can be naturally occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, USEPA and the state Department of Health Services (Department) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. Department regulations also establish limits for contaminants in bottled water that must provide the same protection for public health.

The tables below list the drinking water contaminants that were detected during the most recent sampling. The presence of these contaminants in the water does not necessarily indicate that the water poses a health risk. The Department allows us to monitor for certain contaminants less than once per year because the concentrations of these contaminants do not change frequently. Some of the data, though representative of the water quality, are more than one year old.

TABLE 1 - SAMPLING RESULTS SHOWING THE DETECTION OF COLIFORM BACTERIA

Microbiological Contaminants (to be completed only if there was a detection of bacteria)	**Highest No. of detections**	**No. of months in violation**	**State or Federal MCL** (Maximum Contaminant Level)	**MCLG**	**Typical Source of Bacteria**
Total Coliform Bacteria	1	0	More than 2 samples in a given month with detection	0	Naturally present in the environment
Fecal Coliform or *E. coli*	0	0	A routine sample and a repeat sample detect total coliform, and either sample also detects fecal coliform or E.coli	0	Human and animal fecal waste

TABLE 2 - SAMPLING RESULTS SHOWING THE DETECTION OF LEAD AND COPPER

Lead and Copper (Tested every 3 years. Data is from 2004. Next testing will be in 2007.)	**No. of samples collected**	**90th percentile level detected**	**No. of sites exceeding Action Level**	**Action Level**	**PHG**	**Typical Source of Contaminant**
Lead (ppb)	38	<0.005	0	15	2	Internal corrosion of household water plumbing systems; discharges from industrial manufacturers; erosion of natural deposits
Copper (ppm)	38	0.48	0	1.3	0.17	Internal corrosion of household water plumbing systems; erosion of natural deposits; leaching from wood preservatives

TABLE 3 - DETECTION OF CONTAMINANTS WITH A PRIMARY (health related) DRINKING WATER STANDARD

Chemical or Constituent (and reporting units)	**Level Detected** (average)	**Range of Detections**	**MCL [MRDL]**	**PHG (MCLG) [MRDLG]**	**Typical Source of Contaminant**

Inorganic Chemicals					
Fluoride - naturally occurring (ppm)	0.20	0.16 – 0.23	2	1	Erosion of natural deposits; water additives for tooth health
Nitrate – as N (ppm)	ND	ND – 0.45	1	1	Runoff and leaching from fertilizer use; sewage; natural erosion
Chromium (ppb)	0.08	0.04 – 0.12	1000	(100)	Industrial waste discharge
Radiological					
Uranium (pCi/L)	1.5	1.5	20	0.43	Erosion of natural deposits
Disinfection By-products, Disinfectant Residuals and Disinfection By-products precursors (Federal Rule)					
Haloacetic Acids (five) (ppb)	27.6	17.2 – 46.0	60	NA	By-product of drinking water chlorination
Total Trihalomethanes (ppb)	67.4	44.2 – 105.3	80	NA	By-product of drinking water chlorination
Total Chlorine Residual (ppm)	1.5	0.2 – 3.0	(4.0)	(4.0)	Drinking water disinfectant added for treatment

TABLE 4 - DETECTION OF CONTAMINANTS WITH A SECONDARY (aesthetic) DRINKING WATER STANDARD

Chemical or Constituent (and reporting units)	**Level Detected (average)**	**Range of Detections**	**MCL**	**PHG (MCLG)**	**Typical Source of Contaminant**
Chloride (ppm)	78	68 - 100	500	NA	Runoff/leaching from natural deposits; seawater influence
Color (units)	2	1 - 2	15	NA	Naturally occurring organic materials
Corrosivity (SI)	0.28	0.17 – 0.45	Non-corrosive	NA	Elemental balance in water; affected by temperature, other factors
Odor Threshold (p) (TON)	2	2	3	NA	Naturally occurring organic materials
Specific Conductance (micromhos)	748	650 – 880	1600	NA	Substances that form ions in water; seawater influence
Sulfate (ppm)	154	118 - 190	500	NA	Runoff/leaching from natural deposits; industrial wastes
Total Dissolved Solids (TDS) (ppm)	438	381 - 530	1,000	NA	Runoff/leaching from natural deposits; seawater influence
Turbidity (NTU)	0.16	0.05 – 1.00	5	NA	Soil runoff

TABLE 5 - DETECTION OF UNREGULATED CONTAMINANTS

Chemical or Constituent (and reporting units)	**Level Detected (average)**	**Range of detections**	**Notification Level**	**Major sources in drinking water**
Boron (ppb)	140	100-160	1,000	Runoff/leaching from natural deposits; industrial wastes

TABLE 6 – ADDITIONAL PARAMETERS

Chemical or Constituent (and reporting units)	**Level Detected (average)**	**Range of detections**	**Notification Level**	**Major sources in drinking water**
Alkalinity (ppm)	88	80 - 120	NA	Naturally present in the environment
Calcium (ppm)	47	40 - 60	NA	Naturally present in the environment

Chlorate (ppb)	62.5	25 - 100	800	By-product of drinking water chlorination; industrial processes
Corrosivity (Al)	12.1	12.1 – 12.2	NA	Elemental balance in water; affected by temperature, other factors
Hardness (ppm)	200	174 - 240	NA	Generally found in ground and surface water
Magnesium (ppm)	20	18 – 23.5	NA	Elemental balance in water; affected by temperature, other factors
N – Nitrosodimethylamine (ppt)	ND	ND – 7.5	10	By-product of drinking water chlorination; industrial processes
pH (pH units)	8.1	8.1 – 8.2	NA	By-product of drinking water chlorination; industrial processes
Potassium (ppm)	3.7	3.5 – 4.7	NA	By-product of drinking water chlorination; industrial processes
Sodium (ppm)	72	62 - 96	NA	Generally found in ground and surface water
TOC (w) (ppm)	2.4	2.0 – 3.1	NA	Various natural and manmade sources

Additional General Information on Drinking Water

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the USEPA's Safe Drinking Water Hotline (1-800-426-4791).

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. USEPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline (1-800-426-4791).

We have never had a water quality violation at Red Mountain

The District's Red Mountain Reservoir is an open reservoir with a capacity of 440 million gallons and is used to store treated water purchased from the San Diego County Water Authority (SDCWA). The open reservoir met the health standards of the day when it was constructed in 1949 and we have never received a water-quality violation at Red Mountain. Upcoming regulatory standards will require FPUD to install additional treatment processes by the year 2012. We currently believe Ultraviolet Technology (UV Technology) will be the treatment method used. Additionally, when the reservoir was expanded and lined in 1985, a chain-link fence was installed around the facility. This was done to minimize and prevent potential contamination from birds, windblown materials and vandalism, and to provide access control. FPUD also installed drainage collection and diversion ditches to prevent local runoff water from entering the reservoir. The reservoir is inspected at least twice daily and chlorine tests are taken at that time. Bacteriological tests are taken once a week.

The water the District purchases from the SDCWA is a blend of fully-treated Colorado River and State Project Water that receives complete conventional treatment at the Metropolitan Water District's Skinner Filtration Plant. The water delivered to Red Mountain has a chloramine (mixture of chlorine and ammonia) disinfectant residual. Additional chlorine is added to the water leaving Red Mountain to enhance the chlorine residual

Should a water-quality problem arise due to the open reservoir, FPUD is prepared to take remedial and maintenance action as set forth in the District's operational and monitoring plan on file with the Department of Health Services. The reservoir will be emptied and cleaned in 2007.

APPENDIX 6.5-F – NOTICE OF INTENT FOR THE STATE NPDES GENERAL PERMIT FOR STORM WATER DISCHARGES FROM CONSTRUCTION SITES AND STATE GENERAL PERMIT

Attachment 2

State Water Resources Control Board

NOTICE OF INTENT

TO COMPLY WITH THE TERMS OF THE
GENERAL PERMIT TO DISCHARGE STORM WATER
ASSOCIATED WITH CONSTRUCTION ACTIVITY (WQ ORDER No. 99-08-DWQ)

I. NOI STATUS (SEE INSTRUCTIONS)

MARK ONLY ONE ITEM 1. [X] New Construction 2. [ ] Change of Information for WDID#

II. PROPERTY OWNER

Name	Contact Person		
Orange Grove Energy, LP	Steve Thome		
Mailing Address	Title		
1900 East Golf Road, Suite 1030	Vice President of Development		
City	State	Zip	Phone
Schaumburg	IL	60173	(847) 908-2876

Owner Type (*check one*) 1.[ ] Private Individual 2.[ ]Business 3.[ ]Municipal 4.[ ]State 5.[ ]Federal 6.[ ]Other

III. DEVELOPER/CONTRACTOR INFORMATION

Developer/Contractor	Contact Person		
To be Determined			
Mailing Address	Title		
City	State	Zip	Phone

IV. CONSTRUCTION PROJECT INFORMATION

Site/Project Name	Site Contact Person		
Orange Grove Project	Jim Pomillo (847) 226-4528		
Physical Address/Location	Latitude	Longitude	County
Pala Del Norte Road at SR 76	33.358 °	-117.111 °	San Diego County
City (or nearest City)	Zip	Site Phone Number	Emergency Phone Number
Community of Pala	92059		

A. Total size of construction site area: 37 Acres

B. Total area to be disturbed: 37 Acres (% of total 100)

C. Percent of site imperviousness (including rooftops):
Before Construction: 25 %
After Construction: 10 %

D. Tract Number(s): N/A , _____

E. Mile Post Marker: N/A

F. Is the construction site part of a larger common plan of development or sale?
[ ] YES [X] NO

G. Name of plan or development: N/A

H. Construction commencement date: 04 / 01 / 09

I. % of site to be mass graded: 25

J. Projected construction dates:
Complete grading: 08 / 31 / 09 Complete project: 10 / 01 / 09

K. Type of Construction (Check all that apply):
1. [ ] Residential 2. [ ] Commercial 3. [ ] Industrial 4. [ ] Reconstruction 5. [ ] Transportation
6. [X] Utility Description: Power plant. 7. [ ] Other (Please List): _____

V. BILLING INFORMATION

SEND BILL TO:	Name	Contact Person	
[X] OWNER (as in II. above)			
[ ] DEVELOPER (as in III. above)	Mailing Address	Phone/Fax	
[ ] OTHER (enter information at right)	City	State	Zip

VI. REGULATORY STATUS

A. Has a local agency approved a required erosion/sediment control plan?..... ☐ YES ☐ NO

Does the erosion/sediment control plan address construction activities such as infrastructure and structures?..... ☒ YES ☐ NO

Name of local agency: _____ Phone: _____

B. Is this project or any part thereof, subject to conditions imposed under a CWA Section 404 permit of 401 Water Quality Certification?..... ☐ YES ☒ No

If yes, provide details: _____

VII. RECEIVING WATER INFORMATION

A. Does the storm water runoff from the construction site discharge to (Check all that apply):

1. ☒ **Indirectly to waters of the U.S.**
2. ☐ **Storm drain system - Enter owner's name:**_____
3. ☐ **Directly to waters of U.S. (e.g. , river, lake, creek, stream, bay, ocean, etc.)**

B. Name of receiving water: (river, lake, creek, stream, bay, ocean): Unnamed tributaries to the San Luis Rey River

VIII. IMPLEMENTATION OF NPDES PERMIT REQUIREMENTS

A. STORM WATER POLLUTION PREVENTION PLAN (SWPPP) (check one)

☒ A SWPPP has been prepared for this facility and is available for review: Date Prepared: ____/____/____ Date Amended: ____/____/____

☐ A SWPPP will be prepared and ready for review by (enter date): ____/____/____

☐ A tentative schedule has been included in the SWPPP for activities such as grading, street construction, home construction, etc.

B. MONITORING PROGRAM

☐ A monitoring and maintenance schedule has been developed that includes inspection of the construction BMPs before anticipated storm events and after actual storm events and is available for review.

If checked above: A qualified person has been assigned responsibility for pre-storm and post-storm BMP inspections to identify effectiveness and necessary repairs or design changes..... ☐ YES ☐ NO

Name: _____ Phone: _____

C. PERMIT COMPLIANCE RESPONSIBILITY

A qualified person has been assigned responsibility to ensure full compliance with the Permit, and to implement all elements of the Storm Water Pollution Prevention Plan including:

1. Preparing an annual compliance evaluation..... ☐ YES ☐ NO

Name: _____ Phone: _____

2. Eliminating all unauthorized discharges..... ☐ YES ☐ NO

IX. VICINITY MAP AND FEE (must show site location in relation to nearest named streets, intersections, etc.)

Have you included a vicinity map with this submittal? ..... ☒ YES ☐ NO

Have you included payment of the annual fee with this submittal?..... ☒ YES ☐ NO

X. CERTIFICATIONS

"I certify under penalty of law that this document and all attachments were prepared under my direction and supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment. In addition, I certify that I have read the entire General Permit, including all attachments, and agree to comply with and be bound by all of the provisions, requirements, and prohibitions of the permit, including the development and implementation of a Storm Water Pollution Prevention Plan and a Monitoring Program Plan will be complied with."

Printed Name: _____

Signature: _____ **Date:** _____

Title: _____

STATE WATER RESOURCES CONTROL BOARD (SWRCB)
ORDER NO. 99 - 08 - DWQ
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
GENERAL PERMIT NO. CAS000002

WASTE DISCHARGE REQUIREMENTS (WDRS) FOR DISCHARGES OF STORM WATER RUNOFF ASSOCIATED WITH CONSTRUCTION ACTIVITY

The State Water Resources Control Board finds that:

1. Federal regulations for controlling pollutants in storm water runoff discharges were promulgated by the U.S. Environmental Protection Agency (USEPA) on November 16, 1990 (40 Code of Federal Regulations (CFR) Parts 122, 123, and 124). The regulations require discharges of storm water to surface waters associated with construction activity including clearing, grading, and excavation activities (except operations that result in disturbance of less than five acres of total land area and which are not part of a larger common plan of development or sale) to obtain an NPDES permit and to implement Best Available Technology Economically Achievable (BAT) and Best Conventional Pollutant Control Technology (BCT) to reduce or eliminate storm water pollution.

   On December 8, 1999 federal regulations promulgated by USEPA (40CFR Parts 9, 122, 123, and 124) expanded the NPDES storm water program to include storm water discharges from municipal separate storm sewer systems (MS4s) and construction sites that were smaller than those previously included in the program. Federal regulation 40 CFR § 122.26(b)(15) defines small construction activity as including clearing, grading, and excavating that result in land disturbance of equal to or greater than one acre or less than five acres or is part of a larger common plan of development or sale. Permit applications for small construction activities are due by March 10, 2003.

2. This General Permit regulates pollutants in discharges of storm water associated with construction activity (storm water discharges) to surface waters, except from those areas on Tribal Lands; Lake Tahoe Hydrologic Unit; construction projects which disturb less than one acre, unless part of a larger common plan of development or sale; and storm water discharges which are determined ineligible for coverage under this General Permit by the California Regional Water Quality Control Boards (RWQCBs). Attachment 1 contains addresses and telephone numbers of each RWQCB office.

3. This General Permit does not preempt or supersede the authority of local storm water management agencies to prohibit, restrict, or control storm water discharges to separate storm sewer systems or other watercourses within their jurisdiction, as allowed by State and Federal law.

4. To obtain authorization for proposed storm water discharges to surface waters, pursuant to this General Permit, the landowner (discharger) must submit a Notice of Intent (NOI) with a vicinity map and the appropriate fee to the SWRCB prior to commencement of construction activities. In addition, coverage under this General Permit shall not occur until the applicant develops a Storm Water Pollution Prevention Plan (SWPPP) in accordance with the requirements of Section A of this permit for the project. For proposed construction activity conducted on easements or on nearby property by agreement or permission, or by an owner or lessee of a mineral estate (oil, gas, geothermal, aggregate, precious metals, and/or industrial minerals) entitled to conduct the activities, the entity responsible for the construction activity must submit the NOI and filing fee and shall be responsible for development of the SWPPP.

5. If an individual NPDES Permit is issued to a discharger otherwise subject to this General Permit or if an alternative General Permit is subsequently adopted which covers storm water discharges regulated by this General Permit, the applicability of this General Permit to such discharges is automatically terminated on the effective date of the individual permit or the date of approval for coverage under the subsequent General Permit.

6. This action to adopt an NPDES permit is exempt from the provisions of the California Environmental Quality Act (Public Resources Code Section 21100, et seq.) in accordance with section 13389 of the California Water Code.

7. The SWRCB adopted the California Ocean Plan, and the RWQCBs have adopted and the SWRCB has approved Water Quality Control Plans (Basin Plans). Dischargers regulated by this General Permit must comply with the water quality standards in these Basin Plans and subsequent amendments thereto.

8. The SWRCB finds storm water discharges associated with construction activity to be a potential significant sources of pollutants. Furthermore, the SWRCB finds that storm water discharges associated with construction activities have the reasonable potential to cause or contribute to an excursion above water quality standards for sediment in the water bodies listed in Attachment 3 to this permit.

9. It is not feasible at this time to establish numeric effluent limitations for pollutants in storm water discharges from construction activities. Instead, the provisions of this General Permit require implementation of Best Management Practices (BMPs) to control and abate the discharge of pollutants in storm water discharges.

10. Discharges of non-storm water may be necessary for the completion of certain construction projects. Such discharges include, but are not limited to: irrigation of vegetative erosion control measures, pipe flushing and testing, street cleaning, and dewatering. Such discharges are authorized by this General Permit as long as they (a) do comply with Section A.9 of this General Permit, (b) do not cause or contribute to violation of any water quality standard, (c) do not violate any other provision of this

General Permit, (d) do not require a non-storm water permit as issued by some RWQCBs, and (e) are not prohibited by a Basin Plan. If a non-storm water discharge is subject to a separate permit adopted by a RWQCB, the discharge must additionally be authorized by the RWQCB permit.

11. Following adoption of this General Permit, the RWQCBs shall enforce the provisions herein including the monitoring and reporting requirements.

12. Following public notice in accordance with State and Federal laws and regulations, the SWRCB in a public meeting on June 8, 1998, heard and considered all comments. The SWRCB has prepared written responses to all significant comments.

13. This Order is an NPDES permit in compliance with section 402 of the Clean Water Act (CWA) and shall take effect upon adoption by the SWRCB provided the Regional Administrator of the USEPA has no objection. If the USEPA Regional Administrator objects to its issuance, the General Permit shall not become effective until such objection is withdrawn.

14. This General Permit does not authorize discharges of fill or dredged material regulated by the U.S. Army Corps of Engineers under CWA section 404 and does not constitute a waiver of water quality certification under CWA section 401.

15 The Monitoring Program and Reporting Requirements are modified in compliance with a judgment in the case of San Francisco BayKeeper, et al. v. State Water Resources Control Board. The modifications include sampling and analysis requirements for direct discharges of sediment to waters impaired due to sediment and for pollutants that are not visually detectable in runoff that may cause or contribute to an exceedance of water quality objectives.

16 Storm water discharges associated with industrial activity that are owned or operated by municipalities serving populations less than 100,000 people are no longer exempt from the need to apply for or obtain a storm water discharge permit. A temporary exemption, which was later extended by USEPA, was provided under section 1068(c) of the Intermodal Surface Transportation and Efficiency Act (ISTEA) of 1991. Federal regulation 40 CFR § 122.26(e)(1)(ii) requires the above municipalities to submit permit application by March 10, 2003.

17 This permit may be reopened and modified to include different monitoring requirements for small construction activity than for construction activity over five (5) acres.

IT IS HEREBY ORDERED that all dischargers who file an NOI indicating their intention to be regulated under the provisions of this General Permit shall comply with the following:

A. DISCHARGE PROHIBITIONS:

1. Authorization pursuant to this General Permit does not constitute an exemption to applicable discharge prohibitions prescribed in Basin Plans, as implemented by the nine RWQCBs.

2. Discharges of material other than storm water which are not otherwise authorized by an NPDES permit to a separate storm sewer system (MS4) or waters of the nation are prohibited, except as allowed in Special Provisions for Construction Activity, C.3.

3. Storm water discharges shall not cause or threaten to cause pollution, contamination, or nuisance.

4. Storm water discharges regulated by this General Permit shall not contain a hazardous substance equal to or in excess of a reportable quantity listed in 40 CFR Part 117 and/or 40 CFR Part 302.

B. RECEIVING WATER LIMITATIONS:

1. Storm water discharges and authorized nonstorm water discharges to any surface or ground water shall not adversely impact human health or the environment.

2. The SWPPP developed for the construction activity covered by this General Permit shall be designed and implemented such that storm water discharges and authorized nonstorm water discharges shall not cause or contribute to an exceedance of any applicable water quality standards contained in a Statewide Water Quality Control Plan and/or the applicable RWQCB's Basin Plan.

3. Should it be determined by the discharger, SWRCB, or RWQCB that storm water discharges and/or authorized nonstorm water discharges are causing or contributing to an exceedance of an applicable water quality standard, the discharger shall:

   a. Implement corrective measures immediately following discovery that water quality standards were exceeded, followed by notification to the RWQCB by telephone as soon as possible but no later than 48 hours after the discharge has been discovered. This notification shall be followed by a report within 14-calender days to the appropriate RWQCB, unless otherwise directed by the RWQCB, describing (1) the nature and cause of the water quality standard exceedance; (2) the BMPs currently being implemented; (3) any additional BMPs which will be implemented to

prevent or reduce pollutants that are causing or contributing to the exceedance of water quality standards; and (4) any maintenance or repair of BMPs. This report shall include an implementation schedule for corrective actions and shall describe the actions taken to reduce the pollutants causing or contributing to the exceedance.

b. The discharger shall revise its SWPPP and monitoring program immediately after the report to the RWQCB to incorporate the additional BMPs that have been and will be implemented, the implementation schedule, and any additional monitoring needed.

c. Nothing in this section shall prevent the appropriate RWQCB from enforcing any provisions of this General Permit while the discharger prepares and implements the above report.

C. SPECIAL PROVISIONS FOR CONSTRUCTION ACTIVITY:

1. All dischargers shall file an NOI and pay the appropriate fee for construction activities conducted at each site as required by Attachment 2: Notice of Intent--General Instructions.

2. All dischargers shall develop and implement a SWPPP in accordance with Section A: Storm Water Pollution Prevention Plan. The discharger shall implement controls to reduce pollutants in storm water discharges from their construction sites to the BAT/BCT performance standard.

3. Discharges of non-storm water are authorized only where they do not cause or contribute to a violation of any water quality standard and are controlled through implementation of appropriate BMPs for elimination or reduction of pollutants. Implementation of appropriate BMPs is a condition for authorization of non-storm water discharges. Non-storm water discharges and the BMPs appropriate for their control must be described in the SWPPP. Wherever feasible, alternatives which do not result in discharge of nonstorm water shall be implemented in accordance with Section A.9. of the SWPPP requirements.

4. All dischargers shall develop and implement a monitoring program and reporting plan in accordance with Section B: Monitoring Program and Reporting Requirements.

5. All dischargers shall comply with the lawful requirements of municipalities, counties, drainage districts, and other local agencies regarding discharges of storm water to separate storm sewer systems or other watercourses under their jurisdiction, including applicable requirements in municipal storm water management programs developed to comply with NPDES permits issued by the RWQCBs to local agencies.

6. All dischargers shall comply with the standard provisions and reporting requirements contained in Section C: Standard Provisions.

7. The discharger may terminate coverage for a portion of the project under this General Permit when ownership of a portion of this project has been transferred or when a phase within this multi-phase project has been completed. When ownership has transferred, the discharger must submit to its RWQCB a Change of Information Form (COI) Attachment 4 with revised site map and the name, address and telephone number of the new owner(s). Upon transfer of title, the discharger should notify the new owner(s) of the need to obtain coverage under this General Permit. The new owner must comply with provisions of Sections A. 2. (c) and
B. 2. (b) of this General Permit. To terminate coverage for a portion of the project when a phase has been completed, the discharger must submit to its RWQCB a COI with a revised map that identifies the newly delineated site.

8. The discharger may terminate coverage under this General Permit for a complete project by submitting to its RWQCB a Notice of Termination Form (NOT), and the post-construction BMPs plan according to Section A.10 of this General Permit. Note that a construction project is considered complete only when all portions of the site have been transferred to a new owner; or the following conditions have been met:

   a. There is no potential for construction related storm water pollution,

   b. All elements of the SWPPP have been completed,

   c. Construction materials and waste have been disposed of properly,

   d. The site is in compliance with all local storm water management requirements, and

   e. A post-construction storm water management plan is in place as described in the site's SWPPP.

9. This General Permit expires five years from the date of adoption.

D. REGIONAL WATER QUALITY CONTROL BOARD (RWQCB) AUTHORITIES:

1. RWQCBs shall:

   a. Implement the provisions of this General Permit. Implementation of this General Permit may include, but is not limited to requesting the submittal of SWPPPS, reviewing SWPPPs, reviewing monitoring reports, conducting compliance inspections, and taking enforcement actions.

   b. Issue permits as they deem appropriate to individual dischargers, categories of dischargers, or dischargers in a geographic area. Upon issuance of such permits by a RWQCB, the affected dischargers shall no longer be regulated by this General Permit.

2. RWQCBs may require, on a case-by-case basis, the inclusion of an analysis of potential downstream impacts on receiving waterways due to the permitted construction.

3. RWQCBs may provide information to dischargers on the development and implementation of SWPPPs and monitoring programs and may require revisions to SWPPPs and monitoring programs.

4. RWQCBs may require dischargers to retain records for more than three years.

5. RWQCBs may require additional monitoring and reporting program requirements including sampling and analysis of discharges to water bodies listed in Attachment 3 to this permit. Additional requirements imposed by the RWQCB should be consistent with the overall monitoring effort in the receiving waters.

6. RWQCBs may issue individual NPDES permits for those construction activities found to be ineligible for coverage under this permit.

CERTIFICATION

The undersigned, Administrative Assistant to the Board, does hereby certify that the foregoing is a full, true, and correct copy of an order duly and regularly adopted at a meeting of the State Water Resources Control Board held on August 19, 1999.

AYE: James M. Stubchaer
Mary Jane Forster
John W. Brown
Arthur G. Baggett, Jr.

NO: None

ABSENT: None

ABSTAIN: None

/s/

Maureen Marché
Administrative Assistant to the Board

SECTION A: STORM WATER POLLUTION PREVENTION PLAN

1. Objectives

A Storm Water Pollution Prevention Plan (SWPPP) shall be developed and implemented to address the specific circumstances for each construction site covered by this General Permit. The SWPPP shall be certified in accordance with the signatory requirements of section C, Standard Provision for Construction Activities (9). The SWPPP shall be developed and amended or revised, when necessary, to meet the following objectives:

a. Identify all pollutant sources including sources of sediment that may affect the quality of storm water discharges associated with construction activity (storm water discharges) from the construction site, and

b. Identify non-storm water discharges, and

c. Identify, construct, implement in accordance with a time schedule, and maintain Best Management Practices (BMPs) to reduce or eliminate pollutants in storm water discharges and authorized nonstorm water discharges from the construction site during construction, and

d. Develop a maintenance schedule for BMPs installed during construction designed to reduce or eliminate pollutants after construction is completed (post-construction BMPs).

e. Identify a sampling and analysis strategy and sampling schedule for discharges from construction activity which discharge directly into water bodies listed on Attachment 3. (Clean Water Act Section 303(d) [303(d)] Water Bodies listed for Sedimentation).

f. For all construction activity, identify a sampling and analysis strategy and sampling schedule for discharges that have been discovered through visual monitoring to be potentially contaminated by pollutants not visually detectable in the runoff.

2. Implementation Schedule

a. For construction activity commencing on or after adoption of this General Permit, the SWPPP shall be developed prior to the start of soil-disturbing activity in accordance with this Section and shall be implemented concurrently with commencement of soil-disturbing activities.

b. Existing permittees engaging in construction activities covered under the terms of the previous General Construction Permit SWPPP (WQ Order No.92-08-DWQ) shall continue to implement their existing SWPPP and shall implement any

necessary revisions to their SWPPP in accordance with this Section of the General Permit in a timely manner, but in no case more than 90-calender days from the date of adoption of this General Permit.

c. For ongoing construction activity involving a change of ownership of property, the new owner shall review the existing SWPPP and amend if necessary, or develop a new SWPPP within 45-calender days.

d. Existing permittees shall revise their SWPPP in accordance with the sampling and analysis modifications prior to August 1, 2001. For ongoing construction activity involving a change of ownership the new owner shall review the existing SWPPP and amend the sampling and analysis strategy, if required, within 45 days. For construction activity commencing after the date of adoption, the SWPPP shall be developed in accordance with the modification language adopted.

3. Availability

The SWPPP shall remain on the construction site while the site is under construction during working hours, commencing with the initial construction activity and ending with termination of coverage under the General Permit.

4. Required Changes

a. The discharger shall amend the SWPPP whenever there is a change in construction or operations which may affect the discharge of pollutants to surface waters, ground waters, or a municipal separate storm sewer system (MS4). The SWPPP shall also be amended if the discharger violates any condition of this General Permit or has not achieved the general objective of reducing or eliminating pollutants in storm water discharges. If the RWQCB determines that the discharger is in violation of this General Permit, the SWPPP shall be amended and implemented in a timely manner, but in no case more than 14-calendar days after notification by the RWQCB. All amendments should be dated and directly attached to the SWPPP.

b. The RWQCB or local agency with the concurrence of the RWQCB may require the discharger to amend the SWPPP.

5. Source Identification

The SWPPP shall include: (a) project information and (b) pollutant source identification combined with an itemization of those BMPs specifically chosen to control the pollutants listed.

a. Project Information

(1) The SWPPP shall include a vicinity map locating the project site with respect to easily identifiable major roadways, geographic features, or landmarks. At a minimum, the map must show the construction site perimeter, the geographic features surrounding the site, and the general topography.

(2) The SWPPP shall include a site map(s) which shows the construction project in detail, including the existing and planned paved areas and buildings.

(a) At a minimum, the map must show the construction site perimeter; existing and proposed buildings, lots, roadways, storm water collection and discharge points; general topography both before and after construction; and the anticipated discharge location(s) where the storm water from the construction site discharges to a municipal storm sewer system or other water body.

(b) The drainage patterns across the project area must clearly be shown on the map, and the map must extend as far outside the site perimeter as necessary to illustrate the relevant drainage areas. Where relevant drainage areas are too large to depict on the map, map notes or inserts illustrating the upstream drainage areas are sufficient.

(c) Temporary on-site drainages to carry concentrated flow shall be selected to comply with local ordinances, to control erosion, to return flows to their natural drainage courses, and to prevent damage to downstream properties.

3. Information presented in the SWPPP may be represented either by narrative or by graphics. Where possible, narrative descriptions should be plan notes. Narrative descriptions which do not lend themselves to plan notes can be contained in a separate document which must be referenced on the plan.

b. Pollutant Source and BMP Identification

The SWPPP shall include a description of potential sources which are likely to add pollutants to storm water discharges or which may result in nonstorm water discharges from the construction site. Discharges originating from off-site which flow across or through areas disturbed by construction that may contain pollutants should be reported to the RWQCB.

The SWPPP shall:

(1) Show drainage patterns and slopes anticipated after major grading activities are completed. Runoff from off-site areas should be prevented from flowing through areas that have been disturbed by construction unless appropriate conveyance systems are in place. The amount of anticipated storm water run-on must be considered to determine the appropriateness of the BMPs chosen. Show all calculations for anticipated storm water run-on, and describe all BMPs implemented to divert off-site drainage described in section A. 5 a. (2) (c) around or through the construction project.

(2) Show the drainage patterns into each on-site storm water inlet point or receiving water. Show or describe the BMPs that will protect operational storm water inlets or receiving waters from contaminated discharges other than sediment discharges, such as, but not limited to: storm water with elevated pH levels from contact with soil amendments such as lime or gypsum; slurry from sawcutting of concrete or asphalt ;washing of exposed aggregate concrete; concrete rinse water; building washing operations; equipment washing operations; minor street washing associated with street delineation; and/or sealing and paving activities occurring during rains.

(3) Show existing site features that, as a result of known past usage, may contribute pollutants to storm water, (e.g., toxic materials that are known to have been treated, stored, disposed, spilled, or leaked onto the construction site). Show or describe the BMPs implemented to minimize the exposure of storm water to contaminated soil or toxic materials.

(4) Show areas designated for the (a) storage of soil or waste, (b) vehicle storage and service areas, (c) construction material loading, unloading, and access areas, (d) equipment storage, cleaning, and maintenance areas.

(5) Describe the BMPs for control of discharges from waste handling and disposal areas and methods of on-site storage and disposal of construction materials and construction waste. Describe the BMPs designed to minimize or eliminate the exposure of storm water to construction materials, equipment, vehicles, waste storage areas, or service areas. The BMPs described shall be in compliance with Federal, State, and local laws, regulations, and ordinances.

(6) Describe all post-construction BMPs for the project, and show the location of each BMP on the map. (Post-construction BMPs consist of permanent features designed to minimize pollutant discharges, including sediment, from the site after construction has been completed.) Also, describe the agency or parties to be the responsible party for long-term maintenance of these BMPs.

(7) Show the locations of direct discharge from the construction site into a Section 303(d) list water body. Show the designated sampling locations in the receiving waters, which represent the prevailing conditions of the water bodies upstream of the construction site discharge and immediately downstream from the last point of discharge.

(8) Show the locations designated for sampling the discharge from areas identified in Section A. 5. b. (2), (3), and (4) and Section A. 5. c. (1) and (2). Samples shall be taken should visual monitoring indicate that there has been a breach, malfunction, leakage, or spill from a BMP which could result in the discharge in storm water of pollutants that would not be visually detectable, or if storm water comes into contact with soil amendments or other exposed materials or contamination and is allowed to be discharged. Describe the sampling procedure, location, and rationale for obtaining the uncontaminated sample of storm water.

c. Additional Information

(1) The SWPPP shall include a narrative description of pollutant sources and BMPs that cannot be adequately communicated or identified on the site map. In addition, a narrative description of preconstruction control practices (if any) to reduce sediment and other pollutants in storm water discharges shall be included.

(2) The SWPPP shall include an inventory of all materials used and activities performed during construction that have the potential to contribute to the discharge of pollutants other than sediment in storm water. Describe the BMPs selected and the basis for their selection to eliminate or reduce these pollutants in the storm water discharges.

(3) The SWPPP shall include the following information regarding the construction site surface area: the size (in acres or square feet), the runoff coefficient before and after construction, and the percentage that is impervious (e.g., paved, roofed, etc.) before and after construction.

(4) The SWPPP shall include a copy of the NOI, and the Waste Discharge Identification (WDID) number. Should a WDID number not be received from the SWRCB at the time construction commences, the discharger shall include proof of mailing of the NOI, e.g., certified mail receipt, copy of check, express mail receipt, etc.

(5) The SWPPP shall include a construction activity schedule which describes all major activities such as mass grading, paving, lot or parcel

improvements at the site and the proposed time frame to conduct those activities.

(6) The SWPPP shall list the name and telephone number of the qualified person(s) who have been assigned responsibility for prestorm, poststorm, and storm event BMP inspections; and the qualified person(s) assigned responsibility to ensure full compliance with the permit and implementation of all elements of the SWPPP, including the preparation of the annual compliance evaluation and the elimination of all unauthorized discharges.

6. Erosion Control

Erosion control, also referred to as "soil stabilization" is the most effective way to retain soil and sediment on the construction site. The most efficient way to address erosion control is to preserve existing vegetation where feasible, to limit disturbance, and to stabilize and revegetate disturbed areas as soon as possible after grading or construction. Particular attention must be paid to large mass-graded sites where the potential for soil exposure to the erosive effects of rainfall and wind is great. Mass graded construction sites may be exposed for several years while the project is being built out. Thus, there is potential for significant sediment discharge from the site to surface waters.

At a minimum, the discharger/operator must implement an effective combination of erosion and sediment control on all disturbed areas during the rainy season. These disturbed areas include rough graded roadways, slopes, and building pads. Until permanent vegetation is established, soil cover is the most cost-effective and expeditious method to protect soil particles from detachment and transport by rainfall. Temporary soil stabilization can be the single-most important factor in reducing erosion at construction sites. The discharger shall consider measures such as: covering with mulch, temporary seeding, soil stabilizers, binders, fiber rolls or blankets, temporary vegetation, permanent seeding, and a variety of other measures.

The SWPPP shall include a description of the erosion control practices, including a time schedule, to be implemented during construction to minimize erosion on disturbed areas of a construction site. The discharger must consider the full range of erosion control BMPs. The discharger must consider any additional site-specific and seasonal conditions when selecting and implementing appropriate BMPs. The above listed erosion control measures are examples of what should be considered and are not exclusive of new or innovative approaches currently available or being developed.

a. The SWPPP shall include:

(1) An outline of the areas of vegetative soil cover or native vegetation onsite which will remain undisturbed during the construction project.

(2) An outline of all areas of soil disturbance including cut or fill areas which will be stabilized during the rainy season by temporary or permanent erosion control measures, such as seeding, mulch, or blankets, etc.

(3) An outline of the areas of soil disturbance, cut, or fill which will be left exposed during any part of the rainy season, representing areas of potential soil erosion where sediment control BMPs are required to be used during construction.

(4) A proposed schedule for the implementation of erosion control measures.

b. The SWPPP shall include a description of the BMPs and control practices to be used for both temporary and permanent erosion control measures.

c. The SWPPP shall include a description of the BMPs to reduce wind erosion at all times, with particular attention paid to stock-piled materials.

7. Stabilization

(1) All disturbed areas of the construction site must be stabilized. Final stabilization for the purposes of submitting a NOT is satisfied when:

-All soil disturbing activities are completed AND EITHER OF THE TWO FOLLOWING CRITERIA ARE MET:

-A uniform vegetative cover with 70 percent coverage has been established OR:

-equivalent stabilization measures have been employed. These measures include the use of such BMPs as blankets, reinforced channel liners, soil cement, fiber matrices, geotextiles, or other erosion resistant soil coverings or treatments.

(2) Where background native vegetation covers less than 100 percent of the surface, such as in arid areas, the 70 percent coverage criteria is adjusted as follows: If the native vegetation covers 50 percent of the ground surface, 70 percent of 50 percent (.70 X .50=.35) would require 35 percent total uniform surface coverage.

8. <u>Sediment Control</u>

The SWPPP shall include a description or illustration of BMPs which will be implemented to prevent a net increase of sediment load in storm water discharge relative to preconstruction levels. Sediment control BMPs are required at appropriate locations along the site perimeter and at all operational internal inlets to the storm drain system at all times during the rainy season. Sediment control practices may include filtration devices and barriers (such as fiber rolls, silt fence, straw bale barriers, and gravel inlet filters) and/or settling devices (such as sediment traps or basins). Effective filtration devices, barriers, and settling devices shall be selected, installed and maintained properly. A proposed schedule for deployment of sediment control BMPs shall be included in the SWPPP. These are the most basic measures to prevent sediment from leaving the project site and moving into receiving waters. Limited exemptions may be authorized by the RWQCB when work on active areas precludes the use of sediment control BMPs temporarily. Under these conditions, the SWPPP must describe a plan to establish perimeter controls prior to the onset of rain.

During the nonrainy season, the discharger is responsible for ensuring that adequate sediment control materials are available to control sediment discharges at the downgrade perimeter and operational inlets in the event of a predicted storm. The discharger shall consider a full range of sediment controls, in addition to the controls listed above, such as straw bale dikes, earth dikes, brush barriers, drainage swales, check dams, subsurface drain, sandbag dikes, fiber rolls, or other controls. At a minimum, the discharger/operator must implement an effective combination of erosion and sediment control on all disturbed areas during the rainy season.

If the discharger chooses to rely on sediment basins for treatment purposes, sediment basins shall, at a minimum, be designed and maintained as follows:

Option 1: Pursuant to local ordinance for sediment basin design and maintenance, provided that the design efficiency is as protective or more protective of water quality than Option 3.

OR

Option 2: Sediment basin(s), as measured from the bottom of the basin to the principal outlet, shall have at least a capacity equivalent to 3,600 cubic feet of storage per acre draining into the sediment basin. The length of the basin shall be more than twice the width of the basin. The length is determined by measuring the distance between the inlet and the outlet; and the depth must not be less than three feet nor greater than five feet for safety reasons and for maximum efficiency.

OR

Option 3: Sediment basin(s) shall be designed using the standard equation:

$$As=1.2Q/Vs$$

Where: As is the minimum surface area for trapping soil particles of a certain size; Vs is the settling velocity of the design particle size chosen; and Q=C x I x A where Q is the discharge rate measured in cubic feet per second; C is the runoff coefficient; I is the precipitation intensity for the 10-year, 6-hour rain event and A is the area draining into the sediment basin in acres. The design particle size shall be the smallest soil grain size determined by wet sieve analysis, or the fine silt sized (0.01mm) particle, and the Vs used shall be 100 percent of the calculated settling velocity.

The length is determined by measuring the distance between the inlet and the outlet; the length shall be more than twice the dimension as the width; the depth shall not be less than three feet nor greater than five feet for safety reasons and for maximum efficiency (two feet of storage, two feet of capacity). The basin(s) shall be located on the site where it can be maintained on a year-round basis and shall be maintained on a schedule to retain the two feet of capacity;

OR

Option 4: The use of an equivalent surface area design or equation, provided that the design efficiency is as protective or more protective of water quality than Option 3.

A sediment basin shall have a means for dewatering within 7-calendar days following a storm event. Sediment basins may be fenced if safety (worker or public) is a concern.

The outflow from a sediment basin that discharges into a natural drainage shall be provided with outlet protection to prevent erosion and scour of the embankment and channel.

The discharger must consider any additional site-specific and seasonal conditions when selecting and designing sediment control BMPs. The above listed sediment control measures are examples of what should be considered and are not exclusive of new or innovative approaches currently available or being developed.

The SWPPP shall include a description of the BMPs to reduce the tracking of sediment onto public or private roads at all times. These public and private roads shall be inspected and cleaned as necessary. Road cleaning BMPs shall be discussed in the SWPPP and will not rely on the washing of accumulated sediment or silt into the storm drain system.

9. Non-Storm Water Management

Describe all non-storm water discharges to receiving waters that are proposed for the construction project. Non-storm water discharges should be eliminated or reduced to the extent feasible. Include the locations of such discharges and descriptions of all BMPs designed for the control of pollutants in such discharges. Onetime discharges shall be monitored during the time that such discharges are occurring. A qualified person should be assigned the responsibility for ensuring that no materials other than storm water are discharged in quantities which will have an adverse effect on receiving waters or storm drain systems (consistent with BAT/BCT), and the name and contact number of that person should be included in the SWPPP document.

Discharging sediment-laden water which will cause or contribute to an exceedance of the applicable RWQCB's Basin Plan from a dewatering site or sediment basin into any receiving water or storm drain without filtration or equivalent treatment is prohibited.

10. Post-Construction Storm Water Management

The SWPPP shall include descriptions of the BMPs to reduce pollutants in storm water discharges after all construction phases have been completed at the site (Post-Construction BMPs). Post-Construction BMPs include the minimization of land disturbance, the minimization of impervious surfaces, treatment of storm water runoff using infiltration, detention/retention, biofilter BMPs, use of efficient irrigation systems, ensuring that interior drains are not connected to a storm sewer system, and appropriately designed and constructed energy dissipation devices. These must be consistent with all local post-construction storm water management requirements, policies, and guidelines. The discharger must consider site-specific and seasonal conditions when designing the control practices. Operation and maintenance of control practices after construction is completed shall be addressed, including short-and long-term funding sources and the responsible party.

11. Maintenance, Inspection, and Repair

The SWPPP shall include a discussion of the program to inspect and maintain all BMPs as identified in the site plan or other narrative documents throughout the entire duration of the project. A qualified person will be assigned the responsibility to conduct inspections. The name and telephone number of that person shall be listed in the SWPPP document. Inspections will be performed before and after storm events and once each 24-hour period during extended storm events to identify BMP effectiveness and implement repairs or design changes as soon as feasible depending upon field conditions. Equipment, materials, and workers must be available for rapid response to failures and emergencies. All corrective maintenance to BMPs shall be performed as soon as possible after the conclusion of each storm depending upon worker safety.

For each inspection required above, the discharger shall complete an inspection checklist. At a minimum, an inspection checklist shall include:

a. Inspection date.

b. Weather information: best estimate of beginning of storm event, duration of event, time elapsed since last storm, and approximate amount of rainfall (inches).

c. A description of any inadequate BMPs.

d. If it is possible to safely access during inclement weather, list observations of all BMPs: erosion controls, sediment controls, chemical and waste controls, and non-storm water controls. Otherwise, list result of visual inspection at relevant outfall, discharge point, or downstream location and projected required maintenance activities.

e. Corrective actions required, including any changes to SWPPP necessary and implementation dates.

f. Inspectors name, title, and signature.

The dischargers shall prepare their inspection checklists using the inspection checklist form provided by the SWRCB or RWQCB or on forms that contain the equivalent information.

12. Training

Individuals responsible for SWPPP preparation, implementation, and permit compliance shall be appropriately trained, and the SWPPP shall document all training. This includes those personnel responsible for installation, inspection, maintenance, and repair of BMPs. Those responsible for overseeing, revising, and amending the SWPPP shall also document their training. Training should be both formal and informal, occur on an ongoing basis when it is appropriate and convenient, and should include training/workshops offered by the SWRCB, RWQCB, or other locally recognized agencies or professional organizations.

13. List of Contractors/Subcontractors

The SWPPP shall include a list of names of all contractors, (or subcontractors) and individuals responsible for implementation of the SWPPP. This list should include telephone numbers and addresses. Specific areas of responsibility of each subcontractor and emergency contact numbers should also be included.

14. Other Plans

This SWPPP may incorporate by reference the appropriate elements of other plans required by local, State, or Federal agencies. A copy of any requirements incorporated by reference shall be kept at the construction site.

15. Public Access

The SWPPP shall be provided, upon request, to the RWQCB. The SWPPP is considered a report that shall be available to the public by the RWQCB under section 308(b) of the Clean Water Act.

16. Preparer Certification

The SWPPP and each amendment shall be signed by the landowner (discharger) or his representative and include the date of initial preparation and the date of each amendment.

SECTION B: MONITORING PROGRAM AND REPORTING REQUIREMENTS

1. Required Changes

The RWQCB may require the discharger to conduct additional site inspections, to submit reports and certifications, or perform sampling and analysis.

2. Implementation

a. The requirements of this Section shall be implemented at the time of commencement of construction activity (see also Section A. 2. Implementation Schedule). The discharger is responsible for implementing these requirements until construction activity is complete and the site is stabilized.

b. For ongoing construction activity involving a change in ownership of property covered by this General Permit, the new owner must complete a NOI and implement the requirements of this Section concurrent with the change of ownership. For changes of information, the owner must follow instructions in C. 7. Special Provisions for Construction Activity of the General Permit.

3. Site Inspections

Qualified personnel shall conduct inspections of the construction site prior to anticipated storm events, during extended storm events, and after actual storm events to identify areas contributing to a discharge of storm water associated with construction activity. The name(s) and contact number(s) of the assigned inspection personnel shall be listed in the SWPPP. Pre-storm inspections are to ensure that BMPs are properly installed and maintained; post-storm inspections are to assure that the BMPs have functioned adequately. During extended storm events, inspections shall be required each 24-hour period. Best Management Practices (BMPs) shall be evaluated for adequacy and proper implementation and whether additional BMPs are required in accordance with the terms of the General Permit (see language in Section A. 11. Maintenance, Inspection, and Repair). Implementation of nonstorm water discharge BMPs shall be verified and their

effectiveness evaluated. One time discharges of non-storm water shall be inspected when such discharges occur.

4. Compliance Certification

Each discharger or qualified assigned personnel listed by name and contact number in the SWPPP must certify annually that construction activities are in compliance with the requirements of this General Permit and the SWPPP. This Certification shall be based upon the site inspections required in Item 3 of this Section. The certification must be completed by July 1 of each year.

5. Noncompliance Reporting

Dischargers who cannot certify compliance, in accordance with Item 4 of this Section and/or who have had other instances of noncompliance excluding exceedances of water quality standards as defined in section B. 3. Receiving Water Limitations Language, shall notify the appropriate RWQCB within 30 days. Corrective measures should be implemented immediately following discovery that water quality standards were exceeded. The notifications shall identify the noncompliance event, including an initial assessment of any impact caused by the event; describe the actions necessary to achieve compliance; and include a time schedule subject to the modifications by the RWQCB indicating when compliance will be achieved. Noncompliance notifications must be submitted within 30-calendar days of identification of noncompliance.

6. Monitoring Records

Records of all inspections, compliance certifications, and noncompliance reporting must be retained for a period of at least three years from the date generated. With the exception of noncompliance reporting, dischargers are not required to submit these records.

7. Monitoring Program for Sedimentation/Siltation

Dischargers of storm water associated with construction activity that directly enters a water body listed in Attachment 3 shall conduct a sampling and analysis program for the pollutants (sedimentation/siltation or turbidity) causing the impairment. The discharger shall monitor for the applicable parameter. If the water body is listed for sedimentation or siltation, samples should be analyzed for Settleable Solids (ml/l) and Total Suspended Solids (mg/l). Alternatively or in addition, samples may be analyzed for suspended sediment concentration according to ASTM D3977-97. If the water body is listed for turbidity, samples should be analyzed for turbidity (NTU). Discharges that flow through tributaries that are not listed in Attachment 3 or that flow into Municipal Separate Storm Sewer Systems (MS4) are not subject to these sampling and analysis requirements. The sampling and analysis parameters and procedures must be designed to determine whether the BMPs installed and maintained prevent discharges of sediment from contributing to impairment in receiving waters.

Samples shall be collected during the first two hours of discharge from rain events which result in a direct discharge to any water body listed in Attachment 3. Samples shall be collected during daylight hours (sunrise to sunset). Dischargers need not collect more than four (4) samples per month. All samples shall be taken in the receiving waters and shall be representative of the prevailing conditions of the water bodies. Samples shall be collected from safely accessible locations upstream of the construction site discharge and immediately downstream from the last point of discharge.

For laboratory analysis, all sampling, sample preservation, and analyses must be conducted according to test procedures under 40 CFR Part 136. Field samples shall be collected and analyzed according to the specifications of the manufacturer of the sampling devices employed. Portable meters shall be calibrated according to manufacturer's specification. All field and/or laboratory analytical data shall be kept in the SWPPP document, which is to remain at the construction site at all times until a Notice of Termination has been submitted and approved.

8. Monitoring Program for Pollutants Not Visually Detectable in Storm Water

A sampling and analysis program shall be developed and conducted for pollutants which are not visually detectable in storm water discharges, which are or should be known to occur on the construction site, and which could cause or contribute to an exceedance of water quality objectives in the receiving water. Pollutants that should be considered for inclusion in this sampling and analysis program are those identified in Sections A.5.b. and A.5.c.

Construction materials and compounds that are not stored in water-tight containers under a water-tight roof or inside a building are examples of materials for which the discharger may have to implement sampling and analysis procedures. The goal of the sampling and analysis is to determine whether the BMPs employed and maintained on site are effective in preventing the potential pollutants from coming in contact with storm water and causing or contributing to an exceedance of water quality objectives in the receiving waters. Examples of construction sites that may require sampling and analysis include: sites that are known to have contaminants spilled or spread on the ground; sites where construction practices include the application of soil amendments, such as gypsum, which can increase the pH of the runoff; or sites having uncovered stockpiles of material exposed to storm water. Visual observations before, during, and after storm events may trigger the requirement to collect samples. Any breach, malfunction, leakage, or spill observed which could result in the discharge of pollutants to surface waters that *would* not be visually detectable in storm water shall trigger the collection of a sample of discharge. Samples shall be collected at all discharge locations which drain the areas identified by the visual observations and which can be safely accessed. For sites where sampling and analysis is required, personnel trained in water quality sampling procedures shall collect storm water samples. A sufficiently large sample of storm water that has not come in contact with the disturbed soil or the materials stored or used on-site

(uncontaminated sample) shall be collected for comparison with the discharge sample. Samples shall be collected during the first two hours of discharge from rain events that occur during daylight hours and which generate runoff.

The uncontaminated sample shall be compared to the samples of discharge using field analysis or through laboratory analysis. Analyses may include, but are not limited to, indicator parameters such as: pH, specific conductance, dissolved oxygen, conductivity, salinity, and TDS.

For laboratory analysis, all sampling, sample preservation, and analyses must be conducted according to test procedures under 40 CFR Part 136. Field discharge samples shall be collected and analyzed according to the specifications of the manufacturer of the sampling devices employed. Portable meters shall be calibrated according to manufacturer's specification. All field and/or analytical data shall be kept in the SWPPP document, which is to remain at the construction site at all times until a *Notice of* Termination has been submitted and approved.

SECTION C: STANDARD PROVISIONS FOR CONSTRUCTION ACTIVITY

1. Duty to Comply

The discharger must comply with all of the conditions of this General Permit. Any permit noncompliance constitutes a violation of the Clean Water Act (CWA) and the Porter-Cologne Water Quality Control Act and is grounds for enforcement action and/or removal from General Permit coverage.

The discharger shall comply with effluent standards or prohibitions established under Section 307(a) of the CWA for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions, even if this General Permit has not yet been modified to incorporate the requirement.

2. General Permit Actions

This General Permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the discharger for a General Permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not annul any General Permit condition.

If any toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is promulgated under Section 307(a) of the CWA for a toxic pollutant which is present in the discharge and that standard or prohibition is more stringent than any limitation on the pollutant in this General Permit, this General Permit shall be modified or revoked and reissued to conform to the toxic effluent standard or prohibition and the dischargers so notified.

3. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a discharger in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this General Permit.

4. Duty to Mitigate

The discharger shall take all responsible steps to minimize or prevent any discharge in violation of this General Permit, which has a reasonable likelihood of adversely affecting human health or the environment.

5. Proper Operation and Maintenance

The discharger shall at all times properly operate and maintain any facilities and systems of treatment and control (and related appurtenances) which are installed or used by the discharger to achieve compliance with the conditions of this General Permit and with the requirements of Storm Water Pollution Prevention Plans (SWPPP). Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. Proper operation and maintenance may require the operation of backup or auxiliary facilities or similar systems installed by a discharger when necessary to achieve compliance with the conditions of this General Permit.

6. Property Rights

This General Permit does not convey any property rights of any sort or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor does it authorize any infringement of Federal, State, or local laws or regulations.

7. Duty to Provide Information

The discharger shall furnish the RWQCB, State Water Resources Control Board, or USEPA, within a reasonable time, any requested information to determine compliance with this General Permit. The discharger shall also furnish, upon request, copies of records required to be kept by this General Permit.

8. Inspection and Entry

The discharger shall allow the RWQCB, SWRCB, USEPA, and/or, in the case of construction sites which discharge through a municipal separate storm sewer, an authorized representative of the municipal operator of the separate storm sewer system receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to:

a. Enter upon the discharger's premises at reasonable times where a regulated construction activity is being conducted or where records must be kept under the conditions of this General Permit;

b. Access and copy at reasonable times any records that must be kept under the conditions of this General Permit;

c. Inspect at reasonable times the complete construction site, including any off-site staging areas or material storage areas, and the erosion/sediment controls; and

d. Sample or monitor at reasonable times for the purpose of ensuring General Permit compliance.

9. Signatory Requirements

a. All Notice of Intents (NOIs), Notice of Terminations (NOTs), SWPPPs, certifications, and reports prepared in accordance with this Order submitted to the SWRCB shall be signed as follows:

(1) For a corporation: by a responsible corporate officer. For the purpose of this Section, a responsible corporate officer means: (a) a president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or (b) the manager of the construction activity if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

(2) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or

(3) For a municipality, State, Federal, or other public agency: by either a principal executive officer, ranking elected official, or duly authorized representative. The principal executive officer of a Federal agency includes the chief executive officer of the agency or the senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrator of USEPA).

b. All SWPPPs, reports, certifications, or other information required by the General Permit and/or requested by the RWQCB, SWRCB, USEPA, or the local storm water management agency shall be signed by a person described above or by a duly authorized representative. A person is a duly authorized representative if:

(1) The authorization is made in writing by a person described above and retained as part of the SWPPP; or

(2) The authorization specifies either an individual or a position having responsibility for the overall operation of the construction activity, such as the position of manager, operator, superintendent, or position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position).

c. If an authorization is no longer accurate because a different individual or position has responsibility for the overall operation of the construction activity, a new authorization must be attached to the SWPPP prior to submittal of any reports, information, or certifications to be signed by the authorized representative.

10. Certification

Any person signing documents under Section C, Provision 9 above, shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is, true, accurate, and complete.

I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

11. Anticipated Noncompliance

The discharger will give advance notice to the RWQCB and local storm water management agency of any planned changes in the construction activity which may result in noncompliance with General Permit requirements.

12. Penalties for Falsification of Reports

Section 309(c)(4) of the CWA provides that any person who knowingly makes any false material statement, representation, or certification in any record or other document submitted or required to be maintained under this General Permit, including reports of compliance or noncompliance shall upon conviction, be punished by a fine of not more than $10,000 or by imprisonment for not more than two years or by both.

13. Oil and Hazardous Substance Liability

Nothing in this General Permit shall be construed to preclude the institution of any legal action or relieve the discharger from any responsibilities, liabilities, or penalties to which the discharger is or may be subject to under Section 311 of the CWA.

14. Severability

The provisions of this General Permit are severable; and, if any provision of this General Permit or the application of any provision of this General Permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this General Permit shall not be affected thereby.

15. Reopener Clause

This General Permit may be modified, revoked and reissued, or terminated for cause due to promulgation of amended regulations, receipt of USEPA guidance concerning regulated activities, judicial decision, or in accordance with 40 Code of Federal Regulations (CFR) 122.62, 122.63, 122.64, and 124.5.

16. Penalties for Violations of Permit Conditions

a. Section 309 of the CWA provides significant penalties for any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the CWA or any permit condition or limitation implementing any such section in a permit issued under Section 402. Any person who violates any permit condition of this General Permit is subject to a civil penalty not to exceed $27,500 per calendar day of such violation, as well as any other appropriate sanction provided by Section 309 of the CWA.

b. The Porter-Cologne Water Quality Control Act also provides for civil and criminal penalties which in some cases are greater than those under the CWA.

17. Availability

A copy of this General Permit shall be maintained at the construction site during construction activity and be available to operating personnel.

18. Transfers

This General Permit is not transferable. A new owner of an ongoing construction activity must submit a NOI in accordance with the requirements of this General Permit to be authorized to discharge under this General Permit. An owner who sells property covered

by this General Permit shall inform the new owner of the duty to file a NOI and shall provide the new owner with a copy of this General Permit.

19. Continuation of Expired Permit

This General Permit continues in force and effect until a new General Permit is issued or the SWRCB rescinds this General Permit. Only those dischargers authorized to discharge under the expiring General Permit are covered by the continued General Permit.

APPENDIX 6.5-G.1 – FPUD RECYCLED WATER OPTION AGREEMENTS

OPTION AGREEMENT

This Option Agreement (this "Agreement"), dated as of December 10, 2007, is between **FALLBROOK PUBLIC UTILITY DISTRICT**, a public utility district, with offices and principal place of business located at 990 East Mission Road, Fallbrook, California 92028 ("Optionor"), and **ORANGE GROVE ENERGY, L.P.**, a Delaware limited partnership, with offices and a principal place of business located at 1900 East Golf Road, Suite 1030, Schaumburg, Illinois 60173 ("Optionee"). Optionor and Optionee shall sometimes be referred to herein individually as a "Party" and collectively as the "Parties".

RECITALS

A. Optionee is a Delaware limited partnership that currently is developing a power plant project (the "Project") outside of the District's service area. As part of this Project, Orange Grove requires recycled water for cooling water, and other activities within the boundary of the Project.

B. Optionor is a public agency treating and serving water, recycled water and wastewater within a 28,000 acre service area in northwestern San Diego County. Optionor owns and operates a Water Reclamation Facility which treats wastewater and serves tertiary treated recycled water ("Recycled Water") within the Optionor's service area and by contract to customers outside the district.

C. Orange Grove has requested to purchase up to 45 acre-feet per year of recycled water from the District. District will deliver into trucks supplied by Orange Grove said recycled water at the District's wastewater treatment plant #1 site ("Delivery Site") near the intersection of Ammunition Road and Alturus Road for a term of twenty-five (25) years and two (2) months. Orange Grove has determined that the 45 acre-feet of recycled water allows for an adequate supply of cooling water for the Project.

D. Optionor has agreed to grant to Optionee, and Optionee has agreed to acquire from Optionor, an exclusive option to purchase Recycled Water on the terms and conditions set forth in the Recycled Water Agreement attached as Exhibit A (the "Recycled Water Agreement") for the purpose of constructing, operating, using and maintaining the Project (the "Option"), on the terms and conditions set forth in this Agreement.

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Optionor and Optionee hereby agree as follows:

1. Definitions. The following terms, as used in this Agreement, shall have the definitions set forth below:

"*Agreement*" shall have the meaning set forth in the preamble to this Agreement.

"*Applicable Laws*" shall mean any and all applicable laws, ordinances, codes, statutes, rules, regulations, orders, decisions, decrees, edicts, directives, permits and approvals issued by any Governmental Authority.

"*Business Day*" shall mean any day other than (a) a Saturday or Sunday, or (b) a day on which banking and savings and loan institutions in San Diego, California are authorized or obligated by law or executive order to be closed.

"*Commencement Date*" shall have the meaning set forth in Section 6(a) of this Agreement.

"*Delivery Site*" shall have the meaning set forth in Recital C of this Agreement

"*Effective Date*" shall have the meaning set forth in Section 2 of this Agreement.

"*Exercise Date*" shall have the meaning set forth in Section 7(a) of this Agreement.

"*Option*" shall have the meaning set forth in Recital D of this Agreement.

"*Option Consideration*" shall have the meaning set forth in Section 4(a) of this Agreement.

"*Optionee*" shall have the meaning set forth in the preamble to this Agreement.

"*Optionee Default*" shall have the meaning set forth in Section 14(a) of this Agreement.

"*Optionor*" shall have the meaning set forth in the preamble to this Agreement.

"*Optionor Default*" shall have the meaning set forth in Section 13(a) of this Agreement.

"*Party*" or "*Parties*" shall have the meaning set forth in the preamble to this Agreement.

"*Project*" shall have the meaning set forth in Recital A of this Agreement.

"*Recycled Water Agreement*" shall have the meaning set forth in Recital D of this Agreement.

"*Term*" shall have the meaning set forth in Section 6(a) of this Agreement.

2. Effectiveness of Agreement. This Agreement shall be effective as of the time that this Agreement shall have been duly executed by both Optionor and Optionee. The date that this Agreement shall have become effective in accordance with this Section 2 shall be referred to herein as the "Effective Date".

3. Grant of Option.

(a) Optionor hereby grants to Optionee, and Optionee hereby acquires from Optionor, the Option, on the terms and conditions set forth in this Agreement.

(b) Upon Optionee's exercise of the Option in accordance with this Agreement, Optionor and Optionee shall execute the Recycled Water Agreement.

4. Option Consideration.

(a) Optionee shall pay to Optionor the sum of [redacted] in immediately available funds (the "Option Consideration"), as consideration for the Option.

(b) All Option Consideration paid to or for the benefit of Optionor shall be refunded by Optionor to Optionee in the event of an Optionor Default, as defined in Section 13.

5. Deposit of Option Consideration into Optionor's Account. No later than five (5) Business Days after the Effective Date, Optionee shall deposit the Option Consideration into the following Optionor's account:

[redacted]

6. Term of Option.

(a) The term of the Option ("Term") shall commence as of the date that Optionor receives the Option Consideration. The date upon which the Term actually commences shall be referred to herein as the "Commencement Date".

(b) The Term shall expire as of 5:00 p.m. Pacific time on the date that is one (1) year after the Commencement Date (the "Expiration Date", as may be extended pursuant to Section 6(c)), provided, however, that before the Expiration Date, the Term shall terminate immediately upon the occurrence of any of the following: (i) Optionee's exercise of the Option in accordance with this Agreement, (ii) the occurrence of any Optionee Default, or (iii) Optionee's delivery of written notice to Optionor that Optionee is declining to exercise the Option. In the event that the Expiration Date occurs as a result of the event set forth in this Section 6(b)(iii), Optionee's sole liability to Optionor shall be the forfeit of the Option Consideration.

(c) At Optionee's election, the Term may be extended for one additional one (1) year period upon the payment of an [redacted]n immediately available funds by Optionee to Optionor at any time prior to the one year anniversary of the Commencement Date.

7. Exercise of Option.

(a) Optionee shall be conclusively deemed to have irrevocably exercised the Option, without condition or qualification, upon the occurrence of all of the following (the "Exercise Date"):

(i) Optionee shall have delivered to Optionor written notice of Optionee's exercise of the Option which notice shall be effective on a date set forth therein and no later than the Expiration Date; and

(ii) Optionee shall have delivered to Optionor a signed copy of the Recycled Water Agreement for Optionor's execution.

8. Optionee Covenants. Optionee agrees for the benefit of Optionor that:

(a) It shall not seek to obtain Recycled Water from any other third party during the Term; and

(b) It agrees to submit the Recycled Water Agreement and description of the facilities contained therein in its Small Power Plant Exemption application to the California Energy Commission.

9. Optionor Covenants. Optionor agrees for the benefit of Optionee that:

(a) It shall reserve the capability to provide Recycled Water to Optionee in the amounts contemplated under the Recycled Water Agreement for the term contemplated under the Recycled Water Agreement; and

(b) Upon exercise of the Option by the Optionee, it shall execute the Recycled Water Agreement within three (3) Business Days after the Exercise Date.

10. Optionor's Representations and Warranties. Optionor hereby represents and warrants, as of the Effective Date and the Exercise Date:

(a) Organization; Standing; Power; Authority. Optionor is a public utility district, duly organized and existing in the State of California, and has the requisite right, power and authority to execute, deliver and perform the terms and conditions of this Agreement and to consummate the transactions contemplated in the Agreement. Except for actions that may be necessary to satisfy the San Diego Regional Water Quality Control Board, Optionor has taken all corporate action necessary to authorize the execution, delivery and performance of the terms and conditions of the Agreement. The individual executing the Agreement has been duly authorized to do so. The performance by Optionor of Optionor's obligations and responsibilities under the Agreement will not violate or constitute a default under the terms and provisions of Optionor's bylaws or any material agreement, document or instrument to which Optionor is a party. All proceedings required to be taken by or on behalf of Optionor to authorize Optionor to execute, deliver and perform the terms and conditions of the Agreement have been duly and properly taken. No further consent of any person or entity, except possibly the San Diego Regional Water Quality Control Board, is required in connection with the execution and delivery of, or performance by Optionor of its obligations under the Agreement

(b) Enforceability. The Agreement constitute or shall constitute the valid and binding obligation of Optionor, enforceable against Optionor in accordance with their terms, except as such enforcement may be limited by (i) the effect of bankruptcy, insolvency, reorganization, receivership, conservatorship, arrangement, moratorium or other Applicable Laws affecting or relating to the rights of creditors generally, or (ii) the rules governing the availability of specific performance, injunctive relief or other equitable remedies and general principles of equity, regardless of whether considered in a proceeding in equity or at law.

11. Optionee's Representations and Warranties. Optionee hereby represents and warrants, as of the Effective Date and the Exercise Date:

(a) Organization; Standing; Power; Authority. Optionee is a Delaware limited partnership duly organized and existing in the State of Delaware, and has the requisite right, power and authority to execute, deliver and perform the terms and conditions of this Agreement, and to consummate the transactions contemplated in this Agreement. Optionee has taken all corporate action necessary to authorize the execution, delivery and performance of the terms and conditions of the Agreement. The individual executing the Agreement has been duly authorized to do so. The performance by Optionee of Optionee's obligations and responsibilities under the Agreement will not violate or constitute a default under the terms and provisions of Optionee's partnership agreement or any material agreement, document or instrument to which Optionee is a party or by which Optionee is bound or affected. All proceedings required to be taken by or on behalf of Optionee to authorize Optionee to execute, deliver and perform the terms and conditions of the Agreement have been duly and properly taken. No further consent of any person or entity is required in connection with the execution and delivery of, or performance by Optionee of its obligations under the Agreement.

(b) Enforceability. The Agreement constitute or shall constitute the valid and binding obligation of Optionee, enforceable against Optionee in accordance with their terms, except as such enforcement may be limited by (i) the effect of bankruptcy, insolvency, reorganization, receivership, conservatorship, arrangement, moratorium or other Applicable Laws affecting or relating to the rights of creditors generally, or (ii) the rules governing the availability of specific performance, injunctive relief or other equitable remedies and general principles of equity, regardless of whether considered in a proceeding in equity or at law.

12. Conditions Precedent to Exercise of Option. All of the following shall be conditions precedent to Optionee's exercise of the Option in accordance with this Agreement (any of which conditions Optionor may waive in its sole discretion):

(a) Optionor shall have received the Option Consideration; and

(b) No Optionee Default shall have occurred, and Optionee shall have performed, in all material respects, all covenants and obligations to be performed by Optionee under this Agreement.

13. Optionor Default.

(a) The occurrence of any of the following shall constitute an "Optionor Default" under this Agreement:

(i) The failure to perform any obligation or responsibility of Optionor set forth in this Agreement, provided that Optionor does not cure such failure within thirty (30) days after delivery of written notice of such failure to Optionor or, if such failure is not capable of being cured within said thirty (30) day period, then Optionor does not commence to cure such failure within thirty (30) days after delivery of written notice of such failure to Optionor or thereafter does not diligently prosecute such cure to completion.

(b) Upon the occurrence of any Optionor Default, Optionee shall have the right to pursue any and all remedies at law or in equity that are available to Optionee as a result of such Optionor Default, including but not limited to the right to pursue injunctive relief or specific performance of this Agreement and the Recycled Water Agreement.

14. Optionee Default.

(a) The occurrence of any of the following shall constitute an "Optionee Default" under this Agreement:

(i) The failure to pay the Option Consideration when due; or

(ii) The failure to perform any other obligation or responsibility of Optionee set forth in this Agreement, provided that Optionee does not cure such failure within thirty (30) days after delivery of written notice of such failure to Optionee or, if such failure is not capable of being cured within said thirty (30) day period, then Optionee does not commence to cure such failure within thirty (30) days after delivery of written notice of such failure to Optionee or thereafter does not diligently prosecute such cure to completion.

(b) Upon the occurrence of any Optionee Default, Optionor shall have the right to pursue any and all remedies at law or in equity that are available to Optionor as a result of such Optionee Default.

15. Assignment. Except as otherwise permitted herein, neither Party shall assign any right, title, interest or obligation under this Agreement to any person without the prior written consent of the other Party, which consent shall not be unreasonably withheld, conditioned or delayed. In connection with Optionee's collateral assignment of this Agreement to

16. Waiver of Performance. Either Party may waive the satisfaction or performance of any terms or conditions of this Agreement that have been included in this Agreement for its benefit, so long as such waiver is in writing, specifies the waived term or condition and delivered to the other Party.

17. Notices. All notices under this Agreement shall be in writing and shall be effective upon actual receipt whether delivered by personal delivery, legible facsimile or reputable overnight courier or sent by United States registered or certified mail, return receipt requested, postage prepaid, addressed to the Parties as follows:

If to Optionor:
Fallbrook Public Utility District
P.O. Box 2290
Fallbrook, California, 92088-2290
Attention: General Manager
Telephone: (760) 728-1125
Facsimile: (760) 728-5943

If to Optionee:
Orange Grove Energy, L.P.
1900 East Golf Road, Suite 1030
Schaumburg, Illinois 60173
Attention: Vice President of Asset Management
Telephone: (847) 908-2800
Facsimile: (847) 908-2888

With a copy to:
Morgan, Lewis & Bockius LLP
300 South Grand Avenue, Suite 220
Los Angeles, CA 90071-3132
Attention: Richard A. Shortz
Telephone: (213) 612-2526
Facsimile: (213) 612-2501

18. Amendments. This Agreement may be amended only by written agreement signed by both of the Parties.

19. Time of the Essence. Time and each of the terms and conditions of this Agreement are hereby expressly made of the essence.

20. Counterparts. This Agreement may be executed in counterparts, each of which shall be deemed an original and all of which shall constitute one and the same agreement.

21. Governing Law and Venue. This Agreement shall be governed by the laws of the State of California, without reference to its choice of law provisions. By execution and delivery of this Agreement, each of Optionor and Optionee hereby irrevocably and unconditionally accepts and submits to the personal jurisdiction of said courts.

22. Attorneys' Fees and Costs. In any action between the Parties seeking the enforcement of any of the terms or conditions of this Agreement, the prevailing Party in such action shall

delivery of this Agreement, each of Optionor and Optionee hereby irrevocably and unconditionally accepts and submits to the personal jurisdiction of said courts.

22. Attorneys' Fees and Costs. In any action between the Parties seeking the enforcement of any of the terms or conditions of this Agreement, the prevailing Party in such action shall be awarded, in addition to any damages or equitable relief, its reasonable attorney's fees and costs.

23. Prior Agreements. This Agreement supersedes any and all oral or written agreements between the Parties which are prior in time to this Agreement. Neither Optionor nor Optionee shall be bound by any prior understanding, agreement, promise, representation or stipulation, express or implied, not specified herein.

24. Further Assurance. Optionee and Optionor agree to execute all documents and instruments reasonably required in order to consummate the transactions contemplated in this Agreement.

25. Successors and Assigns. This Agreement shall be binding upon and shall inure to the benefit of the successors and assigns of the Parties.

26. Severability. If any portion of this Agreement is held to be unenforceable by a court of competent jurisdiction, the remainder of this Agreement shall remain in full force and effect. In the event any such provision of this Agreement is so held unenforceable, the Parties shall promptly renegotiate in good faith new provisions to restore this Agreement as near as possible to its original intent and effect.

27. Construction of Agreement. The language in all parts of this Agreement shall be in all cases construed simply according to its fair meaning and not strictly for or against either of the Parties. The language of this Agreement and all documents and instruments referred to in this Agreement have been prepared, examined, negotiated and revised by each Party and its legal counsel, and no implication shall be drawn and no provision shall be construed against any Party by virtue of the purported identity of the drafter of this Agreement. The section headings of this Agreement are for purposes of reference only and shall not be used for limiting or interpreting the meaning of any section of this Agreement. When required by the context, whenever the singular is used in this Agreement, the same shall include the plural, and the plural shall include the singular, the masculine gender shall include the feminine and neuter genders, and vice versa. As used in this Agreement, the term "Optionor" shall include the respective successors and assigns of Optionor, and the term "Optionee" shall include the successors and permitted assigns of Optionee.

28. No Partnership or Joint Venture. Optionor and Optionee shall not be partners or joint venturers with each other and nothing in this Agreement shall create or be deemed to create any partnership or joint venture between Optionor and Optionee.

[Signatures appear on following page.]

IN WITNESS WHEREOF, Optionor and Optionee hereby execute this Agreement as of the date first above written.

OPTIONOR

FALLBROOK PUBLIC UTILITY DISTRICT,
a public utility district

By: _____
Name: Keith Lewinger
Title: G.M.

OPTIONEE

ORANGE GROVE ENERGY, L.P.., a Delaware limited partnership

By: _____
Name: Stephen J. Thome
Title: Vice President

EXHIBIT A TO OPTION AGREEMENT
RECYCLED WATER AGREEMENT

[See attached.]

ORANGE GROVE ENERGY, L.P. RECYCLED WATER AGREEMENT

This Recycled Water Agreement (this "Agreement") is entered into by and between the **FALLBROOK PUBLIC UTILITY DISTRICT**, a public utility district organized and operating pursuant to California Public Utility Code §15501 et seq. (hereinafter "District") and **ORANGE GROVE ENERGY** (hereinafter referred to as "Orange Grove"). This Agreement shall become effective execution by the parties.

R-E-C-I-T-A-L-S

A. Orange Grove is a limited partnership that currently is developing a power plant project (the "Project") outside of the District's service area. As part of this Project, Orange Grove requires recycled water for cooling water, and other activities within the boundary of the Project.

B. The District is a public agency treating and serving water, recycled water and wastewater within a 28,000 acre service area in northwestern San Diego County. The District owns and operates a Water Reclamation Facility which treats wastewater and serves tertiary treated recycled water within the District's service area and by contract to customers outside the District.

C. Orange Grove has requested to purchase up to 45 acre-feet per year of recycled water from the District. District will deliver into trucks supplied by Orange Grove said recycled water at the District's wastewater treatment plant #1 site ("Delivery Site") near the intersection of Ammunition Road and Alturus Road for a term of twenty-five (25) years and two (2) months. Orange Grove has determined that the 45 acre-feet of recycled water allows for an adequate supply of cooling water for the Project.

D. The District has agreed to sell tertiary recycled water to Orange Grove in accordance with all terms of this Agreement.

E. Orange Grove has agreed to purchase the recycled water from the District in accordance with all terms of this Agreement.

F. The term of this Agreement is twenty-five (25) years and two (2) months from the Agreement Start Date (as defined below).

C-O-V-E-N-A-N-T-S

1. Sale of Recycled Water by District. The District agrees to sell and Orange Grove agrees to purchase, commencing on the Agreement Start Date, no less than 45 acre feet per year of tertiary recycled water for a

term of 25 years and 2 months. The 45 acre feet per year shall be purchased on a take or pay basis on an annual basis commencing on the Agreement Start Date. This payment for the first 45 acre feet each year is not pro-ratable and shall be paid on the annual anniversary of the Agreement Start Date in advance of the next 12 month period during the entire term of this Agreement. Payment for the first year's 45 acre feet shall be made upon the Agreement Start Date and on an annual basis on the anniversary date thereafter. The last annual payment shall be pro-rated for 2 months. A late charge equivalent to one and one half percent (1½ %) per month shall be levied for each day (pro rated) the payment for the first 45 acre feet is paid following the due date (annual anniversary date of the Agreement Start Date). Any recycled water delivered in excess of 45 acre feet in any year shall be billed in the month following delivery.

2. Fees Paid to District and the Price For Recycled Water and Future Price Increases. The commodity price for the recycled water sold by the District to Orange Grove shall be at the rate set by the District Board of Directors from time to time, in its sole discretion. The commodity rate for customers inside the District as of October 15, 2007 is $1.78 per thousand gallons. The District makes no guarantee about future price increases and intends to sell recycled water to Orange Grove at a recycled water rate based on the rate established for customers inside the District's formal boundaries. The recycled water commodity rate to be paid by Orange Grove shall include a capacity charge/premium charge for payment to acquire new capacity equal to [redacted] of the commodity rate for customers inside the District. Orange Grove's total commodity rate shall therefore be [redacted] of the commodity rate paid by customers inside the District's boundaries. Orange Grove will also pay a monthly system access charge for the meter which is set for their use at the Delivery Site, currently $373.50 per month for a 6-inch meter. This monthly system access charge is subject to increases in the future and shall be at the rate set by the District Board of Directors, in its sole discretion and is payable regardless of the quantity of recycled water delivered. The monthly system access fee for each 12 month period shall be paid in advance on the Agreement Start Date of this agreement and on the anniversary of the Agreement Start Date thereafter. A late charge equivalent to one and one half percent (1½ %) per month shall be levied for each day (pro rated) the fee is paid following the due date (annual anniversary date of this agreement).

In addition to the price for the recycled water set by the District, an additional annual independent fixed fee of [redacted] for the guarantee of a long term supply as well as out of District transfer shall be paid by Orange Grove to the District above and beyond the rate charged for the recycled water. Both parties agree that this [redacted] annual fee is an independent fee paid to District for the guarantee of a long term supply and is payable

on the Agreement Start Date of this agreement and on the anniversary date of the Agreement Start Date thereafter. This [redacted] payment is not pro-ratable and shall be paid upon execution of this agreement and on the annual anniversary of this agreement in advance of the next 12 month period during the entire term of this Agreement. A late charge equivalent to one and one half percent (1½ %) per month shall be levied for each day (pro rated) the fee is paid following the due date (annual anniversary date of the Agreement Start Date).

3. Responsibility and Indemnity for Recycled Water after Delivery. Orange Grove recognizes that by entering into this Agreement, Orange Grove is solely responsible for the use and transportation of all recycled water once it is supplied to Orange Grove at the Point of Delivery, which is defined as Orange Grove water trucks at the District's Wastewater Treatment Plant #1 site near the intersection of Alturas Road and Ammunition Road. Once the recycled water is delivered at the Point of Delivery, the District shall have no liability for the transportation and use of the recycled water by Orange Grove. All liability for the transportation and use of the recycled water after receipt at the Delivery Site shall be assumed by Orange Grove. Orange Grove agrees to indemnify and hold the District harmless and defend the District and its directors, officers, employees, agents, and representatives from and against any and all claims, causes of action, suits, actions, damages, losses, costs, fees, expenses, fines, and penalties, of whatever type or nature, including all costs of defense and attorney fees, caused in whole or in part, or claimed to be caused in whole or in part by the action, inaction, passive or active negligence, or intentional misconduct of Orange Grove in the receipt, use and transportation of the recycled water after receipt at the Delivery Site

   For acts in the exclusive control of the District and occurring prior to delivery to Orange Grove, the District agrees to indemnify and hold Orange Grove harmless and defend Orange Grove and its directors, officers, employees, agents, and representatives from and against any and all claims, causes of action, suits, actions, damages, losses, costs, fees, expenses, fines, and penalties, of whatever type or nature, including all costs of defense and attorney fees, caused in whole or in part, or claimed to be caused in whole or in part by the action, inaction, passive or active negligence, or intentional misconduct of the District with respect to the District's obligations under this Agreement.

4. Quality of Recycled Water Delivered by District. District agrees that all recycled water sold to Orange Grove shall meet all requirements of the State of California for Title 22 tertiary treated recycled water. District shall be responsible for ensuring that all recycled water delivered or sold to Orange Grove at the Delivery Site meets all recycled water standards as defined by California Title 22.

5. Term of Agreement and Termination. Unless either of the parties is in breach of any term or provision of this Agreement, this Agreement shall remain in full force and effect for a term of 25 years and 2 months after the Agreement Start Date. Agreement Start Date shall commence after the completion of the New Facilities (as defined below) or four months after the execution of this agreement, whichever occurs last. Orange Grove's obligations to purchase the recycled water under this Agreement shall commence on the Agreement Start Date and continue for a period of 25 years and 2 months thereafter. Regardless of whether Orange Grove takes delivery of less than 45 acre feet in any year, Orange Grove must still pay for a minimum of 45 acre feet each year and pay system access fees for 12 months and the independent annual fee of [redacted] annually not later than each anniversary of the agreement and any and all fees owed for recycled water used in that year by Orange Grove. Orange Grove's choosing not to take delivery of recycled water for any period of time whatsoever, does not terminate the agreement nor the requirement to pay for a minimum of 45 acre feet of recycled water for the remaining years of the agreement nor the obligation to pay the monthly service charges nor the independent fee each year for the full 25 years and 2 months of the term of this agreement. Failure to pay the independent annual fee within 30 calendar days of the anniversary of the Agreement Start Date shall be construed as a breach of this agreement by Orange Grove and subject the agreement to cancellation by the District in its sole discretion, as well as remedies for breach in paragraph 6 below.

6. Remedies for Breach. In the event of a breach of any term or provision of this Agreement by either party, both parties shall have all rights and remedies granted by California law. Nothing contained in this Agreement shall be construed as limiting any of the rights and remedies of either parties upon any breach of a term or provision of this Agreement.

7. Installation of Improvements, Priority of Use. As a material term of this Agreement, Orange Grove shall pay for all new capital facilities that will be necessary to fill Orange Grove's trucks at the Delivery Site. These improvements include at a minimum, but are not limited to approximately 600 feet of 24' wide asphalt road way, water handling facilities including 6-inch meter necessary to fill the trucks, concrete loading pad, and other ancillary appurtenances as may be required by the District in its sole discretion (collectively, the "New Facilities"). It is anticipated that the trucks transporting the recycled water for Orange Grove will be able to turn within a 100' cul de sac, and that a 24' wide road would provide sufficient width for two trucks to pass each other coming in or out of the site. These improvements are currently estimated to cost [redacted] however in no case are the costs for the improvements limited to this amount. The District shall be responsible for

constructing the New Facilities. The District shall construct the New Facilities within four (4) months after the date of this Agreement. All improvements determined necessary by the District must be completed prior to commencing deliveries, and no hauling will be allowed until all necessary regulatory permits (if any) are acquired by Orange Grove. Within three (3) working days after execution of this agreement, Orange Grove shall deposit with the District the engineer's estimate of the aforementioned New Facilities. Such deposits shall solely be used for the costs of constructing the New Facilities. Upon completion of construction of the New Facilities, any amounts remaining will be returned to Orange Grove within thirty (30) days after the completion of construction and payment of all invoices relating to construction. If construction costs exceed the amount deposited by Orange Grove, Orange Grove shall pay such additional costs after being notified by the District of any such additional costs. Orange Grove acknowledges and agrees that the District shall be entitled to use the New Facilities. The District agrees that no third party shall have any right to use such New Facilities if such use would interfere in any way with Orange Grove's access. The District shall notify Orange Grove of any proposed third party use and obtain Orange Grove's acknowledgment and agreement that the proposed used will not interfere with Orange Grove's access. Such agreement shall not be unreasonably withheld. The Parties agree that the District shall own the New Facilities and the District agrees to pay for on-going maintenance and any further improvements of the New Facilities. The District shall construct the New Facilities and the Delivery Site to include a meter and secure access to the spigot.

8. Transportation Route between Delivery Site and Orange Grove's Power Plant. The parties agree that Merida Drive is a heavily traveled residential street in the vicinity of the Delivery Site. The parties also agree that local residents would not approve of additional truck traffic on Merida Drive. Therefore, if an Orange Grove water truck chooses to travel on Merida Drive, either to or from the Delivery Site, then Orange Grove agrees to pay an extra fee to the District of $1,000 per occurrence. A time/date stamped photograph of any such occurrence shall be sufficient evidence to require the $1,000 payment. Such fees shall be due and payable within 30 days of presentation of evidence of travel on Merida Drive by Orange Grove trucks.

9. Completion of CEQA Review and Other Permits Orange Grove shall be solely responsible for complying with all California Environmental Quality Act (CEQA) and National Environmental Protection Act (NEPA) requirements necessary for Orange Grove's receipt, use and transportation of the recycled water under this agreement, if applicable. Orange Grove shall also be solely responsible for any and all permits required under any state, federal or local law for its receipt, use and

transportation of recycled water under this agreement. No recycled water will be delivered to Orange Grove until all CEQA and NEPA certifications are complete and all necessary permits have been obtained by Orange Grove.

10. District's Representations and Warranties. District hereby represents and warrants, as of the Effective Date and the Exercise Date:

(a) Organization; Standing; Power; Authority. District is a public utility district, duly organized and existing in the State of California, and has the requisite right, power and authority to execute, deliver and perform the terms and conditions of this Agreement and to consummate the transactions contemplated in the Agreement. Except for actions that may be necessary to satisfy the San Diego Regional Water Quality Control Board, District has taken all corporate action necessary to authorize the execution, delivery and performance of the terms and conditions of the Agreement. The individual executing the Agreement has been duly authorized to do so. The performance by District of District's obligations and responsibilities under the Agreement will not violate or constitute a default under the terms and provisions of District's bylaws or any material agreement, document or instrument to which District is a party or by which District. All proceedings required to be taken by or on behalf of District to authorize District to execute, deliver and perform the terms and conditions of the Agreement have been duly and properly taken. No further consent of any person or entity, except possibly the San Diego Regional Water Quality Control Board, is required in connection with the execution and delivery of, or performance by District of its obligations under the Agreement.

(b) Enforceability. The Agreement constitute or shall constitute the valid and binding obligation of District, enforceable against District in accordance with their terms, except as such enforcement may be limited by (i) the effect of bankruptcy, insolvency, reorganization, receivership, conservatorship, arrangement, moratorium or other Applicable Laws affecting or relating to the rights of creditors generally, or (ii) the rules governing the availability of specific performance, injunctive relief or other equitable remedies and general principles of equity, regardless of whether considered in a proceeding in equity or at law.

11. Orange Grove's Representations and Warranties. Orange Grove hereby represents and warrants, as of the Effective Date and the Exercise Date:

(a) Organization; Standing; Power; Authority. Orange Grove is a Delaware limited partnership duly organized and existing in the State of Delaware, and has the requisite right, power and authority to execute, deliver and perform the terms and conditions of this Agreement, and to consummate the transactions contemplated in this Agreement. Orange Grove has taken all corporate action necessary to authorize the execution, delivery and performance of the terms and conditions of the Agreement. The individual executing the Agreement has been duly authorized to do so. The performance by Orange Grove of Orange Grove's obligations and responsibilities under the Agreement

will not violate or constitute a default under the terms and provisions of Orange Grove's partnership agreement or any material agreement, document or instrument to which Orange Grove is a party or by which Orange Grove is bound or affected. All proceedings required to be taken by or on behalf of Orange Grove to authorize Orange Grove to execute, deliver and perform the terms and conditions of the Agreement have been duly and properly taken. No further consent of any person or entity is required in connection with the execution and delivery of, or performance by Orange Grove of its obligations under the Agreement.

(b) Enforceability. The Agreement constitute or shall constitute the valid and binding obligation of Orange Grove, enforceable against Orange Grove in accordance with their terms, except as such enforcement may be limited by (i) the effect of bankruptcy, insolvency, reorganization, receivership, conservatorship, arrangement, moratorium or other Applicable Laws affecting or relating to the rights of creditors generally, or (ii) the rules governing the availability of specific performance, injunctive relief or other equitable remedies and general principles of equity, regardless of whether considered in a proceeding in equity or at law.

12. Miscellaneous Provisions.

A. California Law. California law shall govern all terms of this Agreement.

B. Venue. In the event any arbitration or litigation is commenced to enforce, interpret or invalidate any terms or provisions of this Agreement, the parties agree that venue shall lie only in the Superior Court for the North County Judicial District, County of San Diego, State of California.

C. Modification. This Agreement may not be altered in whole or in part except by a modification, in writing, executed by all the parties to this Agreement.

D. Attorney's Fees. In the event of any arbitration or legal or equitable proceeding to invalidate, enforce, challenge, or interpret any terms of this Agreement, the prevailing party shall be entitled to all attorney's fees and costs in addition to any other relief granted by law. The prevailing party shall also be entitled to recover all such fees and costs during any appeals and during any bankruptcy proceedings.

E. Entire Agreement. This Agreement, together with all exhibits attached to this Agreement contains all representations and the entire understanding between the parties with respect to the subject matter of this Agreement. Any prior correspondence, memoranda, or agreements, whether or nor such correspondence, memoranda, or agreements are in conflict with this Agreement, are intended to be replaced in total by this Agreement and its exhibits. The parties

mutually declare there are no oral understandings or promises not contained in this Agreement which contains the complete, integrated, and final agreement between the parties.

F. Binding Effect. This Agreement shall inure to the benefit of and be binding upon the parties and their respective purchasers, successors, heirs, and assigns.

G. Unenforceable Provisions. The terms and conditions and covenants of this Agreement shall be construed whenever possible as consistent with all applicable laws and regulations. To the extent that any provision of this Agreement, as so interpreted, is held to violate any applicable law or regulation, the remaining provisions shall nevertheless be carried into full force and effect and remain enforceable.

H. Representation of Capacity to Contract. Each party to this Agreement represents and warrants that he or she has the authority to execute this Agreement on behalf of the entity represented by that individual and that this Agreement is final and binding upon both parties.

I. Opportunity to be Represented by Independent Counsel. Each of the parties to this Agreement warrant and represent that they have been advised to consult independent legal counsel of their own choosing and have done so prior to executing this Agreement.

J. No Waiver. The failure of either party to enforce any term, covenant, or condition of this Agreement on the date it is to be performed shall not be construed as a waiver of either party's right to enforce this, or any other term, covenant, or condition of this Agreement. No waiver shall occur unless the waiver is stated expressly in writing and signed by the party waiving the right. No oral waivers shall be effective for any purpose.

K. Effective Date. The effective date of this Agreement executed in counterparts within the North County Judicial District, County of San Diego, State of California, is _____.

L. Counterparts and Facsimile Signatures. This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. Facsimile signatures shall be permitted and shall be treated as original signatures for all purposes.

13. Assignment. Neither party shall assign its rights to this Agreement without the prior written consent of the other party; provided that Orange Grove shall be

permitted to collaterally assign its rights under this Agreement to the lenders providing financing to Orange Grove with respect to the Project.

14. Further Documents and Acts, Financing Cooperation. Each of the parties hereto agrees to cooperate in good faith with each other, and to execute and deliver such further documents and perform such other acts as may be reasonably necessary or appropriate to consummate and carry into effect the transactions contemplated under this Agreement The District agrees that such cooperation to execute further documents hereunder includes executing consents to collateral assignment and providing opinions of counsel as may be requested by the lenders providing financing to Orange Grove with respect to the Project.

Dated: _____, 2007 FALLBROOK PUBLIC UTILITY DISTRICT,

a Public Utility District

By:_____
Keith Lewinger, General Manager

Dated: _____, 2007 ORANGE GROVE ENERGY, L.P.,
a Delaware limited partnership

By:_____

Orange Grove Energy Recycled Water Agreement
List of Exhibits

1. Exhibit "A" Map of Orange Grove Energy "Project" Site

2. Exhibit "B" Plot of Location of the Fallbrook Public Utility District Treatment Plant and Tank Truck Filling Site, (Delivery Site).

APPENDIX 6.5-G.2 – FPUD FRESH WATER OPTION AGREEMENTS

POTABLE WATER OPTION AGREEMENT

This Option Agreement (this "Agreement"), dated as of July 3, 2008, is between **FALLBROOK PUBLIC UTILITY DISTRICT**, a public utility district, with offices and principal place of business located at 990 East Mission Road, Fallbrook, California 92088 ("Optionor"), and **ORANGE GROVE ENERGY, L.P.**, a Delaware limited partnership, with offices and a principal place of business located at 1900 East Golf Road, Suite 1030, Schaumburg, Illinois 60173 ("Optionee"). Optionor and Optionee shall sometimes be referred to herein individually as a "Party" and collectively as the "Parties".

RECITALS

A. Optionee is a Delaware limited partnership that currently is developing a power plant project (the "Project") outside of the District's service area. As part of this Project, Orange Grove requires potable water for cooling water, and other activities within the boundary of the Project.

B. Optionor is a public agency treating and serving water, potable water and wastewater within a 28,000 acre service area in northwestern San Diego County. Optionor owns and operates a Water Reclamation Facility which treats wastewater and serves tertiary treated recycled water ("Recycled Water") within the Optionor's service area and by contract to customers outside the district.

C. Orange Grove has requested to purchase up to 62 acre-feet per year of potable water from the District with supply to Orange Grove provided trucks at the District's Potable Water Filling Station site ("Delivery Site") near the intersection of Mission Road and Live Oak Park Road for a term of 25 years and 2 months. The 62 acre-feet of potable water allows for an adequate supply of potable water for the Project.

D. Optionor has agreed to grant to Optionee, and Optionee has agreed to acquire from Optionor, an exclusive option to purchase Potable Water on the terms and conditions set forth in the Potable Water Agreement attached as Exhibit A (the "Potable Water Agreement") for the purpose of constructing, operating, using and maintaining the Project (the "Option"), on the terms and conditions set forth in this Agreement.

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Optionor and Optionee hereby agree as follows:

1. Definitions. The following terms, as used in this Agreement, shall have the definitions set forth below:

"*Agreement*" shall have the meaning set forth in the preamble to this Agreement.

"*Applicable Laws*" shall mean any and all applicable laws, ordinances, codes, statutes, rules, regulations, orders, decisions, decrees, edicts, directives, permits and approvals issued by any Governmental Authority.

"*Business Day*" shall mean any day other than (a) a Saturday or Sunday, or (b) a day on which banking and savings and loan institutions in San Diego, California are authorized or obligated by law or executive order to be closed.

"*Commencement Date*" shall have the meaning set forth in Section 6(a) of this Agreement.

"*Delivery Site*" shall have the meaning set forth in Recital C of this Agreement

"*Effective Date*" shall have the meaning set forth in Section 2 of this Agreement.

"*Exercise Date*" shall have the meaning set forth in Section 7(a) of this Agreement.

"*Option*" shall have the meaning set forth in Recital D of this Agreement.

"*Option Consideration*" shall have the meaning set forth in Section 4(a) of this Agreement.

"*Optionee*" shall have the meaning set forth in the preamble to this Agreement.

"*Optionee Default*" shall have the meaning set forth in Section 14(a) of this Agreement.

"*Optionor*" shall have the meaning set forth in the preamble to this Agreement.

"*Optionor Default*" shall have the meaning set forth in Section 13(a) of this Agreement.

"*Party*" or "*Parties*" shall have the meaning set forth in the preamble to this Agreement.

"*Project*" shall have the meaning set forth in Recital A of this Agreement.

"*Potable Water Agreement*" shall have the meaning set forth in Recital D of this Agreement.

"*Term*" shall have the meaning set forth in Section 6(a) of this Agreement.

2. Effectiveness of Agreement. This Agreement shall be effective as of the time that this Agreement shall have been duly executed by both Optionor and Optionee. The date that this Agreement shall have become effective in accordance with this Section 2 shall be referred to herein as the "Effective Date".

3. Grant of Option.

(a) Optionor hereby grants to Optionee, and Optionee hereby acquires from Optionor, the Option, on the terms and conditions set forth in this Agreement.

(b) Upon Optionee's exercise of the Option in accordance with this Agreement, Optionor and Optionee shall execute the Potable Water Agreement.

4. Option Consideration.

(a) Optionee shall pay to Optionor the sum of [redacted] No/100 Dollars [redacted] in immediately available funds (the "Option Consideration"), as consideration for the Option.

(b) All Option Consideration paid to or for the benefit of Optionor shall be refunded by Optionor to Optionee in the event of an Optionor Default, as defined in Section 13.

5. Deposit of Option Consideration into Optionor's Account. No later than five (5) Business Days after the Effective Date, Optionee shall deposit the Option Consideration into the following Optionor's account:

Account Name Fallbrook Public Utility District Depository Account
Account Number #: [redacted]
Routing Number #: [redacted]
Attention: [redacted]

6. Term of Option.

(a) The term of the Option ("Term") shall commence as of the date that Optionor receives the Option Consideration. The date upon which the Term actually commences shall be referred to herein as the "Commencement Date".

(b) The Term shall expire as of 5:00 p.m. Pacific time on the date that is one (1) year after the Commencement Date (the "Expiration Date", as may be extended pursuant to Section 6(c)), provided, however, that before the Expiration Date, the Term shall terminate immediately upon the occurrence of any of the following: (i) Optionee's exercise of the Option in accordance with this Agreement, (ii) the occurrence of any Optionee Default, or (iii) Optionee's delivery of written notice to Optionor that Optionee is declining to exercise the Option. In the event that the Expiration Date occurs as a result of the event set forth in this Section 6(b)(iii), Optionee's sole liability to Optionor shall be the forfeit of the Option Consideration.

(c) At Optionee's election, the Term may be extended for one additional one (1) year period upon the payment of an additional [redacted] and No/100 Dollars [redacted] in immediately available funds by Optionee to Optionor at any time prior to the one year anniversary of the Commencement Date.

7. Exercise of Option.

(a) Optionee shall be conclusively deemed to have irrevocably exercised the Option, without condition or qualification, upon the occurrence of all of the following (the "Exercise Date"):

(i) Optionee shall have delivered to Optionor written notice of Optionee's exercise of the Option which notice shall be effective on a date set forth therein and no later than the Expiration Date; and

(ii) Optionee shall have delivered to Optionor a signed copy of the Potable Water Agreement for Optionor's execution.

8. Optionee Covenants. Optionee agrees for the benefit of Optionor that:

(a) It shall not seek to obtain Potable Water from any other third party during the Term; and

(b) [It agrees to submit the Potable Water Agreement and description of the facilities contained therein in its Application for Certification to the California Energy Commission].

9. Optionor Covenants. Optionor agrees for the benefit of Optionee that:

(a) It shall reserve the capability to provide Potable Water or if Potable Water is unavailable, recycled water to Optionee in the amounts and pursuant to the conditions contemplatedunder the Potable Water Agreement for the term contemplated under the Potable Water Agreement; and

(b) Upon exercise of the Option by the Optionee, it shall execute the Potable Water Agreement within three (3) Business Days after the Exercise Date.

10. Optionor's Representations and Warranties. Optionor hereby represents and warrants, as of the Effective Date and the Exercise Date:

(a) Organization; Standing; Power; Authority. Optionor is a public utility district, duly organized and existing in the State of California, and has the requisite right, power and authority to execute, deliver and perform the terms and conditions of this Agreement and to consummate the transactions contemplated in the Agreement. Optionor has taken all corporate action necessary to authorize the execution, delivery and performance of the terms and conditions of the Agreement. The individual executing the Agreement has been duly authorized to do so. The performance by Optionor of Optionor's obligations and responsibilities under the Agreement will not violate or constitute a default under the terms and provisions of Optionor's bylaws or any material agreement, document or instrument to which Optionor is a party or by which Optionor. All proceedings required to be taken by or on behalf of Optionor to authorize Optionor to execute, deliver and perform the terms and conditions of the Agreement have been duly and properly taken. No further consent of any person or entity, except the San Diego Regional Water Quality Control Board, is required in connection with the execution and delivery of, or performance by Optionor of its obligations under the Agreement

(b) Enforceability. The Agreement constitute or shall constitute the valid and binding obligation of Optionor, enforceable against Optionor in accordance with their terms, except as such enforcement may be limited by (i) the effect of bankruptcy, insolvency, reorganization, receivership, conservatorship, arrangement, moratorium or other Applicable Laws affecting or relating to the rights of creditors generally, or (ii) the rules governing the availability of specific performance, injunctive relief or other equitable remedies and general principles of equity, regardless of whether considered in a proceeding in equity or at law.

11. Optionee's Representations and Warranties. Optionee hereby represents and warrants, as of the Effective Date and the Exercise Date:

(a) Organization; Standing; Power; Authority. Optionee is a Delaware limited partnership duly organized and existing in the State of Delaware, and has the requisite right, power and authority to execute, deliver and perform the terms and conditions of this Agreement, and to consummate the transactions contemplated in this Agreement. Optionee has taken all corporate action necessary to authorize the execution, delivery and performance of the terms and conditions of the Agreement. The individual executing the Agreement has been duly authorized to do so. The performance by Optionee of Optionee's obligations and responsibilities under the Agreement will not violate or constitute a default under the terms and provisions of Optionee's partnership agreement or any material agreement, document or instrument to which Optionee is a party or by which Optionee is bound or affected. All proceedings required to be taken by or on behalf of Optionee to authorize Optionee to execute, deliver and perform the terms and conditions of the Agreement have been duly and properly taken. No further consent of any person or entity is required in connection with the execution and delivery of, or performance by Optionee of its obligations under the Agreement.

(b) Enforceability. The Agreement constitute or shall constitute the valid and binding obligation of Optionee, enforceable against Optionee in accordance with their terms, except as such enforcement may be limited by (i) the effect of bankruptcy, insolvency, reorganization, receivership, conservatorship, arrangement, moratorium or other Applicable Laws affecting or relating to the rights of creditors generally, or (ii) the rules governing the availability of specific performance, injunctive relief or other equitable remedies and general principles of equity, regardless of whether considered in a proceeding in equity or at law.

12. Conditions Precedent to Exercise of Option. All of the following shall be conditions precedent to Optionee's exercise of the Option in accordance with this Agreement (any of which conditions Optionor may waive in its sole discretion):

(a) Optionor shall have received the Option Consideration; and

(b) No Optionee Default shall have occurred, and Optionee shall have performed, in all material respects, all covenants and obligations to be performed by Optionee under this Agreement.

13. Optionor Default.

(a) The occurrence of any of the following shall constitute an "Optionor Default" under this Agreement:

(i) The failure to perform any obligation or responsibility of Optionor set forth in this Agreement, provided that Optionor does not cure such failure within thirty (30) days after delivery of written notice of such failure to Optionor or, if such failure is not capable of being cured within said thirty (30) day period, then Optionor does not commence to cure such failure within thirty (30) days after delivery of written notice of such failure to Optionor or thereafter does not diligently prosecute such cure to completion.

(b) Upon the occurrence of any Optionor Default, Optionee shall have the right to pursue any and all remedies at law or in equity that are available to Optionee as a result of such Optionor Default, including but not limited to the right to pursue injunctive relief or specific performance of this Agreement and the Potable Water Agreement.

14. Optionee Default.

(a) The occurrence of any of the following shall constitute an "Optionee Default" under this Agreement:

(i) The failure to pay the Option Consideration when due; or

(ii) The failure to perform any other obligation or responsibility of Optionee set forth in this Agreement, provided that Optionee does not cure such failure within thirty (30) days after delivery of written notice of such failure to Optionee or, if such failure is not capable of being cured within said thirty (30) day period, then Optionee does not commence to cure such failure within thirty (30) days after delivery of written notice of such failure to Optionee or thereafter does not diligently prosecute such cure to completion.

(b) Upon the occurrence of any Optionee Default, Optionor shall have the right to pursue any and all remedies at law or in equity that are available to Optionor as a result of such Optionee Default.

15. Assignment. Except as otherwise permitted herein, neither Party shall assign any right, title, interest or obligation under this Agreement to any person without the prior written consent of the other Party, which consent shall not be unreasonably withheld, conditioned or delayed. In connection with Optionee's collateral assignment of this Agreement to

Optionee's financing parties, Optionor agrees to execute a consent to collateral assignment and provide legal opinions in form and substance reasonably satisfactory to Optionor, Optionee and Optionee's financing parties.

16. Waiver of Performance. Either Party may waive the satisfaction or performance of any terms or conditions of this Agreement that have been included in this Agreement for its benefit, so long as such waiver is in writing, specifies the waived term or condition and delivered to the other Party.

17. Notices. All notices under this Agreement shall be in writing and shall be effective upon actual receipt whether delivered by personal delivery, legible facsimile or reputable overnight courier or sent by United States registered or certified mail, return receipt requested, postage prepaid, addressed to the Parties as follows:

If to Optionor:
Fallbrook Public Utility District
P.O. Box 2290
Fallbrook, California 92088-2290
Attention: General Manager
Telephone: [redacted]
Facsimile: [redacted]3

If to Optionee:
Orange Grove Energy, L.P.
1900 East Golf Road, Suite 1030
Schaumburg, Illinois 60173
Attention: Vice President of Asset Management
Telephone: [redacted]
Facsimile: [redacted]

With a copy to:
Morgan, Lewis & Bockius LLP
300 South Grand Avenue, Suite 220
Attention: [redacted]
Telephone: [redacted]
Facsimile: [redacted]

18. Amendments. This Agreement may be amended only by written agreement signed by both of the Parties.

19. Time of the Essence. Time and each of the terms and conditions of this Agreement are hereby expressly made of the essence.

20. Counterparts. This Agreement may be executed in counterparts, each of which shall be deemed an original and all of which shall constitute one and the same agreement.

21. Governing Law and Venue. This Agreement shall be governed by the laws of the State of California, without reference to its choice of law provisions. By execution and

delivery of this Agreement, each of Optionor and Optionee hereby irrevocably and unconditionally accepts and submits to the personal jurisdiction of said courts.

22. Attorneys' Fees and Costs. In any action between the Parties seeking the enforcement of any of the terms or conditions of this Agreement, the prevailing Party in such action shall be awarded, in addition to any damages or equitable relief, its reasonable attorney's fees and costs.

23. Prior Agreements. This Agreement supersedes any and all oral or written agreements between the Parties which are prior in time to this Agreement. Neither Optionor nor Optionee shall be bound by any prior understanding, agreement, promise, representation or stipulation, express or implied, not specified herein.

24. Further Assurance. Optionee and Optionor agree to execute all documents and instruments reasonably required in order to consummate the transactions contemplated in this Agreement.

25. Successors and Assigns. This Agreement shall be binding upon and shall inure to the benefit of the successors and assigns of the Parties.

26. Severability. If any portion of this Agreement is held to be unenforceable by a court of competent jurisdiction, the remainder of this Agreement shall remain in full force and effect. In the event any such provision of this Agreement is so held unenforceable, the Parties shall promptly renegotiate in good faith new provisions to restore this Agreement as near as possible to its original intent and effect.

27. Construction of Agreement. The language in all parts of this Agreement shall be in all cases construed simply according to its fair meaning and not strictly for or against either of the Parties. The language of this Agreement and all documents and instruments referred to in this Agreement have been prepared, examined, negotiated and revised by each Party and its legal counsel, and no implication shall be drawn and no provision shall be construed against any Party by virtue of the purported identity of the drafter of this Agreement. The section headings of this Agreement are for purposes of reference only and shall not be used for limiting or interpreting the meaning of any section of this Agreement. When required by the context, whenever the singular is used in this Agreement, the same shall include the plural, and the plural shall include the singular, the masculine gender shall include the feminine and neuter genders, and vice versa. As used in this Agreement, the term "Optionor" shall include the respective successors and assigns of Optionor, and the term "Optionee" shall include the successors and permitted assigns of Optionee.

28. No Partnership or Joint Venture. Optionor and Optionee shall not be partners or joint venturers with each other and nothing in this Agreement shall create or be deemed to create any partnership or joint venture between Optionor and Optionee.

[Signatures appear on following page.]

IN WITNESS WHEREOF, Optionor and Optionee hereby execute this Agreement as of the date first above written.

OPTIONOR

FALLBROOK PUBLIC UTILITY DISTRICT,
a public utility district

By: Keith Lewinger
Name: Keith Lewinger
Title: G.M.

OPTIONEE

ORANGE GROVE ENERGY, L.P.., a Delaware limited partnership

By: [illegible]
Name: Stephen T. Thorne
Title: Vice President

1-LA/965680.2

EXHIBIT A TO OPTION AGREEMENT
POTABLE WATER AGREEMENT

[See attached.]

Execution Copy

ORANGE GROVE ENERGY, L.P. POTABLE WATER AGREEMENT

This Potable Water Agreement (this "Agreement") is entered into by and between the **FALLBROOK PUBLIC UTILITY DISTRICT**, a public utility district organized and operating pursuant to California Public Utility Code §15501 et seq. (hereinafter "District") and **ORANGE GROVE ENERGY** (hereinafter referred to as "Orange Grove"). This Agreement shall become effective execution by the parties.

R-E-C-I-T-A-L-S

A. Orange Grove is a limited partnership that currently is developing a power plant project (the "Project") outside of the District's service area. As part of this Project, Orange Grove requires potable water for equipment operation, and other activities within the boundary of the Project.

B. The District is a public agency treating and serving water, potable water and wastewater within a 28,000 acre service area in northwestern San Diego County. The District owns and operates a Water Reclamation Facility which treats wastewater and serves tertiary treated water within the District's service area and by contract to customers outside the District.

C. Orange Grove has requested to purchase up to 62 acre-feet per year of potable water from the District via trucks provided by Orange Grove at the District's Water Filling Station (Primary Delivery Site) near the intersection of Mission Rd. and Live Oak Park Road in Fallbrook. The 62 acre-feet of potable water will provide an adequate supply of potable water for the Project.

D. Orange Grove and the District are parties to an existing agreement for the purchase and sale of 45 acre-ft of tertiary treated recycled water from the Districts' waste water treatment facility (the "Recycled Water Supply Agreement").

E. The District has agreed to sell potable water to Orange Grove in accordance with all terms of this Agreement.

F. Orange Grove has agreed to purchase the potable water from the District in accordance with all terms of this Agreement.

G. The term of this Agreement is twenty-five (25) years from the Agreement Start Date (as defined below).

C-O-V-E-N-A-N-T-S

1. Sale of Potable Water by District. The District agrees to sell and Orange Grove agrees to purchase, commencing on the Agreement Start Date, up to 62 acre feet per year of potable water for a term of 25 years and 2 months. The District shall bill Orange Grove on a monthly basis for actual water used, plus monthly fixed charges. A late charge equivalent to one and one half percent (1½ %) per month shall be levied for each day invoiced amounts are not paid following the due date.

2. Fees Paid to District and the Price For Potable Water and Future Price Increases. The commodity price for the potable water sold by the District to Orange Grove shall be at the published rate for construction meters set by the District Board of Directors from time to time, in its sole discretion. The construction rate for customers inside the District as of June 23rd, 2008 is $2.95 per thousand gallons. The District makes no guarantee about future price increases and intends to sell potable water to Orange Grove at a rate established for customers inside the District's formal boundaries. The potable water commodity rate to be paid by Orange Grove shall include a capacity charge/premium charge for payment to acquire new capacity equal to [redacted] of the commodity rate for customers inside the District. Orange Grove's total commodity rate shall therefore be [redacted] of the commodity rate paid by customers with construction meters inside the District's boundaries. Orange Grove will also pay a monthly system access charge for the meter which is set for their use at the Delivery Site, currently $373.50 per month for a 6-inch meter. This monthly system access charge is subject to increases in the future and shall be at the rate set by the District Board of Directors, in its sole discretion and is payable regardless of the quantity of potable water delivered. The monthly system access fee shall be paid in advance on the date of execution of this agreement and invoiced on a monthly basis thereafter. A late charge equivalent to one and one half percent (1½ %) per month shall be levied for each day (pro rated) the fee is paid following the due date.

   In addition to the price for the potable water set by the District, an additional monthly independent fixed fee equal to Orange Grove's cost for [redacted] gallons [redacted] x construction rate x [redacted]) shall be paid by Orange Grove to the District above and beyond the rate charged for the potable water. Both parties agree that this monthly fee is an independent fee paid to District for the guarantee of a long term supply and is payable upon execution of this agreement and on an monthly basis thereafter. This payment shall be paid upon execution of this agreement and invoiced monthly thereafter by the District. A late charge equivalent to one and one half percent (1½ %) per month shall be levied for each day (pro rated) the fee is paid following the due date.

3. Responsibility and Indemnity for Potable Water after Delivery. Orange Grove recognizes that by entering into this Agreement, Orange Grove is solely

responsible for the use and transportation of all potable water once it is supplied to Orange Grove at the Point of Delivery, which is defined as Orange Grove water trucks at the District's Potable Water Filling Station site near the intersection of Mission Rd. and Live Oak Park Rd. Once the potable water is delivered at the Point of Delivery, the District shall have no liability for the transportation and use of the potable water by Orange Grove. All liability for the transportation and use of the potable water after receipt at the Delivery Site shall be assumed by Orange Grove. Orange Grove agrees to indemnify and hold the District harmless and defend the District and its directors, officers, employees, agents, and representatives from and against any and all claims, causes of action, suits, actions, damages, losses, costs, fees, expenses, fines, and penalties, of whatever type or nature, including all costs of defense and attorney fees, caused in whole or in part, or claimed to be caused in whole or in part by the action, inaction, passive or active negligence, or intentional misconduct of Orange Grove in the receipt, use and transportation of the potable water after receipt at the Delivery Site.

For acts in the exclusive control of the District and occurring prior to delivery to Orange Grove, the District agrees to indemnify and hold Orange Grove harmless and defend Orange Grove and its directors, officers, employees, agents, and representatives from and against any and all claims, causes of action, suits, actions, damages, losses, costs, fees, expenses, fines, and penalties, of whatever type or nature, including all costs of defense and attorney fees, caused in whole or in part, or claimed to be caused in whole or in part by the action, inaction, passive or active negligence, or intentional misconduct of the District with respect to the District's obligations under this Agreement.

4. Term of Agreement and Termination. Unless either of the parties is in breach of any term or provision of this Agreement, this Agreement shall remain in full force and effect for a term of 25 years and 2 months after the Agreement Start Date. "Agreement Start Date" shall commence after the completion of the facilities or four months after the execution of this agreement, whichever occurs last. Orange Grove's obligations to purchase the potable water under this Agreement shall commence on the Agreement Start Date and continue for a period of 25 years and 2 months thereafter. Regardless of whether Orange Grove takes delivery of any potable water in a given month, Orange Grove must still pay the system access fees and the independent monthly fee and any and all fees owed for potable water used in that year by Orange Grove. Orange Grove's choosing not to take delivery of potable water for any period of time whatsoever, does not terminate the agreement nor the obligation to pay the monthly service charges nor the independent fee each month for the full 25 years and 2 months of the term of this agreement. Failure to pay the independent monthly fee within 45 calendar days of being invoiced shall be construed as a breach of this agreement by Orange Grove and subject the agreement to cancellation by the District in its sole discretion, as well as remedies for breach in paragraph 6 below.

5. Drought, Water supply shortage, water emergency and Incremental Recycled Water Reservation. In the event a drought, a water supply shortage or a water emergency [as determined by the District in its reasonable discretion] limits the District's ability to deliver potable water, the District may prohibit access to the potable water Point of Delivery. At any time that the District prohibits annexations to the District due to water supply concerns, the District will prohibit access to the potable water Point of Delivery. The District shall notify Orange Grove of any restrictions at least 24 hours in advance of their taking effect. For every day or partial day that the District restricts potable water access, Orange Grove shall receive an incremental increase in the reservation of tertiary treated recycled water under its Recycled Water Supply Agreement. The incremental increase in the reservation of tertiary treated recycled water shall be 62 acre-ft less the amount of potable water that has already been delivered in a calendar year.

6. Remedies for Breach. In the event of a breach of any term or provision of this Agreement by either party, both parties shall have all rights and remedies granted by California law. Nothing contained in this Agreement shall be construed as limiting any of the rights and remedies of either parties upon any breach of a term or provision of this Agreement.

7. Installation of Improvements, Priority of Use. As a material term of this Agreement, Orange Grove shall pay for all new capital facilities that will be necessary to fill Orange Grove's trucks at the Delivery Site. These improvements include at a minimum, but are not limited to approximately 200' feet of 14' wide asphalt road way, water handling facilities including 6-inch meter necessary to fill the trucks, concrete loading pad, and other ancillary appurtenances as may be required by the District in its sole discretion (collectively, the "New Facilities"). It is anticipated that the 14' wide road would provide sufficient width for trucks transporting the potable water for Orange Grove.. These improvements are currently estimated to cost _____ dollars ($_____), however in no case are the costs for the improvements limited to this amount. The District shall be responsible for constructing the New Facilities. The District shall construct the New Facilities within four (4) months after the date of this Agreement. All improvements determined necessary by the District must be completed prior to commencing deliveries, and no hauling will be allowed until all necessary regulatory permits (if any) are acquired by Orange Grove. Orange Grove shall deposit the engineer's estimate of the aforementioned facilities within 90 days in advance of construction of the facilities. Such deposits shall solely be used for the costs of constructing the New Facilities. Upon completion of construction of the New Facilities, any amounts remaining will be returned to Orange Grove within thirty (30) days after the completion of construction and payment of all invoices relating to construction. If construction costs exceed the amount deposited by Orange Grove, Orange Grove shall pay such additional costs after being notified by the District of any such additional costs. Orange Grove shall have exclusive use of the water filling station and meter and

acknowledges and agrees that the District shall be entitled to use the New Facilities. The District agrees that no third party shall have any right to use such New Facilities if such use would interfere in any way with Orange Grove's access. The District shall notify Orange Grove of any proposed third party use and obtain Orange Grove's acknowledgment and agreement that the proposed used will not interfere with Orange Grove's access. Such agreement shall not be unreasonably withheld. The Parties agree that the District shall own the New Facilities and the District agrees to pay for on-going maintenance and any further improvements of the New Facilities. The District shall construct the New Facilities and the Delivery Site to include a meter and secure access to the spigot.

8. Completion of CEQA Review and Other Permits Orange Grove shall be solely responsible for complying with all California Environmental Quality Act (CEQA) and National Environmental Protection Act (NEPA) requirements necessary for Orange Grove's receipt, use and transportation of the potable water under this agreement, if applicable. Orange Grove shall also be solely responsible for any and all permits required under any state, federal or local law for its receipt, use and transportation of potable water under this agreement. No potable water will be delivered to Orange Grove until all CEQA and NEPA certifications are complete and all necessary permits have been obtained by Orange Grove.

9. District's Representations and Warranties. District hereby represents and warrants, as of the Effective Date and the Exercise Date:

(a) Organization; Standing; Power; Authority. District is a public utility district, duly organized and existing in the State of California, and has the requisite right, power and authority to execute, deliver and perform the terms and conditions of this Agreement and to consummate the transactions contemplated in the Agreement. District has taken all corporate action necessary to authorize the execution, delivery and performance of the terms and conditions of the Agreement. The individual executing the Agreement has been duly authorized to do so. The performance by District of District's obligations and responsibilities under the Agreement will not violate or constitute a default under the terms and provisions of District's bylaws or any material agreement, document or instrument to which District is a party or by which District. All proceedings required to be taken by or on behalf of District to authorize District to execute, deliver and perform the terms and conditions of the Agreement have been duly and properly taken. No further consent of any person or entity, except the San Diego Regional Water Quality Control Board, is required in connection with the execution and delivery of, or performance by District of its obligations under the Agreement.

(b) Enforceability. The Agreement constitute or shall constitute the valid and binding obligation of District, enforceable against District in accordance with their terms, except as such enforcement may be limited by (i) the effect of bankruptcy,

insolvency, reorganization, receivership, conservatorship, arrangement, moratorium or other Applicable Laws affecting or relating to the rights of creditors generally, or (ii) the rules governing the availability of specific performance, injunctive relief or other equitable remedies and general principles of equity, regardless of whether considered in a proceeding in equity or at law.

10. Orange Grove's Representations and Warranties. Orange Grove hereby represents and warrants, as of the Effective Date and the Exercise Date:

(a) Organization; Standing; Power; Authority. Orange Grove is a Delaware limited partnership duly organized and existing in the State of Delaware, and has the requisite right, power and authority to execute, deliver and perform the terms and conditions of this Agreement, and to consummate the transactions contemplated in this Agreement. Orange Grove has qualified to do business in the state of California with the California Secretary of State and is in good standing with the California Corporation's Commission. Orange Grove will provide to District a copy of its current qualification letter. Orange Grove has taken all corporate action necessary to authorize the execution, delivery and performance of the terms and conditions of the Agreement. The individual executing the Agreement has been duly authorized to do so. The performance by Orange Grove of Orange Grove's obligations and responsibilities under the Agreement will not violate or constitute a default under the terms and provisions of Orange Grove's partnership agreement or any material agreement, document or instrument to which Orange Grove is a party or by which Orange Grove is bound or affected. All proceedings required to be taken by or on behalf of Orange Grove to authorize Orange Grove to execute, deliver and perform the terms and conditions of the Agreement have been duly and properly taken. No further consent of any person or entity is required in connection with the execution and delivery of, or performance by Orange Grove of its obligations under the Agreement.

(b) Enforceability. The Agreement constitute or shall constitute the valid and binding obligation of Orange Grove, enforceable against Orange Grove in accordance with their terms, except as such enforcement may be limited by (i) the effect of bankruptcy, insolvency, reorganization, receivership, conservatorship, arrangement, moratorium or other Applicable Laws affecting or relating to the rights of creditors generally, or (ii) the rules governing the availability of specific performance, injunctive relief or other equitable remedies and general principles of equity, regardless of whether considered in a proceeding in equity or at law.

11. Miscellaneous Provisions.

A. California Law. California law shall govern all terms of this Agreement.

B. Venue. In the event any arbitration or litigation is commenced to enforce, interpret or invalidate any terms or provisions of this Agreement, the parties

agree that venue shall lie only in the Superior Court for the North County Judicial District, County of San Diego, State of California.

C. Modification. This Agreement may not be altered in whole or in part except by a modification, in writing, executed by all the parties to this Agreement.

D. Attorney's Fees. In the event of any arbitration or legal or equitable proceeding to invalidate, enforce, challenge, or interpret any terms of this Agreement, the prevailing party shall be entitled to all attorney's fees and costs in addition to any other relief granted by law. The prevailing party shall also be entitled to recover all such fees and costs during any appeals and during any bankruptcy proceedings.

E. Entire Agreement. This Agreement, together with all exhibits attached to this Agreement contains all representations and the entire understanding between the parties with respect to the subject matter of this Agreement. Any prior correspondence, memoranda, or agreements, whether or nor such correspondence, memoranda, or agreements are in conflict with this Agreement, are intended to be replaced in total by this Agreement and its exhibits. The parties mutually declare there are no oral understandings or promises not contained in this Agreement which contains the complete, integrated, and final agreement between the parties.

F. Binding Effect. This Agreement shall inure to the benefit of and be binding upon the parties and their respective purchasers, successors, heirs, and assigns.

G. Unenforceable Provisions. The terms and conditions and covenants of this Agreement shall be construed whenever possible as consistent with all applicable laws and regulations. To the extent that any provision of this Agreement, as so interpreted, is held to violate any applicable law or regulation, the remaining provisions shall nevertheless be carried into full force and effect and remain enforceable.

H. Representation of Capacity to Contract. Each party to this Agreement represents and warrants that he or she has the authority to execute this Agreement on behalf of the entity represented by that individual and that this Agreement is final and binding upon both parties.

I. Opportunity to be Represented by Independent Counsel. Each of the parties to this Agreement warrant and represent that they have been advised to consult independent legal counsel of their own choosing and have done so prior to executing this Agreement.

J. No Waiver. The failure of either party to enforce any term, covenant, or condition of this Agreement on the date it is to be performed shall not be

construed as a waiver of either party's right to enforce this, or any other term, covenant, or condition of this Agreement. No waiver shall occur unless the waiver is stated expressly in writing and signed by the party waiving the right. No oral waivers shall be effective for any purpose.

K. Effective Date. The effective date of this Agreement executed in counterparts within the North County Judicial District, County of San Diego, State of California, is _____.

L. Counterparts and Facsimile Signatures. This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. Facsimile signatures shall be permitted and shall be treated as original signatures for all purposes.

M. Assignment. Neither party shall assign its rights to this Agreement without the prior written consent of the other party; provided that Orange Grove shall be permitted to collaterally assign its rights under this Agreement to the lenders providing financing to Orange Grove with respect to the Project and District shall execute consents to collateral assignment as may be reasonably requested by Orange Grove's lenders.

N. Further Documents and Acts, Financing Cooperation. Each of the parties hereto agrees to cooperate in good faith with each other, and to execute and deliver such further documents and perform such other acts as may be reasonably necessary or appropriate to consummate and carry into effect the transactions contemplated under this Agreement The District agrees that such cooperation to execute further documents hereunder includes executing consents to collateral assignment and providing opinions of counsel as may be requested by the lenders providing financing to Orange Grove with respect to the Project.

Dated: _____, 2008

FALLBROOK PUBLIC UTILITY DISTRICT,
a Public Utility District

By:_____
Keith Lewinger, General Manager

Dated: _____, 2008

ORANGE GROVE ENERGY, L.P.,
a Delaware limited partnership

By:_____
Stephen Thome, Vice President

Orange Grove Energy Potable Water Agreement
List of Exhibits

1. Exhibit "A" Map of Orange Grove Energy "Project" Site
2. Exhibit "B" Plot of Location of the Proposed Birdcage Tank Truck Filling Site, (Primary Delivery Site)

APPENDIX 6.5-H – ONSITE WASTEWATER TREATMENT SYSTEM DESIGN

ON-SITE WASTEWATER TREATMENT SYSTEM DESIGN

FOR

ORANGE GROVE ENERGY, L.P.

ORANGE GROVE POWER PLANT

JUNE 10, 2008

PREPARED BY:

16041 Foster P.O. BOX 1000
Stilwell, Kansas 66085-1000
(913) 681-2881

Sega Project No. 07-0098

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- Figure 1 - Site Location & Project Vicinity Map
- Drawing C100 – Rev. L – Site Layout Plan
- Vinje & Middleton Engineering, Inc. Design Packet by DEH Certified Geotechnical Engineer Ralph Malcolm Vinje
- DEH Septic System Design Requirements, February 1999
- Drawing C200 – Rev. F - On-site Wastewater Treatment System
- DEH OWTS Permitting Process and Design Criteria Setbacks Excerpt
- Chapter 3 – Septic Tanks and Seepage Pits, Section 68.343 & 68.344

Introduction

Orange Grove Energy, L.P.'s proposed Orange Grove Power Plant (OGPP) is located in Unincorporated San Diego County (SDC) west of Pala, California 92059 about 0.1 mile north of the intersection of State Road 76 (Pala Road or SR-76) and a private road called Pala Del Norte Road. The 8.5 acre proposed project site is located on approximately 202 acres of property owned by San Diego Gas & Electric (SDG&E) in San Diego County, California in Section 29, Township 9 South, Range 2 West (Please refer to Figure 1 - Site Location and Project Vicinity Map in the References section).

A geotechnical investigation of fourteen site borings was performed on site with a maximum explored depth of 30.5 feet below grade. No seasonal high groundwater table was encountered with any of the borings.

The purpose of the Service Building sanitary system will be to receive the domestic drain and waste and to route to an approved system in accordance with the County of San Diego standards and specifications. Public sewer is not available at this time. As a result, this system will be located on site, east of the Service Building (Please refer to Drawing C100 – Rev. L – Site Layout Plan in the References section). Should public sewer become available in the future, this system could be converted with the approval of the County.

The Service Building sanitary system, which will support two restroom facilities, was designed conservatively for six full-time employees using an average rate of 15 gal/person/day. The drains and waste will be directed to a septic tank with an effluent filter and outlet to an infiltration field.

On-site wastewater treatment systems (OWTS), which have a subsurface discharge into the ground, are required to abide by the California Water Code, Section 13282. This section allows the Regional Water Quality Control Board (RWQCB) to give permission to issue permits for conventional OWTS to the local public agencies. As a result, the County of San Diego - Department of Environmental Health (DEH) OWTS Permitting Process and Design Criteria was used for the OGPP's sanitary system. Accordingly, the purpose of these OWTS calculations is to show that the proposed septic tank and infiltration system are adequate.

Infiltration Rate

A Percolation Test was performed by Vinje & Middleton Engineering, Inc. in the approximate area of the proposed leach field (Please refer to the Vinje & Middleton Engineering, Inc. Design Packet in the References Section). The Percolation Test had an average infiltration rate of 43 MPI (Please refer to the Vinje & Middleton Engineering, Inc. Design Packet in the References Section).

Leach Line

The proposed leach lines are 4 inch diameter Schedule 40 PVC pipes with 5/8 inch holes spaced at 60 degree offsets with a trench depth of 3 feet (Please refer to the DEH Septic System Design Requirements in the References section). The leach lines must be approved by both the DEH director and an International Association of Plumbing and Mechanical Officials (IAPMO) representative prior to backfilling.

Layout

The layout design was based on the required setback minimum distance listed in Table 1 below. The infiltration field, designed to meet the requirements for an industrial/commercial facility with an average infiltration rate of 43 MPI, requires a minimum linear length of leach line of 157 feet. The infiltration field was designed for 200 feet with 100% reserve, per the county's minimum requirements if less than 200 linear feet (Please refer to the Vinje & Middleton Engineering, Inc. Design Packet and Drawing C200 – Rev. F - On-site Wastewater Treatment System in the References section).

TABLE 1 – Setback Summary*

System Component	Setback To:	Minimum Distance
Septic Tank	Structure	5 feet
Leach Lines	Structure	8 feet
Leach Lines	Drainage Course	50 feet from top of bank
Leach Lines	Pond	100 feet from spillway elev.
Leach Lines	Septic Tank	5 feet
Leach Lines	Leach Lines	10 feet

* Complete table of setback to minimum distance can be found in the DEH OWTS Permitting Process and Design Criteria Setbacks Excerpt in the References section.

Septic Tank

The septic tank will be a minimum 1,000 gallon watertight concrete tank with an effluent discharge to a leach field disposal system (Please refer to the DEH Septic System Design Requirements in the References section). The septic tank, which will be in accordance with the San Diego County Code of Regulatory Ordinances, must be approved by both the DEH director and an IAPMO representative prior to backfilling (Please refer to Chapter 3 – Septic Tanks and Seepage Pits, Section 68.343 – Minimum Requirements for Septic Tanks in the References section).

Distribution Box

The distribution box, which is based on the San Diego County Code of Regulatory Ordinances, will have a single inlet from the septic tank and will outlet on two sides to the leach field. The distribution box will be constructed of a watertight concrete box with a plastic baffle located on the inlet side of the box (Please refer to Chapter 3 – Septic Tanks and Seepage Pits, Section 68.344 – Minimum Requirements for Distribution Boxes in the References section).

Water Supply

Water for the OWTS will be supplied from an onsite 535,000 gallon water storage tank.

Primary and Reserve Areas

In addition to the primary area for the leach field, the county requires that new construction of OWTS with an average infiltration rate of 43 MPI, to have a minimum 100% reserve area. The reserve area would be used for the new OWTS if the primary system were to fail. Therefore, in the event that the OGPP OWTS were to fail, a new system would be installed in the reserve area as indicated on Drawing C200 – Rev. F. The primary system, per the direction of the county, would either be removed and disposed of properly or abandoned in place.

Maintenance Plan

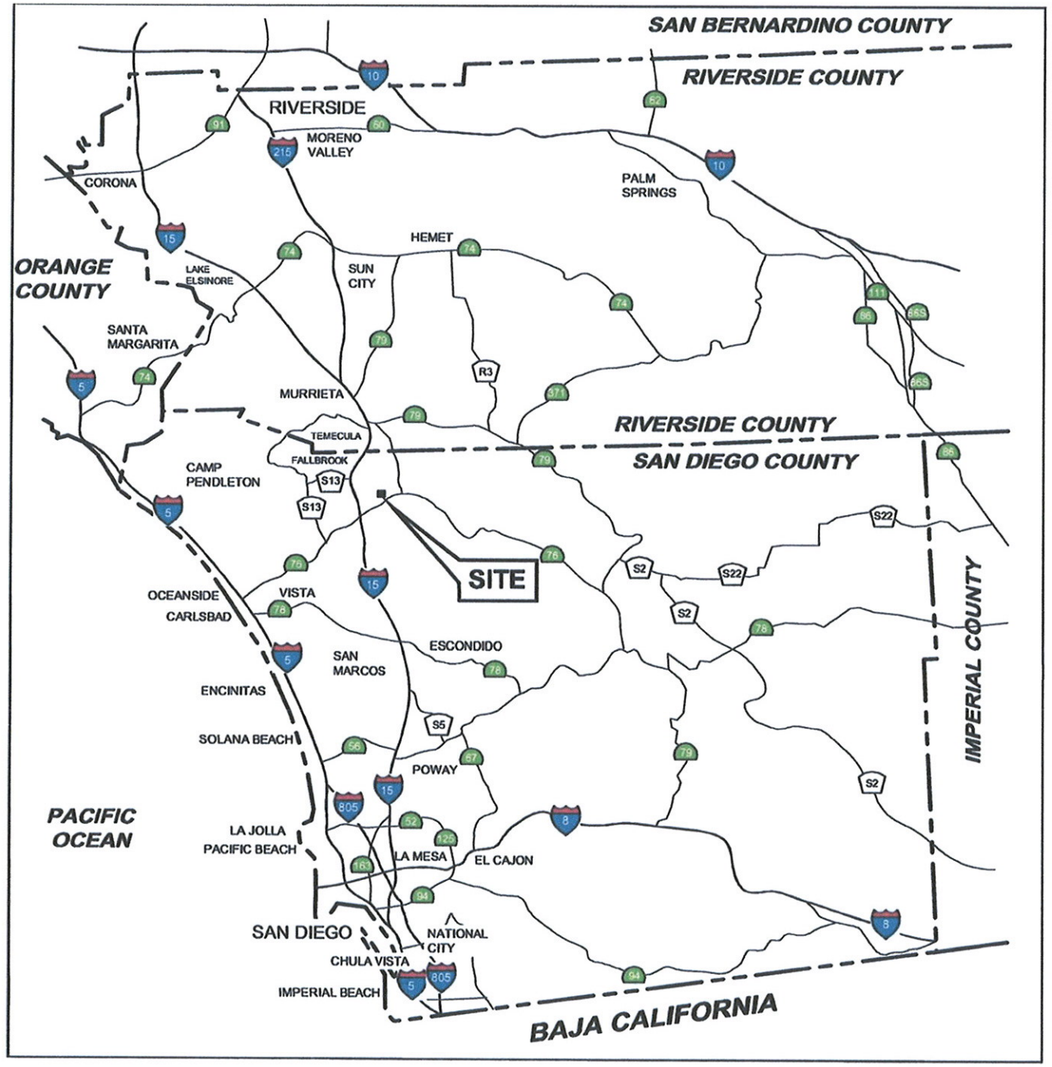
Environmental Protection Agency's ten steps to keep a septic system working properly:

1. Keep a drawing of the OWTS in the maintenance building's records.
2. Have the septic system inspected at least every three years.
3. Pump the septic tank and clean or replace the effluent filter as needed (generally every three to five years).
4. Don't dispose of household hazardous wastes in sinks or toilets.
5. Keep other household items, such as dental floss, feminine hygiene products, condoms, diapers, and cat litter out of the system.
6. Use water efficiently.
7. Plant only grass over and near your septic system. Do not apply manure or fertilizers over the drainfield.
8. Keep vehicles and equipment off the OWTS. The weight can damage the pipes and tank, and the system may not drain properly under compacted soil.
9. Keep gutters from draining into or near the septic system.
10. Check with the local health department before using additives. Commercial septic tank additives do not eliminate the need for periodic pumping and can be harmful to the system.

Conclusion

The proposed septic tank and leach field will be adequate as the Orange Grove Power Plant On-site Wastewater Treatment System. The OGPP is designed to serve local loads during peak demand and therefore may not be occupied full time, year round. During the peak demand operation hours, the OGPP will typically be manned with four full time employees, but may have at max, six employees. Thus, the OTWS, designed by San Diego County Department of Environmental Health Certified Geotechnical Engineer Ralph Malcolm Vinje, meets all requirements for the San Diego RWQCB and the County of San Diego Department of Environmental Health.

REFERENCES

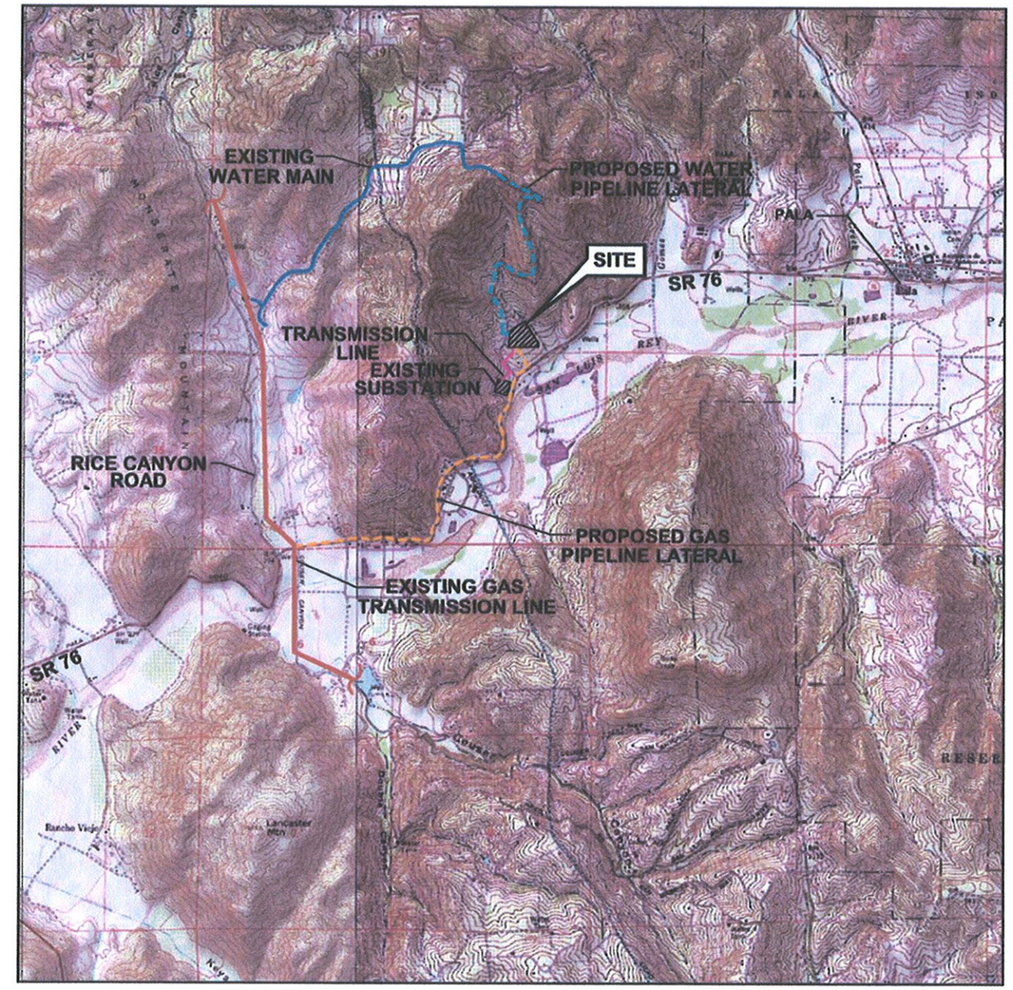


N

0 10 20 30 40 MILES

SCALE IN MILES

SITE LOCATION MAP



N

0 1/2 1 1 1/2 2 MILES

SCALE 1:48,000

SOURCE:

United States Geological Survey
7.5 Minute Topographic Map, 2000:
Pala, Bonsall, Temecula,
and Pechanga Quadrangles

PROJECT VICINITY MAP

Sega

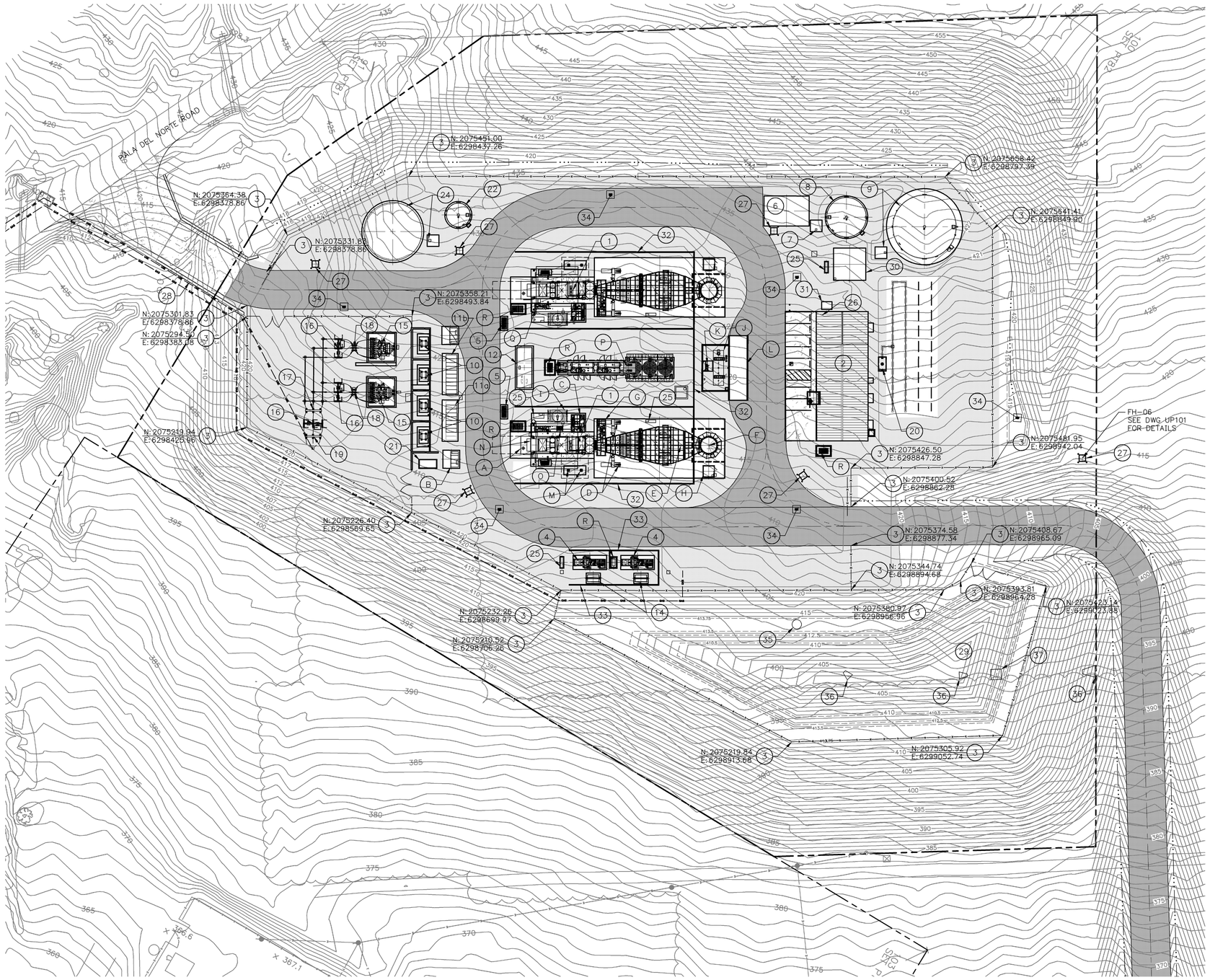
Engineers - Architects - Technicians
Design - Construction - Field Service

16041 Foster
P.O. Box 1000
Stilwell, KS 66085-1000

ORANGE GROVE ENERGY L.P.
Schaumburg, IL

FIGURE 1
ORANGE GROVE POWER PLANT
SITE LOCATION AND PROJECT VICINITY MAP

DESIGN BY: J. LANGEL	CHECKED BY:
DRAWN BY: J. CLAUSSEN	DATE: 11-28-07
CLIENT I.D.	SEGA PROJECT NO. 07-201
FILE NAME: OG_site_vicinity.mxd	
DRAWING NO.	REV.



SITE LAYOUT PLAN

PLAN NORTH IS 29°55'46" CCW OF TRUE NORTH

40 0 40 80

SCALE IN FEET

EMISSION COORDINATES SYMBOL		
DESCRIPTION	NORTHING	EASTING
COMBUSTION TURBINE #1 (NORTH)	2075491	6298683
COMBUSTION TURBINE #2 (SOUTH)	2075387	6298743
DIESEL FIRE PUMP (±2')	2075517	6298766
BLACK START GENERATOR (±2')	2075379	6298582

KEYNOTES:

1. COMBUSTION TURBINE (CT), GENERATOR, AND AUXILIARY EQUIPMENT. (FOR EACH UNIT): (HEIGHT = 43' AT THE TOP OF VBV DUCT).
   - A MAIN TURBINE GENERATOR SKID ENCLOSURE.
   - B 13.8KV ELECTRICAL SWITCHGEAR.
   - C CT AUXILIARY EQUIPMENT SKID.
   - D TEMPERING AIR FANS (2).
   - E EMISSION CONTROL SYSTEM–SCR (HEIGHT = ±33').
   - F STACK (HEIGHT = 80').
   - G AMMONIA VAPORIZATION SKID.
   - H CEMS ENCLOSURE WITH TRANSFORMER AND CALIBRATION GAS STORAGE.
   - I CT LUBE OIL COOLER.
   - J AMMONIA STORAGE TANK (COMMON TO BOTH CT UNITS).
   - K AMMONIA FORWARDING PUMP SKID (COMMON TO BOTH CT UNITS).
   - L AMMONIA UNLOADING PAD, SPILL CONTAINMENT (COMMON TO BOTH CT UNITS).
   - M TURBINE REMOVAL SUPPORTS.
   - N AIR INLET FILTER (HEIGHT = 34').
   - O SPRINT SKID.
   - P INLET AIR CHILLER AND COOLING TOWER (COMMON TO BOTH CT UNITS) (HEIGHT = 30').
   - Q WATER INJECTION SKID.
   - R OILY DRAIN TANK.
2. SERVICE BUILDING FOR CONTROL ROOM, ELECTRICAL EQUIPMENT, FIRE PUMPS, COMPRESSED AIR. (HEIGHT = 18').
3. SITE SECURITY CHAINLINK FENCE AND GATES.
4. FUEL GAS COMPRESSORS.
5. GAS COALESCING FILTER SKID.
6. CONCRETE PAD FOR TEMPORARY WATER TREATMENT TRAILER.
7. DEMIN. WATER PUMP SKID AND RELATED EQUIPMENT.
8. DEMIN. WATER STORAGE TANK (HEIGHT = 24').
9. RAW WATER/FIREWATER STORAGE TANK & PUMP SKID (HEIGHT = 44').
10. AUXILIARY TRANSFORMERS.
11a. 4160V ELECTRICAL SWITCHGEAR.
11b. 480V ELECTRICAL SWITCHGEAR.
12. BLACKSTART GENERATOR.
13. NOT USED.
14. FUEL GAS COMPRESSOR RECYCLE FIN–FAN COOLER.
15. 13.8KV–69KV GENERATOR STEP–UP TRANSFORMER (GSU).
16. 69KV DISCONNECT SWITCH AND SUPPORTS.
17. 69KV CT/VT METERING UNIT.
18. 69KV CIRCUIT BREAKER.
19. 69KV TRANSITION STRUCTURE & POTHEAD.
20. UNDERGROUND SANITARY SYSTEM.
21. TRANSFORMER DELUGE VALVE ENCLOSURE.
22. WASTEWATER STORAGE TANK (HEIGHT = 24').
23. NOT USED.
24. COOLING TOWER MAKEUP TANK AND PUMP SKID (HEIGHT = 36').
25. 480V MCC.
26. DIESEL FIRE PUMP ROOM.
27. YARD FIRE HYDRANTS WITH HYDRANT MOUNT FIRE MONITORS.
28. BRIDGE.
29. STORMWATER DETENTION BASIN.
30. RO WATER TREATMENT AREA.
31. DIESEL STORAGE TANK – DIESEL FIRE PUMP.
32. GAS TURBINE SOUND WALL (HEIGHT = 48').
33. GAS COMPRESSOR SOUND WALL (HEIGHT = 24').
34. AREA INLET.
35. STORM MANHOLE.

KEYNOTES CONT.:

36. STORM END SECTION.
37. STORMWATER OUTLET CONTROL STRUCTURE.

REV.	DATE	DESCRIPTION	DWN	CHK
A	10–23–07	ISSUED FOR REVIEW	BGG	WHR
B	10–30–07	ISSUED FOR REVIEW	BGG	WHR
C	11–8–07	ISSUED FOR WESTPOWER APPROVAL	BGG	WHR
D	11–19–07	ISSUED FOR AIR MODEL	BGG	WHR
E	11–29–07	RE–ISSUED FOR AIR MODEL	BGG	WHR
F	11–30–07	ISSUED FOR MILESTONE 4	BGG	WHR
G	12–19–07	ISSUED FOR AMENDED SPPE APPLICATION	BGG	WHR
H	12–28–07	RE–ISSUED FOR MILESTONE 4	BGG	WHR
J	1–17–08	ISSUED PER FPP COMMENTS	BGG	MJB
K	02–29–08	FINAL ISSUE FOR APPROVAL	BGG	WHR
L	6–2–08	ISSUED FOR AFC PERMIT	BGG	MJB

Sealed Only When Signed in Blue Ink

Sega ®
Engineers – Architects – Technicians
Design – Construction – Field Service
16041 Foster
P.O. Box 1000
Stilwell, Kansas 66085–1000

ORANGE GROVE ENERGY L.P.
Schaumburg, IL

ORANGE GROVE POWER PLANT

SITE LAYOUT PLAN

DESIGN BY: B. ROMINES	CHECKED BY: J. BONDANK
DRAWN BY: B. GASPERS	DATE: 9–12–07
CLIENT I.D. ICC00101	SEGA PROJECT NO. 07–201

CADD FILE NAME: 07201–C100.dwg

DRAWING NO. C100 REV. L

N:\2007\07201\dwgs\ce\07201–C100.dwg 6/2/08 1:25pm bgaspers

VINJE & MIDDLETON ENGINEERING, INC.
2450 Auto Park Way
Escondido, CA 92029-1229
760-743-1214

Ralph M. Vinje GE #863

"I CERTIFY THAT THE LAYOUT DRAWING SHOWS THE LOCATION OF ALL KNOWN EASMENTS AND PUBLIC WATER LINES ON THE LOT AND ALL PUBLIC WATER LINES THAT ARE WITHIN 20 FEET OF THE LOT BOUNDARY."

Design: MA 1/14/08
R1:
R2:
R3:

LOT INFORMATION

DATE: 1/14/2008
DEH No. LOWS
JOB No. 08-122-S
APN 110-072-26
ACRES 41.15 (Site=8.66)

Site Location
Corner of Highway 76 and Pala Del Norte Road, Pala

Legal
(EX PAR 1 PER D98-109127) IN SW¼ OF SE¼ OF SEC 29-9-2W

Owners Address
SDG&E
c/o: Saga Inc.,
P.O. Box 1000
Stillwell, KS 66085
913-681-2881

LEGEND

- ① Perc Test Location
- Ⓐ Groundwater Boring
- 420 Contour Line w/ 1' Interval
- 200' Leach Line
- 200'R Reserve Leach Line
- Easement
- Setback
- Water/Utilities
- Roads
- Cut/Fill
- Property Line
- Tight Line

INSTALLATION NOTES

- Proposed Peaker Power Plant
- Proposed Man and Woman Bathroom
- Use 43 mpi @ 3' Trench Depth
- Use Usage 6 People Per Day Max.
- Use 15 gal/person/day
- Use Commercial Design with Safety Factor 2
- Use 1000 Gallon Septic Tank

SCALE: 1" = 100'

DEH Approval Stamp and Notes

COUNTY OF SAN DIEGO
DEPARTMENT OF ENVIRONMENTAL HEALTH
PERCOLATION TEST REPORT

DEH #: LOWS

Job #: 08-122-S

Date: 1/14/2008

Assessor's Parcel #: 110-072-26 Map #: Lot #:

Site Location: Corner of Highway 76 and Pala Del Norte Road, Pala

Owner's Name: San Diego Gas & Electric Phone: (760) 743-1214 Vinje & Middleton Engineering, Inc.

Mailing Address: 2450 Auto Park Way, Escondido, CA 92029-1229

Test Hole	Test Depth	Time/Inch	Test Hole	Test Depth	Time/Inch	Average Rate (Time/Inch)
1	5'	40				43 mpi
2	8'	34				
3	10'	53				
4	14'	34				

Vertical seepage pits: Provide soils log, uniformity/capacity test results, and calculations on separate 8-1/2" x 11" sheets of paper.

TYPE OF SOIL: (clay, silt, sand, decomposed granite, etc.)

Surface Topsoil

0 - 4.5' ft. below surface Reddish Brown Sandy Clay with ~ 20-30% Cobbels

4.5 - 10' ft. below surface Tan Clayey Sand with Cobbels

ft. below surface Deep A = Refusal @ 10'

ft. below surface Perc Hole #4 = End @ 14'

Depth to refusal: Refusal @ 10 - 14' Depth to groundwater: Not encountered.

Source of potable water: Rainbow M.W.D. (Per Proposed New Water Line To Site)

Proposed structure: One Peaker Power Plant With Men's & Woman's Bathroom (Calc. @ 6 People Per Day @ 15 gal/pers./day)

RECOMMENDATIONS: Use Standard Gravity COMMERCIAL System
Use Safety Factor of 2

Septic tank size 1000 gal. Pit length n/a ft.

Leach line length 200' Primary +100% Reserve ft. Pit width n/a ft.

Trench depth 3' ft. *Pit depth n/a ft.

Rock under pipe 12" in. **Cap depth n/a ft.

*BELOW CAP DEPTH
**BELOW GROUND SURFACE

I have reviewed this percolation data and design of the subsurface sewage disposal system for this parcel and find the data and design to be accurate and in compliance with state and local regulations and good engineering practice.

Ralph M. Vinje GE #863

2450 Auto Park Way
Escondido, CA 92029-1229 (760) 743-1214 1/14/2008
Address Phone Date

FOR DEPARTMENTAL USE ONLY

APPROVED: YES _____ NO _____ DATE _____ FINAL MAP REQUIRED: YES _____ NO _____

Specialist:

Bldg. Plan Review: DATE:

Grading Review: DATE:

Water Analysis Results: DATE:

DEH: M.A. (2/2007)

Leach Field - Commercial

Drill Date 1/11/2008 **Test Date** 1/12/2008

Lot Information

Percolation Rate (*mpi*)	43
Flow (*gal/person/day*)	15
Number of People	6

Design Specifications

Active Leach Line (*ft*)	157	USE 200' Minimum
Reserve Leach Line (*ft*)	157	+ 100% Reserve
Trench Depth (*ft*)	3	
Rock Below Pipe (*in*)	12	
Septic Tank Capacity (*gal*)	1000	

Calculations

$$\left(\frac{6\ people \times 15\ {}^{gal}/_{person}/_{day}}{\sqrt[5]{43xmpi}}\right) = 118f^2\ of\ required\ absorption\ area$$

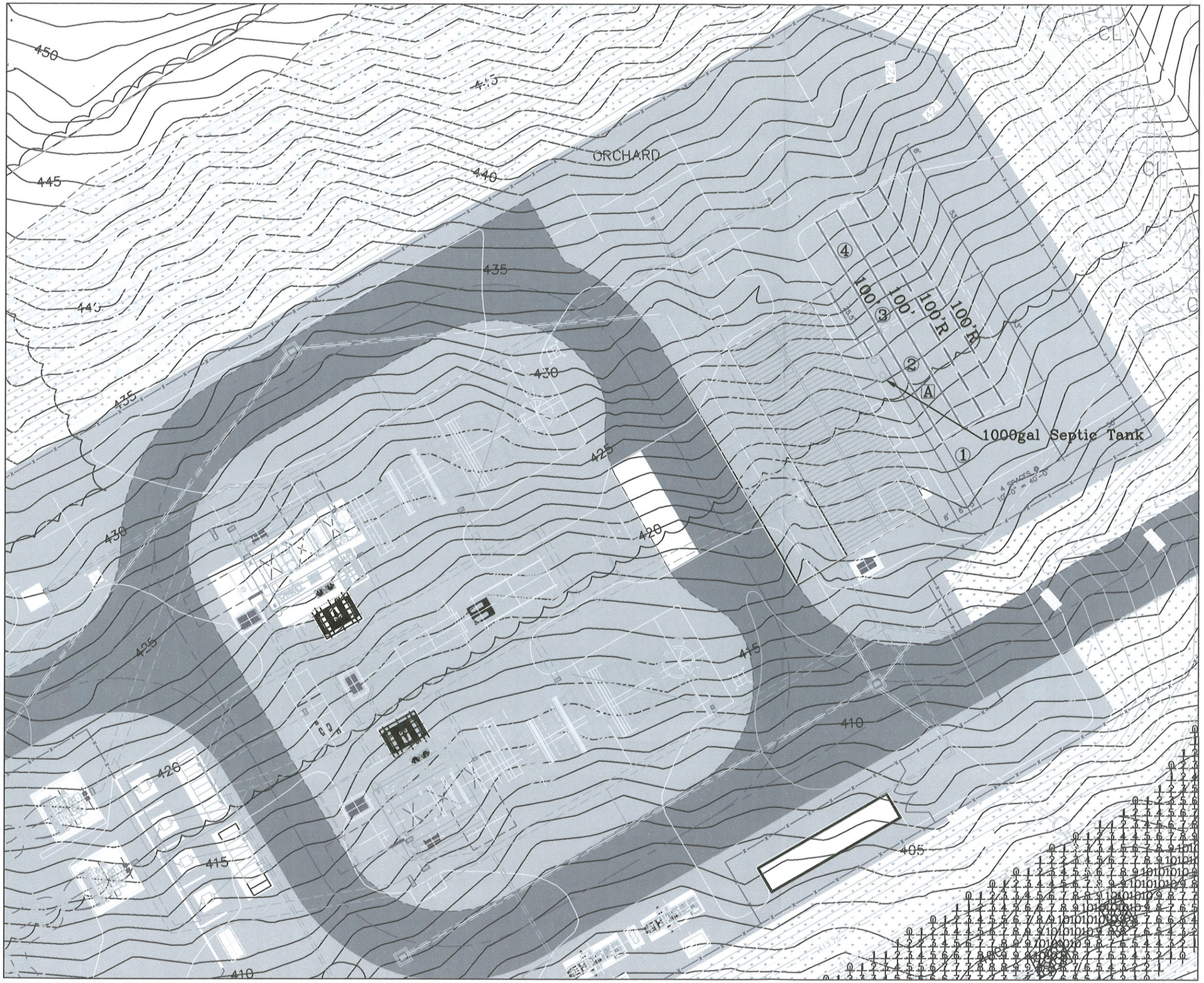
$$\left(\frac{118\ ft^2}{1.5}\right) \times 2 = 157ft\ of\ active\ leach\ line$$

REGISTERED PROFESSIONAL ENGINEER
RALPH MALCOLM VINJE
No. 863
Exp. 12-31-09
GEOTECHNICAL
STATE OF CALIFORNIA

Ralph M. Vinje GE #863

Vinje & Middleton
Engineering, Inc.

2450 Auto Park Way
Escondido, CA 92029-1229
(760) 743-1214



VINJE & MIDDLETON ENGINEERING, INC.
2450 Auto Park Way
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R1:
R2:
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(EX PAR 1 PER D98-109127) IN SW¼ OF SE¼ OF SEC 29-9-2W

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- Groundwater Boring
- 420 Contour Line w/ 1' Interval
- 200' Leach Line
- 200'R Reserve Leach Line
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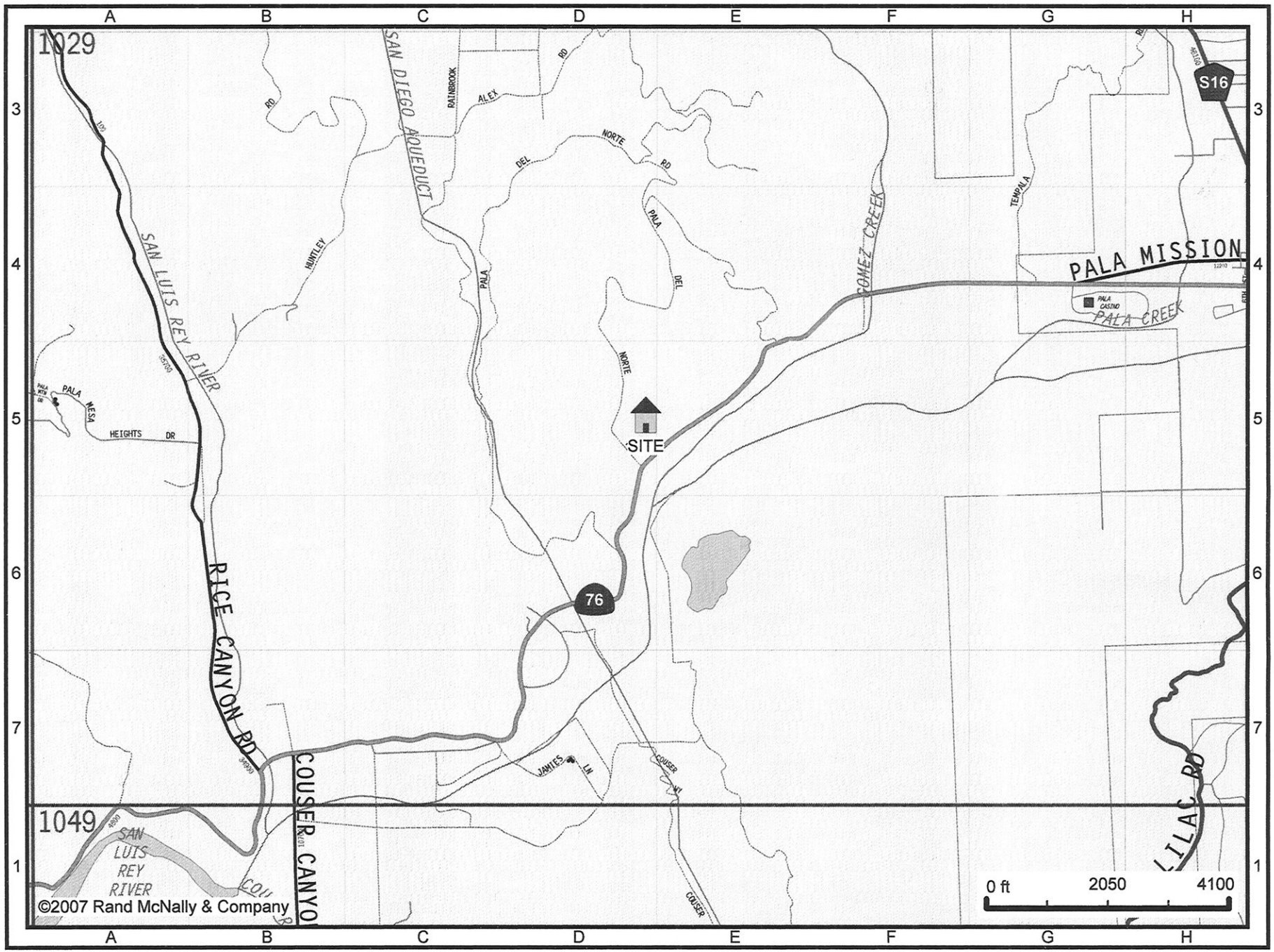
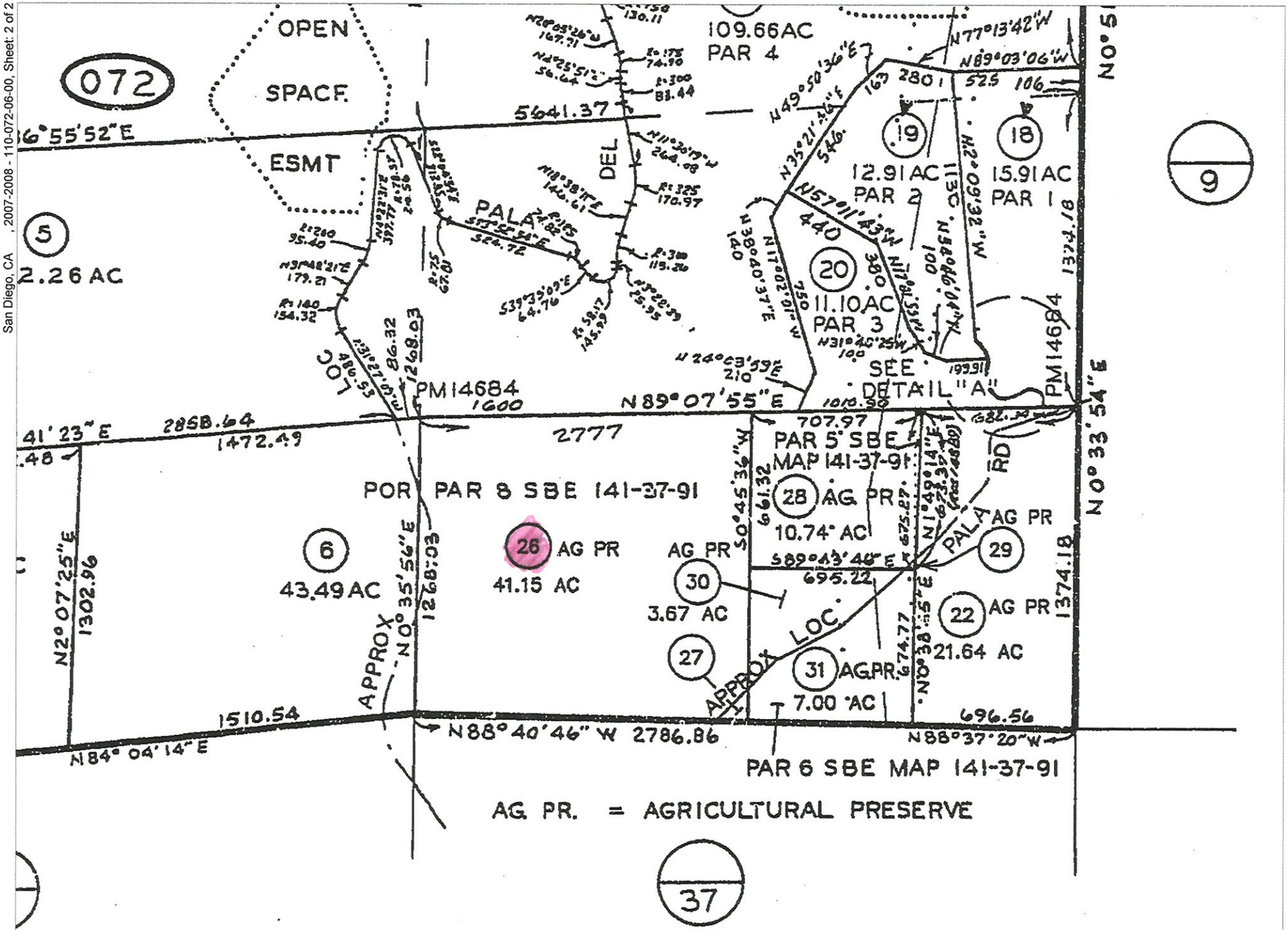
- Use 15 gal/person/day
- Use Commercial Design with Safety Factor 2
- Use 1000 Gallon Septic Tank

SCALE: 1" = 40'

DEH Approval Stamp and Notes


1029
1049
SAN DIEGO AQUEDUCT
RAINBROOK
ALEX
RD
DEL
NORTE
PALA
HUNTLEY
SAN LUIS REY RIVER
PALA MESA HEIGHTS DR
RICE CANYON RD
COUSER CANYON
GOMEZ CREEK
TEMPALA
PALA MISSION
PALA CASINO
PALA CREEK
S16
76
SITE
JAMES LN
COUSER
SAN LUIS REY RIVER
©2007 Rand McNally & Company
0 ft
2050
4100

SITE: 1029 - D5



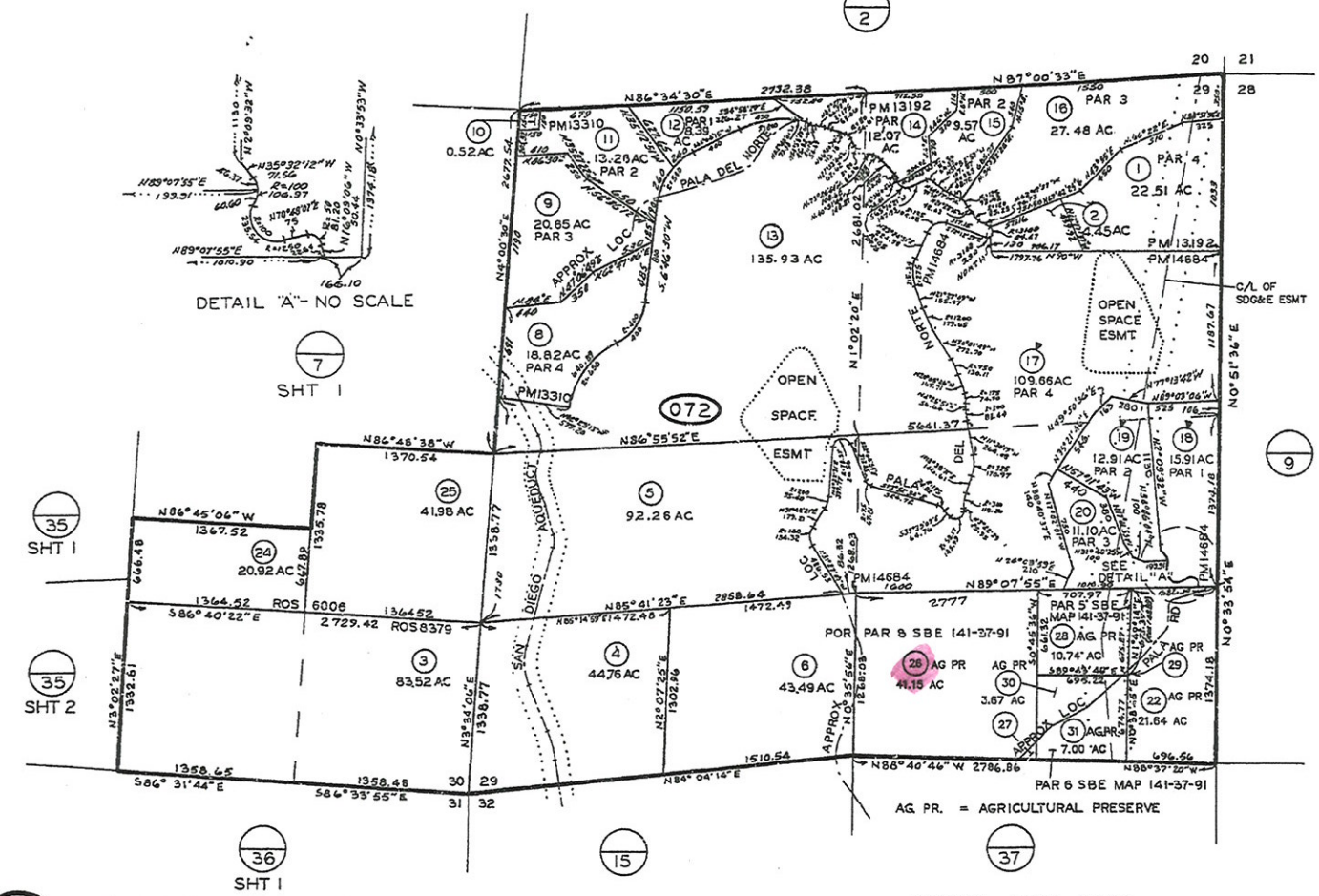
SEC 29 - T9S - R2W

1-800-345-7334

SCALE IN 1/10 OF AN INCH

110-07
SHT 2 OF 2

1" = 800



2/10/99 SM

CHANGES				
BLK	OLD	NEW	YR	CUT
070	070 VARIOUS	110-071 1-19	81	10006
070	6,22,23 45,48	NC 1 S/L CHG	81	5509
070	40,41	NC CHANGE	81	5533
070	40	79&70	82	2257
	41&79	81-85	83	2121
	80	86&87	84	2557 CANC
070	82	88-91	84	3802
	86	92-95	85	1201
	81&84	96-99	87	1851
	48	70&71 NC CHG	96	5528
	91	072 + 182	96	1888 NC
072	"070" VARIOUS	3-25	96	10041
	7,21,23	26-31	99	1077
	1,18-20,22 28-31	SAME & B/L CHG	99	5595

SEC 29 - T9S - R2W
SEC 30 - T9S - R2W - SE 1/4 POR
ROS 8351,8379,14889,15058,15610

MAR 01 1999

SAN DIEGO COUNTY
ASSESSOR'S MAP
BOOK 110 PAGE 07 SHT 2 OF 2

THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSES ONLY. NO LIABILITY IS ASSUMED FOR THE ACCURACY OF THE DATA SHOWN. ASSESSOR'S PARCELS MAY NOT COMPLY WITH LOCAL SUBDIVISION OR BUILDING ORDINANCES.

SEPTIC SYSTEM DESIGN REQUIREMENTS

County of San Diego Department of Environmental Health February 1999

What is a septic system?

A septic system is an on-site subsurface sewage disposal system that is designed to have the sewage treated through the soil. The key components are a septic tank, leach lines or seepage pit, and permeable, unsaturated soil. The design life expectancy is 20 to 30 years for a properly designed and maintained septic system. A septic system is not an option if public sewer is readily available to the site.

Design Requirements

Septic Tank

The septic tank size is a function of the typical peak daily flow of sewage generated by the building served by the septic system. The leach field or seepage pit size is a function of the peak daily sewage flow and soil characteristics for the disposal system.

All septic tanks must have IAPMO approval and be approved by this Department. It is recommended that second dwellings have their own septic tank.

A 1,000 gallon tank is required for up to a 3-bedroom house.

A 1,200 gallon tank is required for a 4-bedroom house.

A 1,500 gallon tank is required for a 5-6-bedroom house.

Sewer Pipe

Tight sewer pipe must have IAPMO approval. SDR-35 rated pipe is recommended for all plumbing from the septic tank to leach lines and crossover connections.

Leach Line Pipe

Leach line pipe shall have IAPMO approval, be 4" diameter, have 5/8" holes offset 60 degrees, and be constructed of PVC or carlon plastic.

Trench Dimensions

The standard leach line trench dimension is 18" wide by 36", 48", or 60" deep. The total length and depth will be a function of the percolation test, or subdivision map design requirements for the parcel.

The bottom of the leach line trench shall be level, and the trench shall be level on contour in order to maintain a uniform trench depth.

The trench unit may need to be modified in conditions where shallow clay lenses are encountered or the leach lines are to be installed on a slope greater than 25%.

Separation to Groundwater

The disposal system must have at least 5 feet of unsaturated soil below the bottom of the leach line trench or seepage pit in order to function properly and not pollute the groundwater. This separation is based on historical high groundwater levels for the site. If the groundwater table rises within 8 feet

Dams and Siphons

Leach line installations on a hillside or slight grade will require a serial system design. A dam and siphon will connect each pair of leach lines so that one trench at a time will take sewage effluent.

Rock Requirements

Leach line rock shall be washed and 1.0" to 1.5" in graded size. Rock fines or dust will seal off the infiltrative sidewall and bottom surfaces of a disposal trench, and clog the void space in between the rock. This can result in premature failure of the disposal system.

Plastic Chambers

Plastic chambers shall have IAPMO approval and approval from this Department. Chamber widths less than 18" will require a correction factor to increase the total linear footage sizing. Chamber interior widths of 18" or greater will have a 1:1 ratio to a standard leach line of rock and pipe.

Sizing Requirements

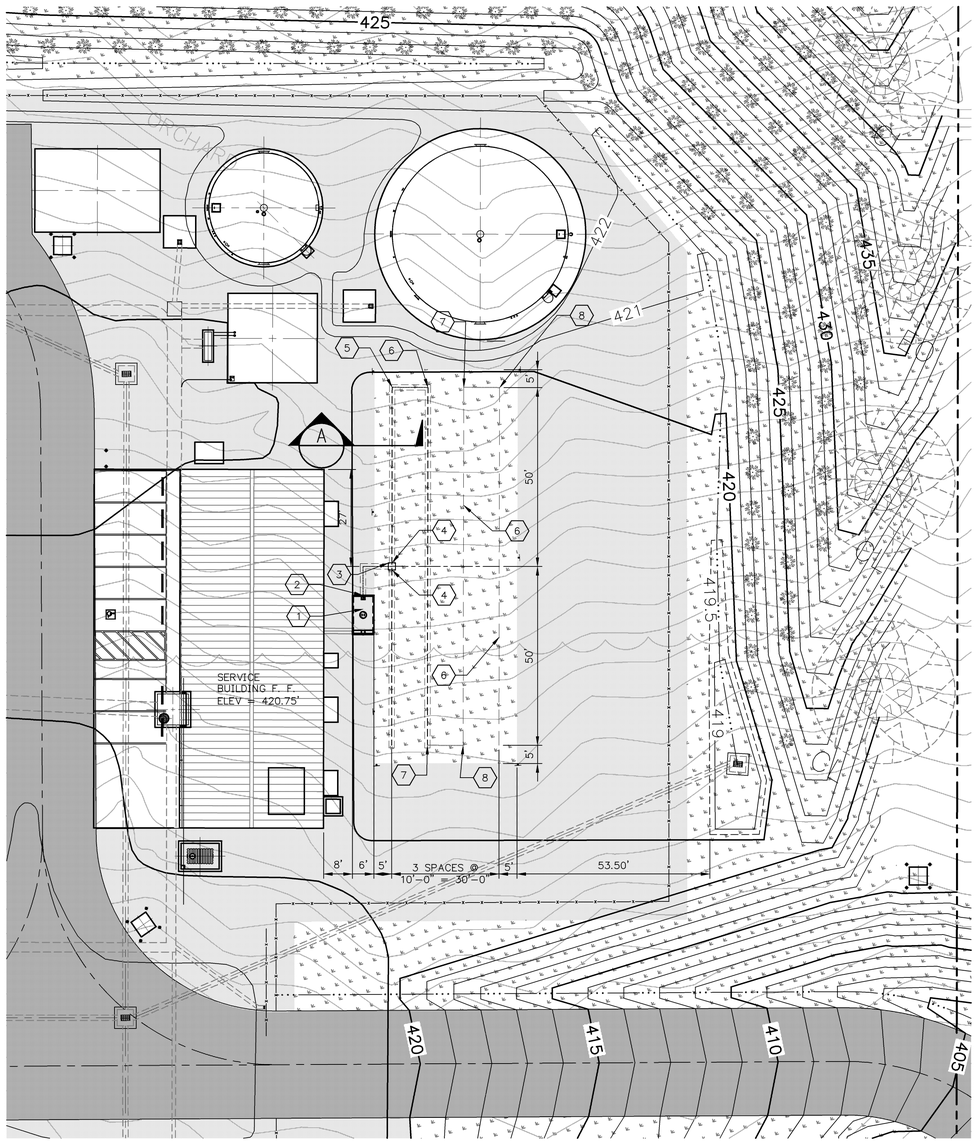
The minimum size leach field per County Code is 200 linear feet. The size of the leach field or seepage pit will be based on the number of bedrooms of the house and the percolation rate of the soil. A second dwelling will be sized as a separate house and not as a bedroom addition. Commercial buildings will be sized on usage and peak daily flows. Septic systems in the desert communities have a reduced sizing requirement based on a horizontal seepage pit design.

Horizontal Seepage Pits

Horizontal seepage pits are restricted to sites where the soil is uniform, the average percolation rate is no greater than 30 minutes per inch (mpi), and the depth of unsaturated soil is at least 13 feet. Full percolation testing is required for a horizontal seepage pit.

Vertical Seepage Pits

Vertical seepage pits are essentially large diameter shallow wells that sewage is discharged into. This type of disposal system is restricted to coastal sedimentary soil basins, where the groundwater is also contaminated by salt-water intrusion. Full percolation testing is required for a vertical seepage pit to serve new construction.



ON-SITE WASTEWATER TREATMENT SYSTEM (OWTS)

PLAN NORTH IS 29°55'46" CCW OF TRUE NORTH

20 0 20 40

SCALE IN FEET

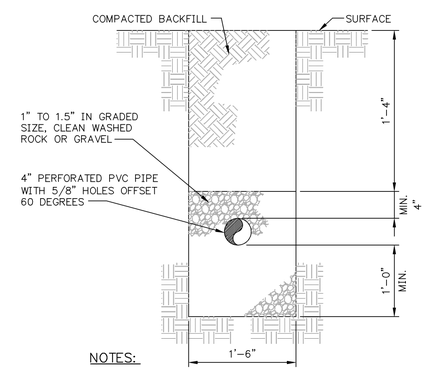
OWTS KEYNOTES:

1. INSTALL MINIMUM 1,000 GALLON WATERTIGHT CONCRETE SEPTIC TANK WITH AN EFFLUENT FILTER LOCATED ON TANK OUTLET THAT MEETS OR EXCEEDS THE MINIMUM REQUIREMENTS OF THE INTERNATIONAL ASSOCIATION OF PLUMBING AND MECHANICAL OFFICIALS (IAPMO), THE COUNTY OF SAN DIEGO DEPARTMENT OF ENVIRONMENTAL HEALTH-LAND AND WATER QUALITY DIVISION AND THE MANUFACTURER'S RECOMMENDATIONS.
   TOP ELEVATION PER MANUFACTURER'S RECOMMENDATIONS.
   FLOWLINE IN (SW) = 417.23'
   FLOWLINE OUT (NE) = 416.98'
2. INSTALL 15 L.F. 4" DIAMETER SCH 40 PVC PIPE TO DISTRIBUTION BOX @ 1.0% SL.
3. INSTALL A 2 OUTLET WATERTIGHT CONCRETE DISTRIBUTION BOX THAT MEETS OR EXCEEDS THE MINIMUM REQUIREMENTS OF THE IAPMO, THE COUNTY OF SAN DIEGO DEPARTMENT OF ENVIRONMENTAL HEALTH-LAND AND WATER QUALITY DIVISION AND THE MANUFACTURE'S RECOMMENDATIONS.
   TOP ELEVATION PER MANUFACTURER'S RECOMMENDATIONS.
   FLOWLINE IN (SW) = 416.83'
   FLOWLINE OUT (N&S) = 416.75'
4. INSTALL 50 L.F. 4" DIAMETER SCH 40 PVC PIPE WITH 5/8" HOLES OFFSET 60 DEGREES AS SHOWN ON PLAN.
5. INSTALL 10 L.F. 4" DIA. SCH. 40 PVC TIGHTLINE PIPE, NON-PERFORATED PIPE @ 0.0% SL.
6. INSTALL 100 L.F. 4" DIAMETER SCH 40 PVC PIPE WITH 5/8" HOLES OFFSET 60 DEGREES AS SHOWN ON PLAN.
7. RESERVED FOR 10 L.F. 4" DIA. SCH. 40 PVC RESERVE TIGHTLINE PIPE, NON-PERFORATED PIPE @ 0.0% SL.
8. RESERVED FOR 100' L.F. 4" DIA. SCH. 40 PVC RESERVE PIPE WITH ⅝" HOLES OFFSET 60 DEGREES AS SHOWN ON PLAN. LAND SET ASIDE FOR EMERGENCY RESERVE, INSTALLED IF PRIMARY SYSTEM FAILS.

OWTS DESIGN SETBACK REQUIREMENTS:

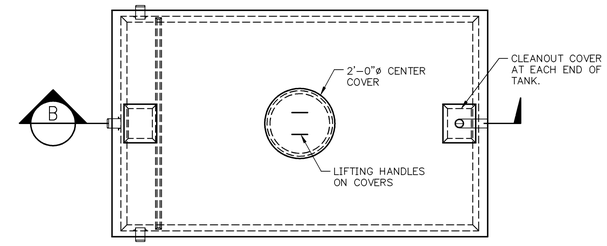
SYSTEM COMPONENT	SETBACK TO:	MINIMUM DISTANCE
SEPTIC TANK	STRUCTURE	5 FEET
LEACH LINES	STRUCTURE	8 FEET
LEACH LINES	DRAINAGE COURSE	50 FEET FROM TOP OF BANK
LEACH LINES	POND	100 FEET FROM SPILLWAY ELEV.
LEACH LINES	SEPTIC TANK	5 FEET
LEACH LINES	LEACH LINES	10 FEET

NOTES:
1. DESIGN CRITERIA PER THE COUNTY OF SAN DIEGO DEPARTMENT OF ENVIRONMENTAL HEALTH-LAND AND WATER QUALITY DIVISION.

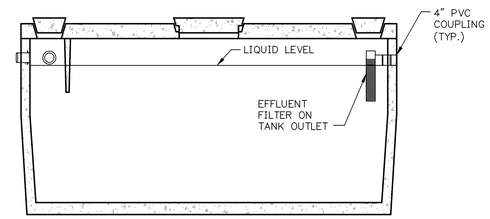


NOTES:
1. LEACH LINE PIPE SHALL BE IAPMO APPROVED.
2. LEACH LINE TRENCHES AND PIPES SHALL BE LEVEL WITH NOT MORE THAN 2" PER 100 LINEAR FEET OF VARIATION IN GRADE.
3. LEACH LINES SHALL BE LOCATED NO CLOSER THAN 10 FEET ON CENTER FROM ANY ADJACENT LEACH LINE.
4. THE LEACH LINES MUST BE APPROVED BY BOTH THE DEPARTMENT OF ENVIRONMENTAL HEALTH DIRECTOR AND AN INTERNATIONAL ASSOCIATION OF PLUMBING AND MECHANICAL OFFICIALS (IAPMO) REPRESENTATIVE PRIOR TO BACKFILLING.

A TYPICAL LEACH LINE SECTION
N.T.S.



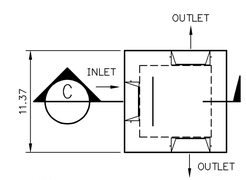
1000 GALLON SEPTIC TANK
N.T.S.



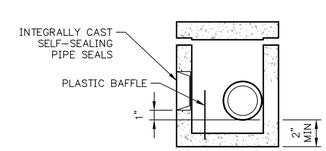
B SEPTIC TANK SECTION
N.T.S.

GENERAL NOTES:

CONCRETE SPECIFICATIONS:
1. 4500 PSI AFTER 28 DAYS.
2. REINFORCING IS GRADE 60.
3. ALL JOINTS SEALED WITH BUTYL RUBBER JOINT SEALANT (OR APPROVED EQUAL.)
4. CENTER ACCESS COVERS SHOULD HAVE RISERS TO BRING COVER ACCESS TO GRADE (SEE PLAN.)
5. COVER NOT DESIGNED FOR VEHICLE LOADS.
6. SEPTIC TANK SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
7. THE SEPTIC TANK MUST BE APPROVED BY BOTH THE DEPARTMENT OF ENVIRONMENTAL HEALTH DIRECTOR AND AN INTERNATIONAL ASSOCIATION OF PLUMBING AND MECHANICAL OFFICIALS (IAPMO) REPRESENTATIVE PRIOR TO BACKFILLING.



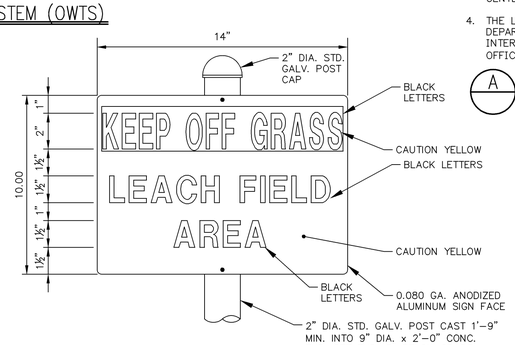
2 OUTLET DISTRIBUTION BOX
N.T.S.



C DISTRIBUTTON BOX SECTION
N.T.S.

GENERAL NOTES:

CONCRETE SPECIFICATIONS:
1. 4500 PSI AFTER 28 DAYS.
2. REINFORCING IS GRADE 60.
3. COVER NOT DESIGNED FOR VEHICLE LOADS.
4. ALL PENETRATIONS TO DISTRIBUTION BOXES ARE INTEGRALLY CAST.
5. DISTRIBUTION BOX SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.



1 TYPICAL LEACH FIELD SIGN
N.T.S.

LENGEND:

- LEACH FIELD SIGN (7 PLACES)
- DISTRIBUTION BOX
- SEPTIC TANK
- LEACH LINE (PERFORATED)
- TIGHTLINE (NON-PERFORATED)
- LEACH LINE RESERVE
- TIGHTLINE RESERVE

REV.	DATE	DESCRIPTION	DWN	CHK
A	11-30-07	ISSUED FOR MILESTONE 4	RLK	WHR
B	12-14-07	ISSUED FOR OWTS REVIEW	RLK	WHR
C	12-28-07	RE-ISSUED FOR MILESTONE 4	BGG	WHR
D	1-22-08	RE-ISSUED FOR OWTS	BGG	MJB
E	02-29-08	FINAL ISSUE FOR APPROVAL	BGG	WHR
F	6-2-08	ISSUED FOR AFC PERMIT	BGG	MJB

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Design – Construction – Field Service
16041 Foster
P.O. Box 1000
Stilwell, Kansas 66085-1000

ORANGE GROVE ENERGY L.P.
Schaumburg, IL

ORANGE GROVE POWER PLANT

ON-SITE WASTEWATER TREATMENT SYSTEM

DESIGN BY: M. BLAKE	CHECKED BY: B. ROMINES
DRAWN BY: R. KUHNS	DATE: 9-12-07
CLIENT I.D. ICC00101	SEGA PROJECT NO. 07-201

CADD FILE NAME: 07201-C200.dwg

DRAWING NO. C200 — REV. F

N:\2007\07201\dwgs\ce\07201-C200.dwg 6/2/08 1:26pm bgaspers

Dwellings that have more bedrooms than the above will require a design with oversized or a battery-type tank, if a common system is being proposed. Separate tanks for each dwelling could be used even if connected to a common disposal field.

Setbacks

Setbacks in layout designs refer to the required spacing in distance from components of the sewage disposal system and to structures, property lines, easements, watercourses, wells, or grading. Specific setback requirements will vary based on the type of system design and site conditions. These are:

System Component	Setback To:	Minimum Distance
Septic Tank	Structure	5 feet
Septic Tank	Property Line	5 feet
Septic Tank	Water Well	100 feet
Leach Lines	Structure	8 feet
Leach Lines	Property Line	5 feet
Leach Lines	Water Lines (Public)	25 feet from edge of easement (a)
Leach Lines	Water Well	100 feet (d)
Leach Lines	Drainage Course	50 feet from top of bank
Leach Lines	Flowing Stream	100 feet from top of bank
Leach Lines	Pond	100 feet from spillway elev.
Leach Lines	Reservoir	500 feet to 1000 feet based on average slope
Leach Lines	Aqueduct	100 feet from edge of easement (c)
Leach Lines	Road Easements	8 feet from edge of ultimate easement width (b)
Leach Lines	Cut Slopes	5:1 Setback from top of cut slope (e)
Leach Lines	Septic Tank	5 feet
Leach Lines	Leach Lines	10 feet
Leach Lines	Seepage Pits	15 feet
Seepage Pits	Structure	10 feet
Seepage Pits	Property Line	10 feet
Seepage Pits	Water Lines (Public)	25 feet from edge of easement (a)
Seepage Pits	Water Well	150 feet (d)
Seepage Pits	Drainage Course	50 feet from top of bank
Seepage Pits	Flowing Stream	100 feet from top of bank
Seepage Pits	Pond	100 feet from spillway elev.
Seepage Pits	Reservoir	500 feet to 1000 feet based on average slope measurements
Seepage Pits	Aqueduct	100 feet from edge of easement (c)
Seepage Pits	Road Easements	10 feet from edge of ultimate easement width (b)
Seepage Pits	Cut Slopes	5:1 Setback from top of cut slope (e)
Seepage Pits	Septic Tank	5 feet
Seepage Pits	Seepage Pits	20 feet

- The setback to a domestic water line may increase if the 5:1 setback of the utility trench depth exceeds the 25-ft setback.
- The setback may increase if the 5:1 setbacks to road cuts are greater than the minimum setback of 8 feet.

- Any reduction in the Aqueduct setback requires approval from the San Diego County Water Authority or other purveyor, if another district.
- The minimum setback may be increased if site conditions show the minimum setback is insufficient to protect groundwater supplies.
- No part of an on-site wastewater system, with the exception of a septic tank, pump chamber, enclosed filter, or tight sewer pipe, shall be located closer than a 5:1 setback distance to the top of a cut bank, or the edge of an excavation. The horizontal distance would be five times the height of the cut or depth of the excavation. This setback would also be applied to the top of an eroded bank or natural slope in excess of 60%.

Leach Line Linear Footage Requirements

The charts located at the end of this policy show the corresponding length of leach line as a function of percolation rate and the number of bedrooms for a single-family dwelling. *The one-bedroom design lengths correspond to 2nd dwelling systems on a shared system with the main house or its own system.

Seepage Pits

Seepage Pits will require full percolation testing by a licensed civil engineer, registered geologist, or registered environmental health specialist.

- Horizontal seepage pits cannot be used if percolation rates exceed 30 minutes per inch.
- Vertical seepage pits are restricted to coastal sedimentary basins that have saltwater intrusion into the groundwater with TDS levels in excess of 1500 ppm.
- Desert seepage pits are used alluvial areas of the San Diego County desert areas, and percolation testing may be waived.

Grading Plan Review

Upon approval of a layout by DEH, the Specialist will write in the grading line on the approval form indicating whether a field check of completed grading is required prior to issuance of a septic tank permit. Keep in mind that DEH grading approval is not the same as local land use agency grading approval. For the unincorporated parts of the County, some small projects may not require grading permits. For other projects, County land use agencies issue the following kinds of grading permits:

- **Minor Grading**: Processed through the Department of Planning and Land Use (DPLU), Building Division. Please see the Grading Plan Checklist (DPLU: BLDG-009, Rev. 1-99). Phone: (858) 565-5920.

- **Major Grading**: Processed through the Department of Public Works, Land Development Division, Grading Improvements. Please see the Major Grading Plan Checklist. Phone: (858) 694-3281.

Minor and/or major grading plans will be reviewed by DEH prior to grading to determine impacts to the approved on-site wastewater system and adjacent properties. After completion of the grading, the appropriate DEH field office must be contacted to arrange for a field check, unless the field check is waived on the layout approval.

Cross reference(s)--Excavations, fills and obstructions, § 71.301 et seq.

SEC. 68.341. RESERVE AREA REQUIREMENTS.

An area shall be set aside for each on-site wastewater system design to allow for the replacement of the entire drainage/dispersal system design. This 100% reserve area is required for all on-site wastewater system designs that are a part of new construction, remodeling, a change in usage that increases potential occupancy or daily sewage flow, subdivisions, boundary adjustments, or grading plan projects.

For percolation rates greater than 60 minutes per inch and less than or equal to 90 minutes per inch, the reserve area requirement shall be 200%. For percolation rates greater than 90 minutes per inch and less than or equal to 120 minutes per inch, the reserve area requirement shall be 300%. For percolation rates greater than 120 minutes per inch, the reserve area requirement shall be 400%.

If an existing property does not have 100% reserve area, no construction shall take place that would remove any usable reserve area, unless the property can be connected to public sewer.

(Repealed by Ord. No. 6049 (N.S.), effective 6-11-81; new section 68.341 added by Ord. No. 9273 (N.S.), effective 12-15-00)

SEC. 68.342. TYPE OF ON-SITE WASTEWATER SYSTEM REQUIRED.

Any on-site wastewater system hereafter constructed or installed in the County shall consist of a septic tank with effluent discharging into either (1) a leach field disposal system, (2) a seepage pit disposal system, or (3) an alternative on-site wastewater system designed and installed to specifications as set forth by the Director.

(Amended by Ord. No. 6049 (N.S.), effective 6-11-81; amended by Ord. No. 7428 (N.S.), effective 2-4-88; amended by Ord. No. 9273 (N.S.), effective 12-15-00)

SEC. 68.343. MINIMUM REQUIREMENTS FOR SEPTIC TANKS.

Any septic tank hereafter installed in the County shall meet the following minimum specifications:

(a) All Septic Tanks shall be IAPMO approved and approved by the Department of Environmental Health.

(b) Such tank shall be watertight and shall be constructed of concrete or other approved material. The Director may approve alternative materials and construction specifications to meet health requirements.

(Amended by Ord. No. 3061 (N.S.), effective 5-11-67; amended by Ord. No. 6049 (N.S.), effective 6-11-81; amended by Ord. No. 7428 (N.S.), effective 2-4-88; amended by Ord. No. 9273 (N.S.), effective 12-15-00)

SEC. 68.344. MINIMUM REQUIREMENTS FOR DISTRIBUTION BOX.

Any distribution box hereafter constructed or installed in the County shall meet the following minimum specifications:

(a) Such distribution box shall be watertight and shall be constructed of the same materials authorized for construction of a septic tank. The inner surface of the distribution box shall be resistant to sewer gas corrosion.

(b) The outlets from such distribution box shall have exactly the same elevation and shall be located at least two inches above the bottom of the box. The inlet to such distribution box shall be one inch above the elevation of the outlets.

(c) Such distribution box shall be connected to a subsurface disposal system.

(Amended by Ord. No. 3061 (N.S.), effective 5-11-67; amended by Ord. No. 6049 (N.S.), effective 6-11-81; amended by Ord. No. 9273 (N.S.), effective 12-15-00)

SEC. 68.345. LEACH LINE DISPOSAL SYSTEMS.

Any leach field system hereafter constructed or installed in the County for the purpose of disposing of effluent from a septic tank shall meet the following minimum requirements:

(a) Perforated leach line pipe shall have IAPMO approval, and its installation must be approved by the Director.

(b) Each leach line shall consist of a trench 18 inches wide, 36 inches deep and be located no closer than 10 feet on center from any adjacent line. Clean washed rock or gravel grading 1 to 1-1/2 inches shall be placed around the leach line pipe. At least 12 inches of rock shall be placed under the leach line pipe and 4 inches above the leach line pipe.

(c) Leach line trenches and pipes shall be level with not more than 2 inches per 100 linear feet of variation in grade.

(d) Leach line trench depth may exceed 36 inches below the surface when percolation testing substantiates adequate soil conditions exist. Additional rock shall be added to the trench so the leach line pipe depth does not increase. The maximum trench depth shall not exceed 60 inches without special approval of the Director.

(Amended by Ord. No. 3061 (N.S.), effective 5-11-67; amended by Ord. No. 6049 (N.S.), effective 6-11-81; amended by Ord. No. 7428 (N.S.), effective 2-4-88; amended by Ord. No. 9273 (N.S.), effective 12-15-00)

SEC. 68.345.1. CHAMBER SYSTEMS.

Any chamber disposal system hereafter constructed or installed in the County for the purpose of disposing of wastewater from a septic tank shall meet the following minimum requirements:

(a) The minimum length of any chamber system shall be at least 200 linear feet.

(b) The chambers shall have IAPMO approval for use in an on-site wastewater system and its installation must be approved by the Director.

(c) Each chamber shall have a minimum width of 18 inches to provide the equivalent trench bottom absorption area of an 18-inch wide leach line trench. Chambers less than 18 inches wide may be used at the discretion of the Director but will require a correction factor to provide the equivalent trench bottom absorption area of an 18 inch wide leach line trench. The chambers shall be installed in a trench 24 to 36 inches deep and be located no closer than 10 feet on center from any adjacent line.

(d) Chamber trenches and chambers shall be level with not more than 2 inches per 100 linear feet of variation in grade.

(e) Chamber trench depth may exceed 36 inches below the ground surface when percolation testing substantiates adequate soil conditions exist. Clean washed rock or gravel grading 1 to 1-1/2 inches shall be added to the trench below the chamber so the chamber depth does not increase. The

Attachment G
Application Fee Check for $4,000

J-POWER USA Development Co.

		Payment Number	Check Date	Check Number
CALIF004	California Department of Fish and Game	000000000770	07/31/2008	003374

Voucher Number	Invoice Number	Invoice Date	Outstanding Amt	Net Paid Amt	Discount Taken	Write Off	Net Check Amt
000000000932	OG CDFG 1602 APPLIC/	07/31/2008	$4,000.00	$4,000.00	$.00	$.00	$4,000.00
		TOTALS:	$4,000.00	$4,000.00	$.00	$.00	$4,000.00

MIZUHO CORPORATE BANK, LTD.
New York, NY 10020
1-430-260

003374

J-POWER USA Development Co. LTD.
1900 E Golf Road
Suite 1030
Schaumburg, IL 60173

DATE	AMOUNT
Jul 31, 2008	$4,000.00

Pay Four Thousand Dollars And 00 Cents

to the Order of:

California Department of Fish and Game

Security features. Details on back.

⑈003374⑈ ⑆026004307⑆ 1074001670 2⑈

Attachment H
Compact Disc Copy of LSAA Application Package