

5.15 Water Resources

5.15.1 Introduction

This section presents the laws, ordinances, regulations, and standards (LORS) applicable to water resources, describes the existing environment that may be affected, and identifies potential impacts related to water resources. In addition, this section presents proposed mitigation measures, and proposal conditions of certification. The agencies involved and agency contact names, as well as the permits required and the permits schedules, are also provided below.

5.15.2 Laws, Ordinances, Regulations, and Standards

Federal, state, and local LORS applicable to water resources and conformance are discussed in this section and summarized in Table 5.15-1.

TABLE 5.15-1
Laws, Ordinances, Regulations, and Standards Applicable to Water Resources

LORS	Requirements/ Applicability	Administering Agency	AFC Section Explaining Conformance
Federal			
Federal Clean Water Act of 1977 (as amended)	Prohibits discharge of pollutants to receiving waters unless the discharge is in compliance with an NPDES permit. Applies to all point-source discharges, including industrial wastewater and storm water runoff, during both construction and operation.	San Diego Regional Water Quality Control Board (RWQCB)	5.15.2.1
State			
Federal Clean Water Act (implemented by State of California)	Implements and enforces the federal NPDES permit program.	San Diego RWQCB	5.15.2.2
Porter-Cologne Water Quality Control Act	Governs the regulation of water quality within California and authorizes preparation of Basin Plans.	San Diego RWQCB	5.15.2.2
Local			
City of Carlsbad, Section 15.12 of the City of Carlsbad Municipal Code	Protects and enhances the water quality of the City of Carlsbad receiving waters and wetlands in a manner pursuant to and consistent with the Clean Water Act and the municipal NPDES Permit.	City of Carlsbad Public Works Department	5.15.2.3

TABLE 5.15-1
Laws, Ordinances, Regulations, and Standards Applicable to Water Resources

LORS	Requirements/ Applicability	Administering Agency	AFC Section Explaining Conformance
City of Carlsbad, Standards Urban Storm Water Mitigation Plan (SUSMP)	Guides compliance for permanent and construction storm water requirements for new private and public development projects in the City of Carlsbad.	City of Carlsbad Public Works Department	5.15.2.3

5.15.2.1 Federal LORS

5.15.2.1.1 Clean Water Act

The Clean Water Act authorizes the U.S. Environmental Protection Agency (USEPA) to regulate discharges of wastewater and storm water into surface waters by issuing National Pollutant Discharge Elimination System (NPDES) permits and setting pretreatment standards. In California, the State Water Resources Control Board (SWRCB), acting through its RWQCBs, implements these permits consistent with a Memorandum of Understanding with the USEPA. For this reason, relevant NPDES permits are discussed below under State LORS.

5.15.2.2 State LORS

5.15.2.2.1 Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act established the SWRCB and divided the state into nine regional basins, each with a RWQCB. The SWRCB is the primary state agency responsible for protecting the quality of the state's surface and groundwater supplies, and enforcing the Clean Water Act and state water quality laws and regulations. Administration is delegated to the nine RWQCBs; the San Diego RWQCB regulates water quality in San Diego County.

The Porter-Cologne Water Quality Control Act authorizes the SWRCB to draft state policies regarding water quality. It requires that the SWRCB, or the appropriate RWQCB, adopt water quality control plans (or Basin Plans) for the protection of water quality. A Basin Plan contains the following:

- Beneficial uses of water to be protected;
- Water quality objectives for the reasonable protection of the beneficial uses; and a
- Program of implementation for achieving the water quality objectives.

5.15.2.2.2 State Water Resources Control Board and San Diego Regional Water Quality Control Board *Construction Storm Water NPDES Permit*

The SWRCB implements regulations under the federal Clean Water Act requiring storm water discharges associated with construction activity to be regulated by an NPDES permit (SWRCB, 1999). The SWRCB is the permitting authority in California and has adopted a statewide General Permit for Storm Water Discharges Associated with Construction Activity (General Construction Permit) that applies to projects resulting in one

or more acres of soil disturbance. This is SWRCB Order 99-08-DWQ. The construction of the CECP would result in disturbance of more than one acre of soil; therefore, the project will require coverage under the statewide General Construction Permit. This includes the preparation of a Storm Water Pollution Prevention Plan (SWPPP) that would specify site management activities to be implemented during site development. These management activities could include construction storm water best management practices (BMPs), dewatering runoff controls, and construction equipment decontamination. The San Diego RWQCB requires that a Notice of Intent be filed prior to construction activities, and that the SWPPP be maintained onsite during construction. A copy of the NOI and Construction SWPPP is located in Appendix 5.15C.

Municipal Storm Water NPDES Permit

Pursuant to the Clean Water Act, a Municipal Storm Water NPDES Permit (Order No. 2001-01, NPDES No. CAS0108758) was issued to San Diego County, and 18 cities (including Carlsbad) by the San Diego RWQCB on February 21, 2001. This municipal permit was issued pursuant to the USEPA's Phase I Municipal Program and requires the development and implementation of a program addressing storm water runoff pollution issues in development planning for public and private projects. Because the municipal storm water standards would be enforced by the City of Carlsbad's SUSMP, they are discussed below under local regulations.

Industrial Storm Water NPDES Permit

The SWRCB also implements regulations under the federal Clean Water Act requiring storm water discharges associated with industrial activity to be regulated by an NPDES permit (SWRCB, 1997). The SWRCB adopted the statewide General Permit for Storm Water Discharges Associated with Industrial Activity (General Industrial Permit, Order 97-03-DWQ) and issued Waste Discharge Requirements (WDRs) for discharges of storm water, excluding construction activities. The CECP will require an operational SWPPP, including good housekeeping practices and BMPs, during project operation. The San Diego RWQCB requires a Notice of Intent to be filed for industrial activities to be covered under the statewide General Industrial Permit. A draft SWPPP for industrial operations is provided in Appendix 5.15D. An NOI will be submitted to the State Water Quality Control Board at a later date prior to plant operation.

Cabrillo Power I LLC has an individual NPDES permit for industrial discharges from the Encina Power Station and is currently discharging wastewater pursuant to Order No. 2000-03, NPDES Permit No. CA0001350. The NPDES permit includes WDRs for discharges of non-contact cooling water, low volume wastes, metal cleaning wastes, and storm water. Storm water collected from the power station, gas turbine, main transformers, paint booth, sodium hypochlorite tanks, sulfuric acid and sodium hydroxide tanks, employee parking area, administrative buildings, and the maintenance building is discharged under this permit. All other storm water is discharged under authority of the General Industrial Permit.

Water Quality Control Plan for the San Diego Basin

The Porter-Cologne Water Quality Control Act (Division 7 of the California Water Code) governs the regulation of water quality within California and established the authority of the SWRCB and the nine Regional Boards. The San Diego RWQCB established regulatory standards and objectives for water quality in the coastal watersheds of San Diego County in the Water Quality Control Plan for the San Diego Region, commonly referred to as the

“Basin Plan.” The Basin Plan identifies existing and potential beneficial uses and provides numerical and narrative water quality objectives designed to protect those uses.

5.15.2.3 Local LORS

5.15.2.3.1 City of Carlsbad

Section 15.12 of the City of Carlsbad Municipal Code was established to protect and enhance the water quality of the City of Carlsbad receiving waters and wetlands in a manner pursuant to and consistent with the Clean Water Act and the municipal NPDES Permit. This section prohibits discharges of non-storm water to the storm water conveyance system, or to any other conveyance system, which discharges into receiving waters. This section also requires the use of BMPs to the maximum extent practicable to eliminate or reduce pollutants entering the City’s storm water conveyance system.

In addition, per the Municipal NPDES Permit, the City of Carlsbad requires that development and significant redevelopment projects, that fall under the category of “priority projects”, include BMPs to ensure that those projects reduce potential urban pollutant runoff. Redevelopment is described as land-disturbing activity that results in the creation, addition, or replacement of 5,000 square feet or more of impervious surface area on an already developed site. Redevelopment includes, but is not limited to: the expansion of a building footprint; addition or replacement of a structure; replacement of impervious surface area that is not part of a routine maintenance activity; and land disturbing activities related to structural or impervious surfaces. Actions that require a discretionary action by the City of Carlsbad (i.e., planned industrial permits, redevelopment permits, coastal development permits) must complete the “Storm Water Requirements Applicability Checklist” of the City’s SUSMP. This checklist will determine if the project is subject to the Priority Project Permanent Storm Water BMP Requirements and/or the Standard Permanent Storm Water BMP Requirements. These requirements are discussed in Section III, Permanent Storm water BMP Selection Procedure, of the SUSMP and include steps to identify and mitigate pollutants and conditions of concern. Compliance with the SUSMP would compliment the requirement to prepare and implement a SWPPP for industrial activities.

Because the CECP is subject to the General Construction Permit (as described above), the Applicant is not required to prepare a Water Pollution Control Plan under Section IV, Construction Storm Water BMP Performance Standards, of the SUSMP.

5.15.3 Affected Environment

5.15.3.1 Hydrologic Setting

The CECP site is in the City of Carlsbad, located in northern San Diego County. Carlsbad is located within the Agua Hedionda Lagoon watershed which has a total drainage area of approximately 29 miles in the cities of Carlsbad, Vista, Oceanside, and San Diego County. Annual precipitation ranges from 10 to 13 inches per year, most of which falls between November and February. The climate of San Diego County is characterized by long, warm, dry summers and mild, sometimes wet winters. The average mean temperature for the area is approximately 65 degrees Fahrenheit in the coastal zone and 57 degrees Fahrenheit in the surrounding hills.

The -CECP site is within the Carlsbad Hydrologic Unit (CHU) in the western portion of the San Diego Hydrologic Region. The CHU is comprised of six watersheds (Loma Alta, Buena Vista, Agua Hedionda, Encinas, San Marcos, and Escondido) and four coastal lagoons (Buena Vista, Agua Hedionda, Batiquitos, and San Elijo) for a total acreage of 135,322 acres. The CHU extends inland approximately 24 miles to just northeast of Lake Wohlford, and is bordered by the San Luis Rey River Watershed to the north and the San Dieguito River Watershed to the south (WURMP, 2003; CWMP, 2002). The maximum elevation of the CHU is approximately 2,400 feet and it extends to sea level at the Pacific Ocean.

5.15.3.1.1 Surface Water

The CECP site is located between San Luis Rey River to the north and San Marcos Creek to the south. It is situated within the Agua Hedionda Lagoon watershed, which has a total drainage area of approximately 29 square miles in the cities of Carlsbad, Vista, Oceanside, and San Diego County. The main stream in the watershed is Agua Hedionda Creek, which begins on the southwestern slopes of the San Marcos Mountains in northern San Diego County, flowing generally southwestward to the Agua Hedionda Lagoon and the Pacific Ocean (Figure 5.15-1)

The nearest surface water drainage to the CECP site is Agua Hedionda Creek. As described in the Basin Plan, beneficial uses of Agua Hedionda Creek include municipal and domestic supply, agricultural, industrial services, contact and non-contact water recreation, and wildlife and warm freshwater habitat. The CECP site is also located near the surface water of Buena Vista Creek. Beneficial uses of Buena Vista Creek include municipal and domestic supply, agricultural, industrial services, contact and non-contact water recreation, wildlife and warm freshwater habitat, and preservation of rare and endangered species.

Coastal waters in the vicinity of the project include the Pacific Ocean, Agua Hedionda Lagoon, and Buena Vista Lagoon. The existing beneficial uses of San Diego County beaches and nearshore areas include water contact recreation (e.g., surfing, swimming), non-contact recreation (e.g., walking, jogging), sport fishing, aquaculture, shellfish harvesting, municipal and domestic supply, preservation of rare and endangered species, marine and wildlife habitat, areas of special biological significance, and navigation.

Agua Hedionda Lagoon is designated as an estuarine habitat and has the same beneficial uses as the Pacific Ocean except for commercial fishing, areas of special biological significance, spawning of aquatic organisms, and navigation. Buena Vista Lagoon is a designated Ecological Reserve by the California Fish and Game Commission and a portion of the lagoon is a bird sanctuary. Buena Vista Lagoon has existing beneficial uses of contact (fishing only) and non-contact water recreation, areas of special biological significance, marine and wildlife habitat, preservation of rare and endangered species, warm freshwater habitat, and has potential for beneficial use as an estuarine habitat.

The CECP site is located within the existing Encina Power Station, which is adjacent to Agua Hedionda Lagoon and across Carlsbad Boulevard from the Pacific Ocean and Carlsbad State Beach. The Encina Power Station has a NPDES permit from the San Diego RWQCB to intake and discharge a maximum of 857 MGD of sea water for use as once-through cooling for Units 1-5 at the Encina Power Station. As part of the CECP, existing steam boiler Units 1, 2, and 3 at the Encina Power Station will be retired. The retirements will occur upon the successful commercial operations of the new CECP generating units. The retirements will

create substantial environmental benefits from the elimination of the 225 million gallons per day of cooling water (seawater) intake capacity for Units 1-3 and the resulting decrease in impingement and entrainment of marine organisms attributed to those unit's cooling water flow; cessation of discharge of wastewaters to the Pacific Ocean from Units 1-3; and elimination of the use of potable water attributed to the existing operation of Units 1-3.

5.15.3.2 Marine Setting

A geophysical survey of the nearshore vicinity of the Encina Power Station was conducted by Coastal Environments (Elwany et al., 1998a and b) to characterize topography, habitat types, and sediment thickness for a sediment transport study. In general, the seafloor topography gently slopes offshore to the southwest. The nearshore area upcoast of the intake channel consists of predominantly rocky outcrops, with the offshore areas almost exclusively sand. The northern rocky-outcrop area extends fewer than 1,000 feet downcoast (south) of the inlet channel. The downcast bottom, extending approximately 1,000 feet past the discharge channel, is entirely sandy until the rocky outcrops of the Terra Mar headlands are reached. Offshore sediment depth is generally less than four feet thick at a water depth of about 48 feet. There are some exceptions, such as deeper pockets between the northern and southern outcrop areas. These may be associated with erosional channels created in the lagoon watershed when the sea level was lower. Sediment thickness is deeper farther offshore, to greater than 12 feet in about 70 feet of water.

5.15.3.2.1 Groundwater

Groundwater is defined as subsurface water that occurs beneath the water table in fully saturated soils and geologic formations. All major drainage basins in the San Diego Region contain ground water basins. The basins are relatively small in area and usually shallow. Although these ground water basins are limited in size, the ground water yield from the basins has been historically important to the development of the region. A number of the larger ground water basins can be of future significance in the San Diego Region for storage of both imported waters and reclaimed wastewaters. Nearly all of the local ground waters of the region have been intensively developed for municipal and agricultural supply purposes. The CECP site is located within the Agua Hedionda groundwater basin, and flanked by the Encinas groundwater basin to the south and the Buena Vista Creek basin to the north (Figure 5.15-2).

The Water Quality Control Plan for the San Diego Basin does not include any existing or potential beneficial uses of groundwater for the Buena Vista or Agua Hedionda watersheds. The groundwater table at the Encina Power Station was encountered during drilling at a depth of 20.8 to 28.9 feet below the existing ground surface (or at an approximate elevation of 1.1 to 14.2 feet mean sea level) (Geo-Logic, 2004).

5.15.3.2.2 Flooding Potential

The Encina Power Station and the CECP site are not located within the 100-year floodplain (Zone A) as defined by the Federal Emergency Management Agency (FEMA, 1997). The CECP site is located in a non-shaded Zone X area (areas determined to be outside of the 500-year floodplain) see Figure 5.15-3.

5.15.3.3 Tsunami and Seiche

Areas in the vicinity of large water bodies are potentially subject to seismically induced hazards such as tsunamis and seiches.

5.15.3.3.1 Seiche

Seiching involves an enclosed body of water oscillating due to ground shaking, usually following an earthquake. According to the City of Carlsbad *South Coastal Redevelopment Plan* (2000), seiches are not expected to affect areas five to ten feet above the mean water level in the Agua Hedionda lagoon.

5.15.3.3.2 Tsunami

A tsunami is a seismic sea-wave caused by sea-bottom deformations that are associated with earthquakes, landslides or volcanic activity beneath the ocean floor. Damaging tsunamis are rare but potentially catastrophic events that present a danger to the people and economy of California, primarily through the impact on ports (State of California Seismic Safety Commission [SSC], 2005). Over 80 tsunamis have been observed or recorded along the coast of California in the past 150 years, nine of which have caused minor damage in ports and harbors, and two with major impacts (SSC, 2005). The worst recorded tsunami event occurred in 1964 when 12 people died in California from the tsunamis generated from the Great Alaska earthquake. According to a recent SSC report entitled “The Tsunamis Threat to California” (December 2005), the Cascadia subduction zone, which extends from offshore northern California to the Pacific northwest, would produce the State’s largest tsunamis. The Cascadia subduction zone is similar to the Alaska-Aleutian trench that generated the magnitude 9.2 March 1964 Alaska earthquake and the Sunda trench in Indonesia that produced the magnitude 9.1 December 2004 Sumatra earthquake.

Local tsunamis can be caused by significant vertical displacement along offshore faults or coastal and submarine landslides and are always largest closest to the source region where they may strike the closest coastline only minutes after the triggering. Factors at the originating point such as earthquake magnitude, type of fault movement, depth of earthquake, focus, water depth and the ocean bottom profile all contribute to the size and momentum of a tsunami (Lida, 1969, in Geo-Logic, 2004). Because Southern California is oriented obliquely with major originating tsunami zones (i.e., Cascadia subduction zone), has a relatively wide and rugged intercontinental borderland—which acts as a diffuser and reflector of remotely generated tsunami wave energy—as well as the nature of offshore faults (i.e., strike-slip, as opposed to large thrust or normal faults), there is a low potential for catastrophic damage to the San Diego County coastline. The SSC tsunami threat report (2005) for California indicates that tsunami run up heights are estimated between 0.3 feet to slightly over 3 feet.

5.15.3.3.3 Climate Change Sea Level Rise

Coastal observations and global model projections indicate that California’s open coast and estuaries will experience rising sea levels during the next 100 years. Studies from the last 100 years in the north coast, San Francisco and San Diego, California indicate that the rise in sea level has affected these regions. Historical trends quantified from a small set of California tide gages, have shown an increase in 0.08 inches per year and are similar to those rates estimated for global mean sea level. Recent climate change simulations project significant global sea level rise during the next 100 years due to factors including thermal

expansion as the oceans warm and runoff from accelerated melting of land-based snow and ice. Relative to sea levels in 2000, it is projected that by the period of 2070 through 2099 sea level rises could rise from 4.3-21 inches for simulations showing the lower greenhouse (GHG) emissions scenario, 5.5-24 inches for the middle upper emission scenario and from 6.7-28 inches for the highest scenario (California Climate Change Center, 2006).

The elevation of the CECP site is approximately 30 feet above mean sea level. In the event that effects from climate change did include rising sea levels over the next 30 years, (projected project life), even using the scenario with the highest rise of sea level protection (estimated over 100 years), the CECP site would still be elevated at a level above the projected sea level rise.

5.15.3.4 Precipitation and Drainage

5.15.3.4.1 Precipitation

The CECP site is located in the northern portion of San Diego County, within the City of Carlsbad. The climate of San Diego County is characterized by long, warm, dry summers and mild, sometimes wet winters. The average rainfall is 10 to 13 inches per year, most of which falls between November and February. The mean annual precipitation (January 1953 to December 2006) is 10.28 inches per year. The minimum and maximum annual precipitation for the period of record is 2.82 inches and 21.89 inches, respectively (WRCC, 2007). Table 5.15-2 shows the average annual precipitation at the Oceanside Marina, approximately eight miles north of the CECP site. The location of the precipitation station and the CECP site are similar in elevation and coastal climatological setting.

TABLE 5.15-2
Rainfall Near the CECP Site (1953-2006)

Precipitation	Annual	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average	10.28	2.11	2.14	1.73	0.97	0.21	0.08	0.03	0.07	0.26	0.39	1.04	1.25

Source: WRCC, 2007.

5.15.3.4.2 Storm Water Runoff/Drainage Prior to Construction

The overall CECP site is approximately 23 acres, of which approximately 45 percent is impervious. Of the total area, approximately 10 acres, which is currently a three-tank, oil tank farm, is 100 percent impervious due to a concrete lining beneath the oil tanks. This tank farm area site is 30 to 35 feet below grade. The three oil tanks will be demolished as part of the ongoing operations and maintenance of the Encina Power Station. The existing storm water system includes pumped collection sumps feeding existing discharge line which eventually discharges into Aqua Hedionda Lagoon. Storm water runoff under current conditions drains to the existing storm drain system, maintained by the City of Carlsbad Department of Public Works. Existing runoff volume is estimated to be approximately 7.66 cubic feet per second (cfs), during a (25 year) year storm event (120 minutes at 0.68 inches per hour

5.15.3.5 Water Supply, Use, and Disposal

This section characterizes the quantity of the water required for power generation by the CECP, the sources of the water supply and wastewater discharge, and treatment and disposal methods.

5.15.3.5.1 Water Supply

California Code of Regulators (CCR) Title 22 reclaimed water will be used for the CECP's process, evaporative cooling water, and miscellaneous plant uses (e.g., equipment wash water), and onsite irrigation will be supplied by the City of Carlsbad Water Recycling Facility (see request for "will serve" letter in Appendix 5.15A). The Carlsbad reclaimed water plant is on Avenida Encinas, south of Cannon Road. The reclaimed water supply will be to a 360,000-gallon raw water storage tank via a 12-inch pipeline connecting to the City's reclaimed water line at Avenida Encinas and Cannon Road. The new connecting pipeline will likely be a 12-inch carbon steel, pipeline extending approximately 3,700 feet to a tie-in point adjacent to the CECP site, where an additional 1,100 feet of pipe on CECP property will extend to the raw (reclaimed) water storage tank. The reclaimed water will then be distributed at the CECP site for various uses as described below. The steam produced in the HRSGs will be used for generating additional electric power from steam turbines and for power augmentation of the combustion turbines. The ultra pure demineralized water that will be used in the HRSGs will be further treated with oxygenated and all volatile chemicals for protecting HRSG tubes and components against the corrosive attack of the ultra pure water.

Potable water will be supplied to the CECP site by the City of Carlsbad. Potable water will be supplied through the existing water supply infrastructure – a 10-inch pipeline running immediately adjacent to the site on the west side. It will be used for domestic purposes, for fire protection, and as an emergency water supply for the project. A backup connection will allow potable water to be used for plant makeup in the event that reclaimed water is not available. This connection will be equipped with an approved back flow preventer.

5.15.3.5.2 Water Use

Water requirements for CECP are presented in Table 5.15-3. Annual average water use is based on 40 percent of the annual operating time (116.8 days of continuous operation a year). Under these annualized conditions, CECP would require approximately 536 acre-feet of water (reclaimed and potable) per year. Daily peak water (reclaimed and potable) use (4.23 acre feet per day) is based on 24-hr plant output at ambient conditions of 104°F and 11.8 percent relative humidity.

TABLE 5.15-3
Daily and Annual Water Use for CECP Operations

Water Use	Water Source	Daily Use (gpm)		Annual Use (afy)
		Average	Maximum	
Recycled Water	City of Carlsbad	320	945	517
Potable Water	City of Carlsbad	12	12	19

gpm = gallons per minute

afy = acre-feet per year (based on an annual operation of 8,760 hours/year at full plant output)

In addition to the above, water will be used during construction for dust and erosion control, equipment washing, and other short-term uses. The amount of water used for dust and erosion control is anticipated to be about 87 acre-feet during the construction period, and the amount of water for equipment washing is expected to be 0.10 acre-feet during the construction period. Prior to plant startup, additional water (estimated to be about 0.4 acre-feet) will be used for hydrostatic testing. The source of construction water will be the City of Carlsbad's potable water system.

5.15.3.5.3 Wastewater Discharges and Disposal

This section characterizes the volume and quality of wastewater that would be generated by CECP and the method of disposal. Estimated daily and annual wastewater discharge rates are provided in Table 5.15-4.

TABLE 5.15-4
Operational Wastewater Discharges from CECP

Waste Discharge Stream	Discharge Location	Daily Discharge (gpm)		Annual Discharge (mgy)
		Average	Maximum	
Reject from reverse osmosis units and discharge from miscellaneous plant drains	City of Carlsbad sanitary sewer system	107	290	56
Domestic wastewater	City of Carlsbad sanitary sewer system	12	12	6.3

mgy = million gallons per year (based on an annual operation of 8,760 hours/year at 61°F and 75% relative humidity)

5.15.3.6 Industrial Wastewater Discharges

CECP will use highly purified (demineralized) water for producing steam. A system of reverse osmosis (RO) units and mixed bed ion-exchange demineralizers will be used for producing high purity water from reclaimed water. During the demineralization process the RO units will produce a reject stream consisting of higher concentrations of undissolved and dissolved constituents that are present in the reclaimed water plus water treatment chemicals that will be added to the RO process and for pre- and post treatment of the processed water. This reject stream will be disposed of via the City of Carlsbad sewer line. It is estimated that 187 acre feet of RO reject stream will be disposed per year. This stream will be monitored prior to discharge, and treated if necessary, for compliance with the Encina Wastewater Authority (EWA) Discharge Limits. A pretreatment stage ahead of the RO stage will reduce biological and physical contaminants that would interfere with the RO process. Any reject stream from the pretreatment stage will also be discharged to the city sewer.

The mixed bed demineralizers downstream of the RO stage will be removed from the site at the end of their useful life for regeneration and replacement by an outside service provider and therefore will not generate any waste stream onsite.

Wastewater from miscellaneous plant uses, evaporative coolers, and HRSG blowdown will be recycled to the Raw Water Storage Tank for reuse. The plant wastewaters will be treated by filtration and oil/water separation prior to recycling and reuse. In the case of

emergencies, these wastes will be discharged to the City sewer system and in accordance with the EWA discharge regulations.

5.15.3.6.1 Alternative to Industrial Waste Discharge to City Sewer

An alternative to discharging to the City sewer is to treat the project's reject streams through a zero liquid discharge (ZLD) system that will produce no liquid waste stream requiring onsite or offsite disposal. The ZLD system evaluated for this alternative included a combination of a second RO system and evaporative/crystallizer. The second RO system would be used to concentrate and reduce the volume of the first RO reject stream, to be dried in an evaporation/crystallization unit. The permeate from the second RO would be returned for process reuse. The evaporation and drying of the second RO reject system would be accomplished by using low pressure extraction steam from the steam turbines. The dried solids would be classified as non-hazardous solid waste and disposed offsite. It is estimated that 700 tons of non-hazardous solid wastes would be disposed of annually for the ZLD option.

The ZLD system will require approximately 3.9 million kilowatt hours of electrical energy to operate each year. The estimated capital installed cost of a system is about \$14-million and the system will have a foot print of approximately 9,000 square feet. A life cycle cost analysis indicates for the CECP that sewer disposal is the preferred alternative and therefore was chosen for this project. ZLD is found economically unsound. This is further discussed in Appendix 5.15E.

The Applicant has requested a "will serve" letter from the City of Carlsbad indicating that the Encina Water Pollution Control Facility has the capacity to accept and treat the RO reject at the stated flow rate and characteristics (Appendix 5.15A).

5.15.3.6.2 Domestic Wastewater Disposal

Domestic wastewater generated at the CECP site, estimated at 12 gpm average, will also be discharged to the City sanitary sewer system. This volume would be considered a *de minimus* increase in demand on the sewer system; i.e., it would not be measurable within the overall dry weather flow and would be well within the treatment, conveyance, and disposal capacities of the City and EWA systems.

5.15.4 Environmental Analysis

Significance criteria are derived from the CEQA Appendix G checklist. The project would be considered to have a potentially significant effect if it would:

- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or offsite or in flooding on- or offsite.
- Create or contribute runoff water that would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff.
- Violate any water quality standards or waste discharge requirements or otherwise substantially degrade water quality.

- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).
- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.
- Place within a 100-year flood hazard area structures that would impede or redirect flood flows.
- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.
- Cause inundation by seiche, tsunami, or mudflow.

5.15.4.1 Drainage

The CECP site is currently in use with an existing storm water collection system and with impervious surfaces covering a large majority of the CECP site. CECP structures and equipment are based on a level (30 to 35 feet) that is lower than adjacent site grade, within the bermed area of previously existing fuel oil storage tanks. The existing storm water system includes pumped collection sumps feeding existing discharge line which eventually discharges into Aqua Hedionda Lagoon. This existing storm water collection system will be used for the CECP development and modified as necessary to accommodate the plant layout.

The volume and rate of runoff from the CECP site will be about the same as a result of project development because the CECP site will contain generally the same or less impervious surfaces and existing peak flow control BMPs under current conditions will be retained and/or improved. The CECP site will be designed to capture storm water runoff in a series of swales and drainage inlets that would convey runoff to the Carlsbad Department of Public Works storm drain system. The total developed Encina Power Station area is approximately 95 acres. Impervious surfaces (i.e., buildings and pavement) cover 10 percent of the existing site. The specific CECP site is approximately 23 acres. Project development will include the removal of existing paved surface at approximately elevation 30 to 35 feet which would contribute to pervious surface area. Conversely, access roads will be 25-foot wide pavement of a total length of about 3,300 feet within the lower level power block area. This and building and equipment enclosures and miscellaneous paved areas will contribute to impervious surface area. But, overall paved surface at elevation 30-35 will be reduced. For the project areas of the 23-acre CECP site, approximately 45 percent would be impervious surfaces (i.e., buildings, equipment, foundations and pavement), and 55 percent would be pervious surfaces (i.e., crushed stone surfacing and grass). Therefore, drainage flow from the CECP site will be about the same or less flow as that from the site under current conditions (see Appendix 5.15B). This is a less-than-significant impact.

Additionally, because the CECP is considered “redevelopment” as defined by the City of Carlsbad, a drainage concept and plan will be submitted to the City that includes details of facilities and measures that mitigate impacts to the City’s storm drain system.

5.15.4.2 Storm Water Quality (Construction Phase)

During construction, approximately 17 acres of land associated with the CECP site and additional areas along the linear corridors (e.g., reclaimed water line) would be disturbed. Surface water impacts are anticipated to be related primarily to short-term construction activity and consist primarily of increased potential for turbidity due to erosion of newly excavated or placed soils. Activities such as grading can potentially increase rates of erosion during construction. In addition, construction materials could contaminate runoff or groundwater if not properly stored and used. Compliance with engineering and construction specifications, following approved grading and drainage plans, and adhering to proper material handling procedures will ensure effective mitigation of these short-term impacts. BMPs for erosion control will be implemented. Additionally, erosion and sediment controls, surface water pollution prevention measures, and other BMPs will be developed and implemented for construction in accordance with the NPDES Construction Permit issued statewide by the State Water Quality Control Board and local agency requirements.

To qualify for the NPDES General Construction permit, the construction contractor will be required to develop a SWPPP (prior to beginning construction), to reduce or prevent the offsite migration of sediment and other pollutants and to reduce the effects of runoff from the construction site to offsite areas. BMPs implemented during construction will be required to meet the technology-based standards of the permit and must assure that violations of receiving water standards do not occur. BMPs will be site-specific and will be modified during construction depending on the phase of construction and weather conditions. BMPs will be selected from a menu of options to most appropriately reflect site conditions and meet regulatory requirements; BMPs to be contained in the SWPPP will include erosion controls (such as soil binders), sediment controls (such as gravel barriers and silt fencing), masonry and paint waste management controls, hazardous material protected programs, material storage and waste management controls, tracking controls (such as protected construction site entrances), wind erosion controls, dry weather flow management, and training components. A copy of the Notice of Intent to the State Water Quality Control Board and a draft SWPPP for construction is provided as Appendix 5.15C. Successful implementation of the SWPPP will ensure that construction impacts to water resources are mitigated to a less-than-significant level.

5.15.4.3 Storm Water Quality (Operations Phase)

As described above, storm water from the site will be discharged to the City of Carlsbad storm drain system. Because this site is considered "redevelopment," a SUSMP will be submitted to the City of Carlsbad and that includes details of facilities and measures that mitigate impacts to water quality. Compliance with the SUSMP requirements as implemented by the CECP will reduce any impact from storm water runoff to a level of less than significant.

In addition to review and approval of the SUSMP, LORS compliance also requires preparation of a SWPPP for industrial operations. The industrial SWPPP will require a suite of good housekeeping requirements including steps to identify and mitigate pollutants and conditions of concern. BMPs to be implemented during operations will be selected to address the potential pollutants generated onsite and will address industrial areas exposed to the elements, material loading and storage areas, dust generating activities, spill and leak prevention, potential non-storm water flows and prohibitions on discharge of certain

non-storm water flows (such as boiler blowdown, RO reject streams and plant wastewaters), waste handling, and employee training. Inspections and monitoring (including sampling) will also be conducted per the permit requirements. Compliance with the SUSMP would compliment the requirement to prepare and implement a SWPPP for industrial activities. A draft SWPPP for industrial operations is provided in Appendix 5.15D. An NOI will be submitted to the State Water Quality Control Board at a later date prior to plant operation. Through the SUSMP and statewide industrial storm water permit program, all potential pollutants generated during the industrial phase will be sufficiently mitigated such that the beneficial uses of downstream receiving waters will be protected and water quality standards will not be violated. Therefore, impacts from water quality during the operations phase will be less than significant.

5.15.4.4 Waste Discharge Requirements

Reverse osmosis will consist of the constituents of the reclaimed water that has been concentrated at approximately three cycles of concentration and residues of the chemicals added to control scaling and biofouling of the RO membranes and for cleaning the membranes. The chemicals will include dechlorinating agent (e.g., sodium bisulfite) pH control agent (e.g., sulfuric acid or caustic), a scale dispersant (e.g., polyacrylate polymer), and a corrosion inhibitor (phosphate-based).

Wastewater from miscellaneous plant uses will be recycled for reuse after filtration and oil separation. Waste products of filtration and separated oil will be disposed offsite. The RO reject stream will be discharged to the City of Carlsbad sanitary sewer system facilities.

Table 5.15-5 summarizes the estimated water quality of the RO reject stream discharges to the sanitary sewer system, based on approximately three cycles of concentration. The constituents listed in Table 5.15-5 are selected based on the City of Carlsbad (Encina Wastewater Authority Pretreatment Ordinance) pretreatment discharge criteria.

TABLE 5.15-5
Summary of Average Water Quality Characteristics for CECP Wastewater Compared to EWA Discharge Limits

Constituent	Unit	Wastewater (RO Reject Water)	Allowable Discharge Limits
Cadmium	ppm	0.02	0.43
Chromium (T)	ppm	0.02	3.50
Copper	ppm	0.03	4.40
Lead	ppm	0.02	1.8
Nickel	ppm	0.03	1.8
Silver	ppm	0.03	4.2
Zinc	ppm	0.07	6.2
pH	Units	6 to 9	5.5-11

Quality and quantity of industrial wastewater discharges to the City of Carlsbad sanitary sewer system must be in compliance with an Industrial Wastewater Discharge Permit to be

issued (see request for “will serve” letter attached as Appendix 5.15B). As shown in Table 5.15-5, the anticipated quality of wastewater discharges from CECP would be well within the EWA discharge limitations. Meeting these industrial discharge limitations indicates that water quality downstream of the affiliated treatment plant will be protected. Impacts to the wastewater system, including the ultimate water quality objectives for treated wastewater, would be less than significant.

5.15.4.5 Groundwater

The CECP would not make any direct use of groundwater resources.

5.15.4.6 Flooding Potential

The general region is flat and there are no significant dams or levees in the project vicinity. Additionally, the CECP site is also flat and would remain generally flat after development. The site grading and drainage will be designed to comply with applicable federal, state, and local regulations. The general site grading will establish a working surface for construction and plant operating areas, and will provide positive drainage from buildings and structures and the general lower site level of previously existing fuel oil storage tanks to reduce the potential of onsite flooding hazards. A back-up power feed will be provided to the power block area drainage sump pumps to maintain operability of the drainage pumps and properly limit the potential for flooding the CECP site. The CECP is not located in a flood hazard zone, as defined by FEMA, indicating it is likely in a moderate, minimal hazard area.

The project would not expose people or structures to significant risk of loss, injury or death resulting from a levee or dam failure. The project is located approximately 1,600 feet from the Pacific Ocean and about 750 feet south of Agua Hedionda lagoon. Nevertheless, potential inundation from seiche, tsunami, or mudflow is remote as discussed in Section 5.15.3.1.

5.15.4.7 Climate Change Sea Level Rise

Coastal observations and global model projections indicate that California’s open coast and estuaries will experience rising sea levels during the next 100 years. Recent climate change simulations project significant global sea level rise during the next 100 years due to factors including thermal expansion as the oceans warm and runoff from accelerated melting of land-based snow and ice. Relative to sea levels in 2000, it is projected that by the period of 2070 through 2099 sea level rises could rise from 4.3-21 inches for simulations showing the lower GHG emissions scenario, 5.5-24 inches for the middle upper emission scenario and from 6.7-28 inches for the highest scenario (California Climate Change Center, 2006).

The elevation of the CECP site is approximately 30 feet above mean sea level. In the event that effects from climate change did include rising sea levels over the next 30 years, (projected project life), even using the scenario with the highest rise of sea level protection (estimated over 100 years), the CECP site would still be elevated at a level above the projected sea level rise. Therefore, impacts from sea level rise resulting from climate change will be less than significant.

5.15.5 Mitigation Measures

This section presents mitigation measures proposed to reduce impacts to water resources in areas affected by the project.

- Implement BMPs designed to minimize soil erosion and sediment transport during construction of the plant site and project linear features. Implement and maintain appropriate erosion and sediment controls for slopes, catch basins, culverts, stream channels, and other areas prone to erosion in accordance with the draft (construction phase) SWPPP included in Appendix 5.15C. Implement and maintain BMPs for material management in accordance with the draft SWPPP.
- Implement the requirements of the SUSMP by designing and installing structural BMPs (such as the planned storm water detention basin) as directed by the City of Carlsbad.
- Conduct operations at the CECP site in accordance with the statewide General Permit for Industrial Activities, as required by the City of Carlsbad during review of the SUSMP. Implement a suite of good housekeeping requirements including steps to identify and mitigate pollutants and conditions of concern. Select BMPs to be implemented during operations to address the potential pollutants generated on site and will address industrial areas exposed to the elements, material loading and storage areas, dust generating activities, spill and leak prevention, potential non-storm water flows and prohibitions on discharge of certain non-storm water flows (such as boiler blowdown, RO reject streams), waste handling, and employee training. Conduct inspections and monitoring (including sampling) per the requirements of the statewide General Permit. Design and implement the BMPs to prevent or control pollutants potentially associated with the operation of the plant from entering storm drains in accordance with the final SWPPP, an outline of which is included in Appendix 5.15D.

The mitigation measures proposed are prescribed by storm water and erosion control management programs mandated under the NPDES permitting system. These programs have been in place for a number of years and the prescribed measures have proven effective. Under the General NPDES Permits for Construction and Industrial Storm Water, for example, various specific measures are prescribed, and a program of monitoring is required. Compliance with these programs should ensure that all residual impacts associated with the proposed project are mitigated to a level of less than significant.

5.15.6 Proposed Monitoring Plans and Compliance Verification Procedures

Routine monitoring and compliance verification would be required as part of the industrial discharge permit and construction/operation storm water NPDES permitting of the project.

5.15.7 Proposed Conditions for Certification

This section describes proposed conditions of certification that will be implemented for the CECP.

WATER RES-1: The project applicant shall use reclaimed water for all in-plant process water needs, except those specifically excluded uses, unless it can be demonstrated that its use is not compatible with any particular application. Specifically excepted from using reclaimed water are fire control water, sanitary water and potable water. The project

applicant shall submit a Reclaimed Water Use Plan (RWUP) that includes a detailed revised project design, operational plan, water balance, and heat balance for the use of reclaimed water for review and approval by the Compliance Project Manager (CPM) prior to the start of any site mobilization activities for the project or any linear element. This RWUP shall be consistent with all applicable LORS, including Title 22 California Code of Regulations.

In-plant water needs that the Applicant claims cannot be met using reclaimed water, other than those excepted, shall be identified and a discussion of the infeasibility of reclaimed water use for these needs shall be included in the RWUP for review and approval by the CPM. Site mobilization activities shall not begin without a CPM-approved RWUP.

Verification: The project applicant shall submit the RWUP to the CPM for review and approval sixty day prior to the start of any site mobilization activities associated with the project or any linear elements. The RWUP must be approved by the CPM before the start of site mobilization.

WATER RES-2: Only potable and reclaimed water from the City of Carlsbad shall be used by the project. The process water supply shall be reclaimed water. A backup water supply has not been included in the project design or operational plan, and the project shall not operate during periods when reclaimed or potable water is not available in sufficient quantities from the primary supply sources. The project applicant shall report the periods of non-operation due to unavailability of water from any source in the Annual Compliance Report.

The project applicant shall install onsite metering and recording devices and record on a monthly basis all water used by the CECP, including the amount of reclaimed and non-reclaimed water used by the project, with the source and amount of all reclaimed and non-reclaimed water identified. The annual summary shall include the monthly range, monthly average, and total amounts of reclaimed and non-reclaimed water identified by amount and source used by the project in both gallons-per-minute and acre-feet. Following the first year of operation, the annual summary shall also include the yearly range and yearly average of reclaimed and non-reclaimed water identified by amount and source used by the project. This information shall be supplied to the CPM in the Annual Compliance Report for review and approval for the life of the project.

Verification: No less than 60 days prior to the start of operation of the CECP, the Applicant shall submit to the CPM evidence that metering devices have been installed and are operational on the pipelines serving and within the project. These metering devices shall be capable of differentiating between uses of these supplies by CECP in order to report water demand. The project applicant shall provide a report on the servicing, testing and calibration of the metering devices and operation in the annual compliance report. The project applicant shall submit the required water use summary to the CPM for review as part of the Annual Compliance Report for the life of the project.

WATER RES-3: Prior to the initiation of any earth moving activities, the Applicant shall submit an erosion control and revegetation plan for CPM approval. The final plan shall contain all the elements of the draft plan with changes made to address the final design of the project.

Verification: The final erosion control and revegetation plan shall be submitted to the California Energy Commission (CEC) CPM for approval at least thirty (30) days prior to the initiation of any earth moving activities.

WATER RES-5: Prior to the start of commercial operation, the Applicant must submit a notice of intent to the State Water Resources Control Board to indicate that the project will operate under provisions of the General Industrial Activity Storm Water Permit. As required by the general permit, the Applicant will develop and implement a SWPPP.

Verification: Two (2) weeks prior to the start of commercial operation, the Applicant will submit to the CEC CPM a copy of the SWPPP and a copy of the Water Quality Control Board authorization to operate under the General Permit.

5.15.8 Cumulative Effects

Cumulative effects to water resources could occur through the use of groundwater, the contribution of sanitary wastewater, or storm water runoff. None of these categories of water use is expected to result in significant cumulative effects to area water resources:

- **Surface Water:** The project area is relatively flat and there are no significant dams or levees in the vicinity. Implementation of BMPs during construction and operation would avoid the potential for adverse impacts to surface water from the project.
- **Plant Sewage:** The CECP will generate 62 mgd of sanitary wastewater that would be discharged to the City of Carlsbad Wastewater Treatment Plant. These discharges are well within the City's discharge limitations. The cumulative effects from this additional waste load would not be significant.
- **Industrial Discharge:** The CECP will generate 187 mgd of reject stream from the demineralization process of reclaimed water which will be monitored and treated if necessary and discharged to the City of Carlsbad sewer. The mixed bed demineralizers would be removed from site by an outside provider, therefore not generating any waste stream onsite. Wastewater from miscellaneous plant uses will be recycled to the Reclaimed Water Storage Tank for reuse. Domestic wastewater will be discharged to the City sanitary sewer. The cumulative effects from this additional waste load would not be significant.
- **Groundwater:** The CECP will not make any direct use of groundwater resources and, therefore, would cause no adverse impacts to groundwater resources.
- **Storm Water:** Implementation of the CECP will neither increase nor decrease runoff significantly on the 23 acres which make up the specific CECP site. The onsite storm water detention areas have been sized to adequately retain storm water from a 25 year rainfall event for gradual release into the storm drain system. The cumulative effects from storm water runoff would not be significant.
- **Reclaimed Water:** The project will contribute to water conservation by making use of reclaimed water for power plant uses.

Other Projects: The Carlsbad Poseidon Desalination Project, which will be located on property leased from Cabrillo Power I LLC at the Encina Power Station, will provide a new, local, drought-proof source of potable water for the region.

The Poseidon desalination plant and the CECP are two separate projects. The Poseidon project will take sea water from the once-through-cooling system that provides cooling water to existing Units 1 through 5 at the Encina Power Station. However, Cabrillo Power I LLC is not required to alter its once-through-cooling system; any alterations are the responsibility of Poseidon. In addition, Cabrillo Power I LLC is not required to continue to operate the once-through-cooling system nor is it required to provide a certain amount of water to the Poseidon desalination plant, therefore Cabrillo Power I LLC does not have to operate the Encina Power Station's seawater once-through-cooling system just to provide water to the desalination plant. CECP is a dry cooled plant and therefore does not rely upon seawater for once-through-cooling. The Poseidon project shall obtain all required permits for construction and operation of the desalination plant; therefore establishing compliance with the requirements of the local, state, and federal regulations. Due to the nature of the separate projects, each one being required to be in compliance with regulatory authorities separate from each other, the cumulative effects for the CECP as it would relate to the Poseidon project would not be significant.

5.15.9 Involved Agencies and Agency Contacts

Involved agencies and agency contacts are listed in Table 5.15-6.

TABLE 5.15-6
Agency Contacts for Water Resources

Issue	Agency	Contact
To comply with NPDES permit requirements, a Notice of Intent must be filed prior to construction activities. A construction SWPPP also must be prepared.	San Diego RWQCB	San Diego RWQCB 9174 Sky Park Court, Suite 100 San Diego, CA. 92123-4340 (858) 467-2952
To comply with NPDES permit requirements, a Notice of Intent must be filed prior to operational activities. An operational SWPPP also must be prepared.	San Diego RWQCB	San Diego RWQCB 9174 Sky Park Court, Suite 100 San Diego, CA. 92123-4340 (858) 467-2952
To comply with the City's SUSMP, the Storm Water Requirements Applicability Checklist must be submitted to the City along with the permit application.	City of Carlsbad, Public Works Department	City of Carlsbad, Public Works Department 405 Oak Avenue Carlsbad, CA 92008 (760) 434-2980

5.15.10 Permits Required and Permit Schedule

Agency contacts and required permits are listed in Table 5.15-7.

TABLE 5.15-7
Permits and Permit Schedule for Water Resources

Permit	Agency Contact	Schedule
Statewide General Permit for Construction Activities	San Diego RWQCB 9174 Sky Park Court, Suite 100 San Diego, CA. 92123-4340 (858) 467-2952	One day to submit the NOI. SWPPP must be onsite prior to commencement of construction activities.
Statewide General Permit for Industrial Activities	San Diego RWQCB 9174 Sky Park Court, Suite 100 San Diego, CA. 92123-4340 (858) 467-2952	One day to submit the NOI. SWPPP must be onsite prior to commencement of operational activities.
Storm Water Requirements Applicability Checklist	City of Carlsbad Public Works Department	This checklist must be completed, signed by the responsible party for the project, and submitted with the permit application. For private projects, the project design must include all required permanent BMPs prior to deeming the application package complete.
Application of Service for Potable Water, Reclaimed Water, Sewer Discharge	City of Carlsbad Engineering Department, C/O Bill Plummer 1635 Faraday Avenue Carlsbad, CA 92008 (760) 602-2720	A request for a "will serve" letter was sent to the City of Carlsbad on July 6, 2007.

5.15.11 References

City of Carlsbad. 2001. Carlsbad Watershed Urban Runoff Management Program (CWURMP).

County of San Diego Department of Environmental Health. 2002. Carlsbad Watershed Management Plan (CWMP).

Federal Emergency Management Agency (FEMA). 1997. Flood Insurance Rate Map: San Diego County Unincorporated and Incorporated Areas (panel number 06073C0764F).

GeoLogic Associates. 2004. Geotechnical Report, Proposed Carlsbad Desalination Plant Encina Generating Station, Carlsbad, CA February 18.

State Water Resources Control Board (SWRCB). 1997. Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Industrial Activities excluding Construction Activities, General Permit No. CAS000001. Adopted April 17.

State Water Resources Control Board (SWRCB). 1999. Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction Activity, General Permit No. CAS000002. Adopted August 19.

Western Regional Climate Center (WRCC). 2007. Oceanside Marina, California. Online Information: <http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca6377>. Accessed: June 28, 2007.



LEGEND

- ENCINA POWER STATION PROPERTY BOUNDARIES
- PROJECT SITE BOUNDARY
- WATER BODIES
- RIVERS

0 1,000 2,000
 FEET
 1 INCH = 2000 FEET



FIGURE 5.15-1
SURFACE WATER FEATURES
 CARLSBAD ENERGY CENTER PROJECT
 CARLSBAD, CALIFORNIA



