

3.10 SOIL AND WATER RESOURCES

Potential soil and water resource issues related to the construction and operation of the proposed Larkspur 3 Energy Facility are similar to those described in the 2001 AFC. The following subsections provide a description of the environmental baseline data related to soil and water resources, potential environmental consequences, proposed mitigation measures, and consistency with LORS. The discussion will focus on the proposed incremental changes from the 2001 AFC.

3.10.1 Environmental Baseline

The Project site is at the same location previously analyzed in the 2001 AFC. See Section 2.0, Project Description for a complete list of baseline information associated with the Project. The Project will require minor grading of the approximate 100 foot by 300 foot area to create a pad for the additional turbine and related equipment. A description of the incremental changes to soil and water resources as a result of the Project is provided below.

3.10.1.1 Soils

The Project region is within the broad area of Otay Mesa mapped as Diablo clay with 2 to 9 percent and 9 to 15 percent slopes locally (map unit designation DaC and DaD, respectively). The Project site and proposed temporary construction laydown area soil types are listed in Table 3.10-1 and displayed in Figure 3.10-1. The characteristics of these soil types are provided in Table 3.10-2.

The Project lies within the Otay Formation which consists of Diablo clay with 2 to 9 percent slopes. The construction laydown area, located approximately ½-mile south-southeast of the Project site, chiefly consists of Diablo clay at 9 to 15 percent slopes and Diablo clay at 2 to 9 percent slopes is mapped in the southeast corner.

TABLE 3.10-1
SOIL TYPES

Project Site	Soil Mapping Unit/Name
Proposed Larkspur 3 Energy Facility	DaC/Diablo clay, 2 to 9 percent slopes
Temporary Construction Laydown	DaD/Diablo clay, 9 to 15 percent slopes DaC/Diablo clay, 2 to 9 percent slopes

Soil Mapping Unit/Name Sources: SanGIS (parcels 2006, SSURGO soils 2002)

**TABLE 3.10-2
SOIL CHARACTERISTICS**

Map ¹	Soil Series Name	Depth from surface (in)	USDA texture	USCS Classification ²	Permeability (in/hr)	Liquid Limit (%)	Plasticity Index (%)	Drainage	Erosion Hazard	Land Capability ³	Reaction pH
DaC	Diablo clay, 2-9%	0-32 32	Clay Soft sandstone	CH	0.06-0.2	50-65	30-40	poorly drained	slight	Ile-5	6.6-7.8
DaD	Diablo clay, 9-15%	0-32 32	Clay Soft sandstone	CH	0.06-0.2	50-65	30-40	poorly drained	slight	IIIe-5	6.6-7.8

Source: Soil Survey of San Diego County (Soil Interpretation Manuel) Part III, San Diego County Planning Department, June 1975

3.10.1.2 Soil Erosion

Under federal mandate (40CFR Parts 9, 122, 123 and 124), the SWRCB has made revisions to the State General Construction Permit, Order No. 99-08-DWQ. Effective March 10, 2003, the threshold for implementation of this permit dropped from 5.0 acres to 1.0 acre.

The total anticipated disturbed soil area (graded area) at the Project site is an approximate 0.9-acre (approximate 300-foot by 100-foot) area. However, anticipated disturbances within the temporary construction laydown area normally must be considered in the calculation of the total disturbed soil area. Combined with the proposed temporary construction laydown area, the total disturbed soil area is over 1.0 acre. Therefore, a Notice of Intent (NOI) to comply with the General Construction Permit along with associated fees will need to be filed with the SWRCB and a construction phase Storm Water Pollution Prevention Plan (SWPPP) will need to be prepared prior to construction.

The existing Larkspur Energy Facility is stabilized from erosion by gravel, asphalt, concrete, and perimeter landscaping. The Project site is comprised entirely of disturbed vegetation and landscaping. The existing landscaping assists in reducing soil erosion; however, once the Project site has been graded, compacted, and covered with concrete or gravel, there will be little remaining potential for natural erosion. Routine vehicular access to the individual Project components during operation of the Project will be limited to stabilized areas not subject to erosion. Standard operational activities would not involve soil disturbance.

3.10.1.3 Water Supply and Reclaimed Water Usage

The Project will utilize the same water supply sources as the existing Larkspur Energy Facility, including an existing 6-inch interconnect to the Otay Water District (OWD) 24-inch water line located in Otay Mesa Road and an additional connection to the 16-inch water line in Harvest Road for fire water supply. Per a conversation with OWD on February 19th, 2007 there is no reclaimed water available to the Project. If and when reclaimed water is made available from the Otay Water District (OWD) (anticipated to be at least 4 to 5 years away, per same discussion with the OWD), the use of reclaimed water for irrigation purposes will be evaluated. Once recycled water is made available it will be evaluated for incorporation into existing landscape irrigation. In addition, if water quality is deemed appropriate, recycled water will also be incorporated into the evaporative cooling system for the turbines. Water will continue to be treated with a reverse osmosis membrane and off-site regenerated portable trailer-mounted mixed bed demineralizers as utilized by the existing Larkspur Energy Facility.

3.10.1.3.1 Construction Phase

Water use for construction will consist predominately of water used for dust control and concrete truck and equipment washout during concrete pouring. Water use for dust control is estimated at 1,000-gallons per day, 5-days a week from August 2007 to March 2008, for an estimated total of 160,000 gallons. Water use for concrete washout will be approximately 500-gallons per day for 30 days, for an estimated total of 15,000 gallons.

3.10.1.3.2 Operational Phase

According to the 2001 AFC, the existing Larkspur Energy Facility consumes approximately 320-gallons of water per minute (gpm) at peak use. The Project's incremental increase in average and maximum daily water usage is anticipated to be approximately 58.3 gpm and 69.3 gpm, respectively. This includes water for NO_x control, Sprint water injection, and water for evaporative cooling (see Table 3.10-3). The anticipated incremental increase in average annual water usage is approximately 14 million gallons assuming operation up to 4,000-hours per year at 58.3 gpm. The existing easternmost landscaping area (approximately 0.5-acres) will be reduced to approximately 0.2-acres, so water usage for irrigation is anticipated to be less (approximately 100,000 ga/yr versus the existing 246,000 ga/yr).

TABLE 3.10-3
INCREMENTAL INCREASE IN WATER REQUIREMENTS

Water Use	Average Daily Usage Based on Annual Average Operating Conditions¹	Maximum Daily Usage Based on Maximum Operating Conditions²
Evaporative Cooler	3.5 gpm	18.1 gpm
NO _x Water Injection	36.1 gpm	33.0 gpm
Sprint Water Injection	18.7 gpm	18.2 gpm
Irrigation	No increase/Potential Decrease	No Increase/Potential Decrease
Total	58.3 gpm	69.3 gpm

¹ Annual average operating temperature conditions are 63.6°F-Dry Bulb Temperature, 56.9°F-Mean Coincident Wet Bulb Temperature, and 66.7% Mean Coincident Relative Humidity.

² Maximum operating temperature conditions are 104°F-Dry Bulb Temperature, 67.1°F-Mean Coincident Wet Bulb Temperature, and 13% Mean Coincident Relative Humidity.

NO_x = nitrogen oxides

gpm = gallons per minute

The Project's incremental change in water consumption has been reviewed by the OWD, and they have confirmed that there is adequate water supply and emergency storage capacity to serve the Project. While the OWD has no objection to the Project, the Applicant may be required to submit improvement plans and obtain approval for the additional water use by OWD prior to construction. Coordination with the OWD regarding specific requirements for service laterals, backflow devices, and/or meter costs is required. If additional service laterals are required the Applicant must pay to have OWD install them, and each service must have an approved backflow device, purchased and installed by the Applicant.

Additionally, based on San Diego Fire Department's requirements, a second fire water supply connection from Otay Mesa Road, in addition to the current connection from Harvest Road, may be required. The San Diego Fire Department will be contacted by the Applicant prior to construction concerning specific fire protection requirements and emergency fire fighting water capacity.

Irrigation plans for Project landscaping will be designed to reclaimed water standards and specifications and submitted to OWD and DEH, for plan check and approval.

3.10.1.4 Wastewater

Consistent with the existing Larkspur Energy Facility, wastewater discharge from the Project will continue to be either disposed of off site or discharged to the City of San Diego Metropolitan Wastewater District (MWWD) system via an existing sewer line in Otay Mesa Road. The existing Larkspur Energy Facility currently has three sources of wastewater. The first wastewater source is the oil-water separator (OWS) process that removes oil from drains around the CTGs. Drains are routed to a separation sump, with provisions for oil collection by an OWS. The wastewater from all facility drains and water from the OWS effluent are discharged to the MWWD sewer. The oily waste and wash wastewater are currently transported for off-site disposal by a licensed hazardous waste hauler. The second source of wastewater is from the operation for the reverse osmosis water treatment system used to produce high purity water for injection into the turbine as part of the air emissions control system. The third source consists of cooling tower blowdown.

The sources of wastewater will remain the same; however, an additional OWS and wastewater sump will be constructed on site as part of the Project. The constituents in the wastewater will be similar to existing constituents from the existing Larkspur Energy Facility including dissolved and suspended solids concentrated from incoming water for process wastewater discharges and sanitary discharges from one toilet. Any oil sludge will continue to be properly disposed of at an appropriate waste disposal or recycling facility.

The estimated incremental increase in annual oily waste and annual wash wastewater to be disposed of off site is approximately 250 gallons and 3,750 gallons, respectively (Table 3.10-4). The incremental increase in the quantity of annual wastewater discharge as a byproduct of reverse osmosis treatment and cooling water blowdown is anticipated at approximately 5.82 gpm. The existing waste discharge agreement with MWWD may require modification to reflect the anticipated added discharge. MWWD was contacted on March 12, 2007. MWWD's Industrial Wastewater Control Program requested a letter and site plan prior to construction providing Project information including the proposed type of equipment (e.g., single cycle gas turbine generator). MWWD will then determine if the existing sewer agreement should be modified or if a new permit should be issued for the Project.

**TABLE 3.10-4
INCREMENTAL INCREASE IN WASTEWATER DISCHARGES**

Wastewater Source	Disposal Location	Incremental Increase in Wastewater Discharge ¹
Oily Waste	Off-site disposal by a licensed hazardous waste hauler/disposal company	0.001 gpm (250 gallons per year)
Wash Wastewater	Off-site disposal by a licensed hazardous waste hauler/disposal company	0.016 gpm (3,750 gallons per year)
Reverse Osmosis Process Wastewater	MWWD Sewer System	5.8 gpm (1,396,640 gallons per year)

¹ Wastewater discharge values based upon operation of new gas turbine at 4,000-hours per year.

3.10.1.5 Stormwater

As discussed, the Project site is currently comprised entirely of landscaped vegetation and does not contain any impervious surfaces. The Project would convert a large portion of the existing landscaped areas to impermeable surfaces such as concrete pads and access roads; thus, an increase in stormwater runoff is anticipated. Based on the Project area (approximately 0.9 acres), the anticipated incremental increase in additional annual average stormwater runoff is approximately 171,100 gallons (0.525 acre-feet). The estimated average annual stormwater runoff from the existing Larkspur Energy Facility is approximately 521,000 gallons (1.6 acre-feet) based upon an average annual rainfall of 10 inches over the existing 2.74-acre facility and assuming an average site imperviousness of 70-percent.

The Project site would be graded to direct stormwater runoff to follow the same drainage pattern as the existing Larkspur Energy Facility and drain towards the southeast. Currently, at the southeast site boundary the stormwater drains by sheet flow to the southern edge of the site ending in a riprap energy dissipater that outlets to an undeveloped parcel southeast of the facility. The existing energy dissipater would be relocated to the southeast corner of the Project. A stormwater management plan was not prepared because the Project will not significantly alter drainage patterns or flows, and stormwater runoff is by surface flow and does not require underground storm drain pipes or connections to a municipal storm drain system.

Approximately 200 feet east of the facility there is an existing unnamed intermittent drainage feature that is not listed as a water quality sensitive area, and is ultimately tributary to the Tijuana River. The existing Larkspur Energy Facility as well as the Project area, is not located within a City, County, or Federal Emergency Management Agency floodplain.

3.10.1.6 Water Quality

MWWD has wastewater quality requirements for temperature, total dissolved solids, and total organics which are currently being met by the existing Larkspur Energy Facility. While the total amount of wastewater produced from the Project site would increase, no increase in the concentration of contaminants in the wastewater is expected. The Project would continue to meet MWWD water quality requirements.

A Spill Prevention Control and Countermeasures Plan (SPCCP) and an Industrial SWPPP are currently implemented at the existing Larkspur Energy Facility. The existing Industrial SWPPP will be amended, as necessary, to exclude the Project site. A new Industrial SWPPP will be prepared and implemented for the Project. A construction phase SWPPP will be implemented because the total disturbed soil area (including the temporary construction laydown area) exceeds 1 acre. The construction SWPPP will include an erosion and sediment control plan and description of the construction phase water quality BMPs to be implemented to minimize or eliminate construction phase water quality impacts.

Development of this type and size within the City of San Diego typically requires the installation of post-construction site design, source control, and treatment control water quality BMPs prior to off-site discharge, which may include biofiltration strips, bioswales, infiltration, or detention BMPs. The Project may be subject to these post-construction water quality requirements, and features such as infiltration or biofiltration strips or detention may be required along the Project's draining perimeter.

3.10.2 Environmental Consequences

The Project will require a slight increase in water supply and produce additional wastewater as an increment to the existing Larkspur Energy Facility; however, no significant impacts to soil and water resources will result from the changes proposed as part of this Amendment. Implementation of post-construction water quality BMPs including landscaping the unpaved areas around the perimeter of the Project site will prevent post-construction erosion. Agreements will be obtained, as necessary, from OWD and MWWD for the incremental increase in water supply and waste, respectively. Specifically, the Project will not (1) violate any water quality standards or waste discharge requirements; (2) substantially deplete groundwater supplies or recharge; (3) substantially alter drainage patterns resulting in increased erosion/siltation or increased stormwater runoff that would result in flooding on- or off-site; or (4) expose people or structures to flood hazards or be subject to seiche, tsunami, or mudflow.

3.10.3 Mitigation Measures

No significant impacts related to soil and water resources are anticipated from the Project. Thus, no mitigation measures are proposed for soil and water resources.

3.10.4 Consistency with LORS

The construction and operation of the Project, as amended, will conform with all applicable LORS related to soil and water resources. Table 3.10-5 presents the water resources-related LORS.

**TABLE 3.10-5
WATER RESOURCES RELATED-LORS**

LORS	Applicability	Conformance
Federal		
CWA § 402; 33 USC § 1342; 40 CFR Parts 110, 112, 116	Requires NPDES permits for construction and industrial stormwater discharges. Requires preparation of an SWPPP and Monitoring Program.	The current Industrial SWPPP will be amended to reflect the new facility. An SWPPP will also be prepared for construction activity.
CWA § 311; 33 USC § 1342; 40 CFR Parts 122-136	Requires reporting of any prohibited discharge of oil or hazardous substance.	The Project will conform by proper management of oils and hazardous substances both during construction and operation.
CFR, Title 40, Parts 124, 144 to 147	Requires protection of underground water resources.	Underground water resources will be protected through implementation of the industrial and construction phase SWPPPs.

**TABLE 3.10-5
WATER RESOURCES RELATED-LORS
(CONTINUED)**

LORS	Applicability	Conformance
State		
CWC § 13552.6	Use of potable domestic water for cooling towers and air conditioning is unreasonable use if suitable recycled water is available.	Project has determined from OWD that recycled water is not available in the vicinity of the Project site.
California Constitution Article 10 § 2	Avoid the waste or unreasonable uses of water. Regulates methods of use and diversion of water.	Project includes appropriate water conservation measures, both during construction and operation. The Project will comply with this as well as SWRCB Resolution 75-58.
State Water Resources Control Board, Resolution No. 75-58	Addresses sources and use of cooling water supplies for power plants which depend on inland waters for cooling and in areas subject to general water shortages.	Project has determined from OWD that recycled water is not available at this site.
Porter-Cologne Water Quality Act of 1972; CWC § 13000-14957, Division 7, Water Quality	Requires State and Regional Water Quality Control Boards to adopt water quality initiatives to protect state waters. Those criteria include identification of beneficial uses, narrative, and numerical water quality standards.	Project will conform to applicable state water standards. The current Industrial SWPPP will be amended to reflect the new facility and a construction phase SWPPP will be implemented.
Title 22, CCR	Addresses the use of recycled water for cooling equipment.	Project has determined from OWD that recycled water is not available at this site.
The Safe Drinking Water and Toxic Enforcement Act of 1986 (proposition 65), Health and Safety Code 25241.5 <i>et seq.</i>	Prohibits the discharge or release of chemicals known to cause cancer or reproductive toxicity into drinking water sources.	Project will conform to all state water quality standards, both qualitative and quantitative.
CWC Section 461	Encourages the conservation of water resources and the maximum reuse of wastewater, particularly in areas where water is in short supply.	Project has determined from OWD that recycled water is not available at this site.
CWC Section 5002	Requires a "Notice of Extraction and Diversion of Water" to be filed with the State Water Resources Control Board on or before March 1st of the succeeding year.	Groundwater will not be used as a supply source so this does not apply.
CWC Section 13751	Requires a "Report of Completion" to be filed with the State Water Resources Control Board within 60 days of well construction.	Groundwater will not be used as a supply source so this does not apply.

**TABLE 3.10-5
WATER RESOURCES RELATED-LORS
(CONTINUED)**

LORS	Applicability	Conformance
California Public Resources Code § 25523(a); 20 CCR §§ 1752, 1752.5, 2300 – 2309, and Chapter 2 Subchapter 5, Article 1, Appendix B, Part (1)	The code provides for the inclusion of requirements in the CEC's decision on an AFC to assure protection of environmental quality and requires submission of information to the CEC concerning proposed water resources and water quality protection.	The Project will comply with the requirements of the CEC to assure protection of water resources.
CWC §§ 13271 – 13272; 23 CCR §§ 2250 – 2260	Reporting of releases of reportable quantities of hazardous substances or sewage and releases of specified quantities of oil or petroleum products.	No releases of hazardous substances are anticipated; however, the Project will conform to all State water quality standards, both qualitative and quantitative.
CWC §13260 – 13269; 23 CCR Chapter 9	Requires the filing of a Report of Waste Discharge (ROWD) and provides for the issuance of WDRs with respect to the discharge of any waste that can affect the quality of the waters of the State.	Process wastewater will be discharged to the MWWD sewer system. OWS waste and the wash wastewater will be collected and disposed of off site by a licensed transport/disposal company.
CEQA, Public Resources Code § 21000 <i>et seq.</i> ; CEQA Guidelines, 14 CCR § 15000 <i>et seq.</i> ; Appendix G	The CEQA Guidelines (Appendix G) contain definitions of projects which can be considered to cause significant impacts to water resources.	The Project will comply with the requirements of the CEC to assure protection of water resources.
Local		
City of San Diego Municipal Code Land Development Manual Stormwater Standards	Applies to projects processed through the City Development Services Department on compliance with permanent and construction stormwater quality requirements for new developments. Non-point sources of water pollution, such as runoff from urban areas, grading, and construction shall be recognized as potentially significant impacts of development and construction related and post-construction water quality BMPs installed.	If City processing is required, the Project will conform to all applicable water quality policies and programs. Grading and erosion control plans will prevent construction impacts. Post-construction water quality BMPs such as infiltration, biofilters, detention, and velocity dissipation may be required.

Table 3.10-6 provides the agency contacts for soil and water resources.

**TABLE 3.10-6
AGENCY CONTACTS**

Agency	Contact	Title	Telephone
Otay Water District (OWD)	David T. Charles	Engineering Public Services Supervisor	(619) 670-2241
City of San Diego, Building Safety and Construction Development Services	Robert D. Medan	Fire Prevention Inspector II	(619) 446-5444
City of San Diego Metropolitan Wastewater District (MWWD)	Dan Gutierrez	Inspector, Industrial Wastewater Control Program	(858) 654-4118

3.10.5 References Cited

California Energy Commission. 2001. Larkspur Energy Facility Conditions of Certification. Located at http://www.energy.ca.gov/sitingcases/peakers/larkspur/documents/01_Larkspur_SA.PDF

County of San Diego Department of Public Works, Flood Control Section. June 2003. San Diego County Hydrology Manual.

Federal Emergency Management Agency, Flood Insurance Rate Map for San Diego County and Incorporated Areas, Number 06073C2179F, dated June 19, 1997.

San Diego County Planning Department and Comprehensive Planning Organization. June 1975. Soil Survey of San Diego County (Soil Interpretation Manual) Part III.

State Water Resources Control Board, National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges associated with Construction Activity (General Permit) Water Quality Order 99-08 DWQ (and applicable amendments).

Wildflower Energy, Application for Certification Pursuant to the 21-Day Emergency Permitting Process Larkspur Energy Facility San Diego, California, March 7, 2001.

3.10.6 Conditions of Certification

This Amendment proposes one additional condition for the Larkspur 3 Energy Facility Project Conditions of Certification.

Proposed Condition:

SOIL&WATER 7: If and when reclaimed water is made available from the Otay Water District (OWD) (anticipated to be at least 4 to 5 years away, per discussion with the OWD on February 19th, 2007), the use of reclaimed water for irrigation purposes shall be implemented and the use of reclaimed water for evaporative cooling will be evaluated.