7.14 WATER RESOURCES

7.14 WATER RESOURCES

This section evaluates the effects of the proposed project on water resources in the area of the proposed San Gabriel Generating Station (SGGS). The project will use reclaimed water supplied by Inland Empire Utility Agency (IEUA). Plant wastewater will be discharged to the Los Angeles County Sanitation District (LACSD) through the IEUA nonreclaimable industrial waste lines under the SGGS existing Industrial User's permit.

The proposed plant will consist of a 656 MW combined cycle electric generating facility on the property of the EGS in San Bernardino County, Rancho Cucamonga, California. The EGS site area is approximately 60 fenced acres located approximately 1 mile to the east of Interstate 15 (I-15) and approximately 1.5 miles north of Interstate 10 (I-10). The new plant will be constructed on approximately 17 acres, of which approximately 16.2 acres is within the northwest portion of the EGS property and 0.8 acres is on land currently owned by IEUA.

The new plant will connect to the EGS' makeup water supply system, the upgraded fire protection system, the potable water supply system, and the process wastewater discharge system. A new septic system will be constructed for sanitary waste disposal.

The total project disturbance will be approximately 32 acres, with 17 acres within the SGGS site and 15 acres offsite (associated with the temporary construction area). The site will be cut and filled to provide a level area for the power generation facility at an approximate elevation of 1,120 feet above mean sea level.

The impacts of the proposed project on beneficial water uses are expected to be too small to be significant.

The aspects of water resources that could potentially be affected by the proposed project include water supply, water quality, and flood hazards. The CEQA Guidelines and applicable laws, ordinances, regulations, and standards (LORS) define significance criteria for compliance in each of these areas.

7.14.1 Affected Environment

This section describes the environment relative to water resource features in the proposed project vicinity.

7.14.1.1 Groundwater

Groundwater Features

The SGGS site is located within the Chino Groundwater Basin (Chino Basin). This groundwater basin covers an area of approximately 235 square miles within the upper Santa Ana River watershed (see Figures 7.14-1 and 7.14-2), primarily within San Bernardino and Riverside counties, with a small portion located in Los Angeles County. As one of the largest groundwater basins in Southern California, the Chino Basin plays an integral part in the regional water system by containing an estimated 5 million acre-feet (af) of water plus an additional unused storage capacity estimated to be 1,000,000 af. The average safe yield of the Chino Basin has been set at approximately 145,000 acre-feet per year (afy) by the Chino Basin Judgment (Superior Court, 1978). Under the Chino Basin Judgment, overproduction is allowed and historically pumping in the Chino Basin has been as high as nearly 182,000 afy.

The Chino Basin is bounded as follows (DWR, 2006):

- On the east by the Rialto-Colton fault;
- On the southeast by the contact with impermeable rocks forming the Jurapa Mountains and low divides connecting the exposures;

- On the south by contact with impermeable rocks of the Puente Hills and by the Chino fault;
- On the northwest by the San Jose fault; and
- On the north by impermeable rocks of the San Gabriel Mountains and by the Cucamonga fault.

The principal sources of groundwater in the basin are geologic formations known as the Halocene alluvium and the Pleistocene alluvium. Approximately 1,000,000 of unused groundwater storage capacity currently exists in the Chino Basin. Prior to 1978, the Chino Basin was in a state of overdraft. This condition led to litigation between the Chino Basin Municipal Water District (MWD) and the City of Chino. The judgment in the matter (Superior Court of San Bernardino, 1978) adjudicated rights to groundwater in the Chino Basin. The Chino Basin Watermaster was established under this judgment to monitor compliance with the terms of the judgment. As such, groundwater use in the basin is strictly controlled to prevent prolonged overdraft conditions.

The geology of the Chino Basin was formed when eroded sediments from the San Gabriel Mountains, the Chino Hills, Puente Hills, and the San Bernardino Mountains filled a structural depression. The bottom or effective base of the Chino Basin consists of impermeable sedimentary and igneous rocks. The base of the basin is overlain by older alluvium of the Pleistocene period followed by younger alluvium of the Holocene period. The younger alluvium is not saturated and does not yield water directly to wells. The Chino Basin generally consists of unconfined aquifers underlain by confined aquifers (Wildermuth, 1999).

Based on the 1999 Optimum Basin Management Plan Phase I Report (Wildermuth, 1999), the EGS site is within Management Zone 2 (MZ-2) of the Chino Basin. The groundwater in MZ-2 flows generally in a southwesterly direction near the EGS site, and more southerly south of the site. Groundwater elevation mapping in the vicinity of the EGS shows that groundwater flow direction at EGS is generally consistent with that of MZ-2 (Hamilton, 2004 and 2007). Sources of water to MZ-2 include direct percolation of precipitation, returns from agriculture, recharge of storm flows, imported water in spreading basins, and subsurface inflow from part of the Rialto Basin. Discharge of MZ-2 water is mainly through groundwater production.

The southwesterly gradient at EGS is between 0.002 feet per foot (ft/ft) and 0.003 feet per foot beneath the EGS, with a slightly steeper gradient (approximately 0.005 ft/ft) in the vicinity of the retention basins in the southeast portion of the property (Wildermuth, 1999; Hamilton, 2004 and 2007). Groundwater measured beneath the EGS is typically close to 400 feet below ground surface (bgs).

The EGS has three groundwater wells (approximately 600 feet deep) that produce approximately 950 afy. The groundwater is used for potable water and plant process water. The plant no longer uses water from the City of Rancho Cucamonga for potable water. Since 2003, the plant has used reclaimed water from IEUA and begun to reduce its use of groundwater for plant water supply.

With the exception of the three onsite wells, there are no other active wells with 0.5 mile of the proposed project site (CBWM, 2007).

Groundwater Quality

Due to historical practices, groundwater in the Chino Basin has been affected by elevated concentrations of total dissolved solids (TDS) and total inorganic nitrogen (TIN). The average TDS concentration from, wells in the Chino Basin vicinity were less than 300 milligrams per liter (mg/L) between 1991 and 1995. (Wildermuth, 1999). The Basin Plan TDS objective for groundwater in this subbasin is 220 mg/L (RWQCB-SA 1995). The average nitrates (NO3-N) measured during the same period were less than 8.0 mg/L (Wildermuth, 1999). Also see discussion of surface water quality in Section 7.14.1.2.

Groundwater analyzed from the three EGS wells is characterized by relatively low concentrations of TDS, specific conductance, chlorides, and nitrates. Table 7.14-1 summarizes water analyses results for the three onsite wells.

Table 7.14-1
Water Analysis Results for Water Supply Sources

Water Quality Parameter	Units	Reclaimed Water[1] Grab Sample	Center Well[2] Grab Sample	East Well[2] Grab Sample	West Well[2] Grab Sample
pH		7.49	7.56	7.41	7.72
Total Suspended Solids (TSS)	mg/L	10.0	12.0	4.0	3.0J
Total Dissolved Solids (TDS)	mg/L	447	300	238	271
Calcium	mg/L	49.5	55.6	46.1	55.6
Magnesium	mg/L	7.6	10.8	8.0	9.6
Sodium	mg/L	96.4	21.5	15.3	16.3
Potassium	mg/L	14.5	2.0	1.7	1.8
Total Alkalinity	mg/L	225	154	116	175
Sulfate	mg/L	44.7	28.8	15.8	8.5
Chloride	mg/L	100.0	24.2	16.5	12.8
Nitrate	mg/L	0.74J	5.5	8.7	7.0
Fluoride	mg/L	N.D.	0.32J	0.29J	0.23J
Arsenic	mg/L	N.D.	<0.005	<0.005	<0.005
Mercury	mg/L	0.00026J	0.00062	0.00054	0.00030J
Iron	mg/L	0.13	0.59	0.21	0.030J
Boron	mg/L	0.38	0.058J	0.061J	0.13
Silica	mg/L	14.0	39.0	35.6	33.2
Biological Oxygen Demand (BOD)	mg-O_2/L	1.4J	36.0	11.0	11.0
Chemical Oxygen Demand (COD)	mg-O_2/L	1.2J	143	14.9J	14.9J

Sources: 1) Water Analysis by Applied P and CH Laboratories 04/19/05
2) Water Analysis by Applied P and CH Laboratories 03/07/05
J: Reported between Practical Quantitation Limit and Method Detection Limit
mg/L = milligrams per liter
NTU = nephelometric turbidity units
N.D= Not Detectable

The former Kaiser Fontana Steel facility is located approximately 1 mile from the proposed project site. The site discharged wastewater brine to surface impoundments from 1943 to 1983, resulting in increased TDS concentrations (500 to 1,200 mg/L). The TDS plume extends south-southwest along with the prevailing gradient away from the EGS site. In addition to water degradation by TDS, other organic contaminants were identified in association with Kaiser's plume (Wildermuth, 1999). This plume flows away from the EGS site and is outside the probable capture zone of the wells.

In 1996, Southern California Edison Company (SCE) implemented a water quality monitoring program at the EGS site to investigate potential groundwater contamination related to the use of several retention basins in the southeast portion of the property (Hamilton, 2004 and 2007). SCE closed the three retention basins and associated sumps in 1996. Two of the basins, referred to as the North and South basins, were constructed in 1952 to collect and store nonhazardous wastewater from the facility and to regulate the discharge of this wastewater in accordance with the plant's National Pollutant Discharge and Elimination System (NPDES) wastewater discharge permit. The third basin was constructed as a boiler chemical cleaning basin; however, it was never used. Results of investigations conducted in late 1996 and 1997 indicated the presence of elevated metal concentrations, pH values, and volatile organic compounds in soils beneath the basins (Hamilton, 2004). Results of subsequent monitoring, however, has indicated that metal concentrations are not significantly different from background concentrations (Hamilton, 2004 and 2006).

Groundwater Beneficial Uses

Groundwater in the vicinity of the site has the following beneficial uses: municipal water supply, agricultural water supply, and industrial supply (SARWQCB, 1994).

7.14.1.2 Surface Water

Surface Water Features

The proposed SGGS site is located within the Santa Ana River Watershed (see Figure 7.14-1). This watershed is the largest watershed in Southern California and covers approximately 2,650 square miles. It includes much of Orange County, the northwestern corner of Riverside County, the southwestern corner of San Bernardino County, and a small portion of Los Angeles County. The highest elevations (upper reaches) of the watershed occur. in the San Bernardino (San Gorgonio Peak, 11,485 feet in elevation) and eastern San Gabriel Mountains (Mt. Baldy, 10,080 feet in elevation) and in the San Jacinto Mountains (Mt. San Jacinto, 10,804 feet in elevation) (SAWPA, 2004). Further downstream, the Santa Ana Mountains and the Chino Hills form a topographic high before the river flows into the Coastal Plain (in Orange County) and into the Pacific Ocean. Primary slope direction is northeast to southwest, with secondary slopes controlled by local topography.

The Santa Ana River has a total length of approximately 69 miles from its origin in the San Bernardino Mountains to the Pacific Ocean (Wildermuth, 1999). North of the proposed project site, Day Creek, Etiwanda Creek, and San Sevaine Creek originate in the San Gabriel Mountains. All three creeks generally flow from north to south. Day Creek and San Sevaine Creek flows are conveyed through the valley floor via concrete flood control channels. Currently Etiwanda Creek discharges into Day Creek at Wineville Basin (approximately 4 miles south of the project site) (see Figure 7.14-2). Once flood control improvements are completed within the next few years, Etiwanda Creek will be joined with San Sevaine Creek at Foothill Boulevard. Day Creek and San Sevaine Creek flow south and discharge into the Santa Ana River upstream of the Prado Reservoir. Day Creek, Etiwanda Creek, and San Sevaine Creek are under the jurisdiction of the local flood control districts (e.g., San Bernardino County Flood Control District and Riverside County Flood Control District).

Surface water features in the vicinity of the site are shown on Figure 7.14-3 at a scale of 1:24,000. The Etiwanda Wash and San Sevaine Channel are located approximately 0.1 mile and 0.5 mile east of the EGS' eastern boundary, respectively. Day Creek is located approximately 0.5 mile west of the EGS' western boundary.

Tributaries to the Santa Ana River (i.e., Day Creek, Etiwanda Creek, and San Sevaine Creek) are generally ephemeral, with flows occurring during, and for a short time after, intermittent storms that typically occur from November through March (Wildermuth, 1999). Flows along the Santa Ana River occur year-round due to discharges from municipal water recycling plants, rising groundwater, and nuisance flows (e.g., excess landscape irrigation). Average monthly streamflow data for the Santa Ana River, San Sevaine Channel, and Day Creek are summarized in Table 7.14-2.

Table 7.14-2
Average Monthly Flows
Santa Ana River, San Sevaine Channel, and Day Creek

Time Period	Santa Ana River Flow Below Prado Dam (cfs)	San Sevaine Channel Flow at Arrow Avenue (cfs)	Day Creek Flow South of Wineville Basin (cfs)
January	366	185	14
February	440	117	10
March	404	88	14
April	267	80	33
May	192	80	36
June	156	67	16
July	128	67	16
August	107	68	10
September	101	68	5
October	128	89	5
November	148	108	6
December	214	126	6

Sources:
USGS Surface Water Data for California, http://waterdata.usgs.gov/ca/nwis/sw
San Bernardino County Flood Control District, Water Resources Website, http://www.sbcounty.gov/trnsprtn/pwg
Notes: cfs = cubic feet per second

A 4-acre foot reservoir located at the northeast corner of the EGS property is used to balance and recirculate process makeup water for the plant. It has four inlets: recycled water, MWD water, groundwater and cooling water return. The pond is approximately 10 feet deep and has a net operating capacity of approximately 10 million gallons. The pond level generally fluctuates less than approximately one foot.

Generally, topography of the EGS site slopes toward the south. Figure 7.14-4 shows the drainage pattern and discharge points for the existing property. Stormwater runoff at EGS drains either into Chadwick Channel or into a 30-inch-diameter storm drain. Stormwater runoff is permitted under the existing EGS

Statewide General Industrial Activities Storm Water Discharge Permit, Permit Identification No. 836S006396. The existing plant has prepared a Stormwater Pollution Prevention Plan in accordance with the permit requirements (Reliant, 2004).

Chadwick Channel originates at the properties just north of the EGS and crosses the EGS property from north to south. Stormwater runoff flows in Chadwick Channel originating offsite from northern neighboring properties commingle with stormwater runoff from the EGS property. The EGS does not discharge wastewater (treated or untreated) into the channel. Stormwater runoff from nonprocess areas currently flows directly into the channel. At least one of the properties north of the EGS (the car crusher operation) discharges water into the creek; the car crusher operation is currently under investigation by the Regional Water Quality Control Board (RWQCB).

The 30-inch-diameter storm drain originates near the northeast corner of the EGS site, near the 4-acre reservoir, and ends near the southeast corner of the facility. Stormwater from the process areas of the site is collected at various inlets and conveyed to two onsite stormwater ponds. Both ponds are lined and are located near the southeast corner of the EGS site. Discharge from the ponds is metered out in accordance with the plant’s stormwater discharge permit.

First flush stormwater is also conveyed to the ponds. A valve is located just south of the plant’s administration building. When the valve is open, the storm drain system captures “first flush” events and conveys the flow to the stormwater ponds. After approximately the first hour of rain, the valve is closed and stormwater flows through an aboveground ditch towards an inlet to the 30-inch-diameter pipeline. The 30-inch-diameter storm drain also conveys stormwater from the properties north of the EGS.

Near the southern edge of the property, near the switchyard, the storm drain pipe surfaces. Stormwater discharges from the EGS site and properties north of the plant combine with stormwater runoff from the switchyard. The combined flows are conveyed via an underground 60-inch-diameter culvert under Etiwanda Avenue near 6th Street and discharged into Etiwanda Wash.

An unnamed tributary to Day Creek flows through the proposed offsite construction laydown area (see Figure 2.7-4). This creek originates north of the railroad tracks, near Foothill Boulevard and I-15, flows through six 48-inch-diameter culverts under the railroad tracks, flows generally south across the property, and eventually enters a 72-inch-diameter culvert south of the laydown area property.

Existing Surface Water Quality

The *Water Quality Control Plan for the Santa Ana River Basin* (Basin Plan) for the Santa Ana region specifies water quality objectives for each water body according to water type. The water quality objectives are intended to provide reasonable protection for the beneficial uses listed for each water body (SARWQCB, 1995).

In 1998, the Santa Ana RWQCB designated a list of 26 waterbodies for which water quality standards (beneficial uses and/or water quality objectives) were not being attained. The list also includes a description of the pollutant(s) causing impairment. This list, developed in accordance with Section 303(d) of the Clean Water Act (CWA), is referred to as the “303(d) list” and updated every 2 years. All RWQCBs are required to establish numeric water quality targets for each waterbody on the 303(d) list. These targets are referred to as Total Maximum Daily Loads (TMDLs). The TMDL is the maximum load of a pollutant that can be discharged into a waterbody without impairing water quality standards. Reach 3 of the Santa Ana River is considered to be impacted by pathogens due to dairies (SARWQCB, 2003).

The Santa Ana region is too large and complex to be managed as a single watershed, and it has therefore been divided into 10 Watershed Management Areas (WMAs; 2004 revision). The proposed SGGS site is located within the Middle Santa Ana River WMA. Water quality concerns for the Middle Santa Ana River include total dissolved solids and TIN levels, contaminant plumes in groundwater, bacterial quality of surface waters, and impacts from confined animal feeding operations (SARWQCB, 2004).

Water quality degradation due to high concentrations of nitrogen and TDs is among the most significant regional water quality problem in the Santa Ana River watershed. Historically, the Santa Ana River and its major tributaries likely flowed during most of the year, recharging deep alluvial groundwater basins in the inland valleys and the coastal plain. However, irrigation projects eventually led to the diversion of most of the streams tributary to the river, and the quantity of groundwater recharge diminished greatly. Diverted stream flows were used to support extensive irrigated agriculture operations, principally citrus orchards that were also reliant on the use of nitrogen fertilizers to sustain crop yields. As a consequence of these historic practices, water quality issues in the Santa Ana River watershed have often revolved around elevated concentrations of TDS and TIN.

Water from the Santa Ana River is used multiple times as it moves downstream through the watershed. Each cycle of use adds an increment of salt, whether through addition of soluble materials as a result of consumptive use, or though evaporation and evapotranspiration. Typically, each use adds 200 to 300 parts per million (ppm) or mg/L of TDS (SAWPA, 2005). Average TDS levels in Colorado River water and State Project water, both sources to the Santa Ana River watershed, are approximately 700 mg/L and 250 mg/L, respectively.

Major efforts to address the salt balance problem include the Santa Ana RWQCB's program of regulating TDS levels in waste discharges; import and recharge of large volumes of low-TDS water from the State Water Project (SWP); construction of the Santa Ana River Interceptor (SARI) line to export high TDS wastes from the upper Santa Ana River Basin; and operation of groundwater desalting facilities that extract high-TDS groundwater, remove excessive TDS, export the resulting brine via the SARI line, and provide water supplies with lowered TDS levels. In 2000, the Santa Ana Watershed Project Authority (SAWPA) began operating a 9 million-gallon per day (mgd) groundwater desalter in the Chino Basin. Another 8 mgd groundwater desalter recently became operational. The goal is to have over 40 mgd of groundwater desalting capacity in the Chino Basin by 2020. Other desalters include SAWPA's Arlington Desalter, operating since 1990; the City of Corona's Temescal Basin Desalter, operating since 2002; and Eastern Municipal Water District's Sun City Desalter, operating since 2003. Eastern MWD has plans for two more desalters in the Menifee area.

Degradation of water quality at Prado Dam due to nitrogen (often expressed as TIN) was first observed in the mid-1980s. The elevated TIN concentrations in groundwater are largely due to historical agricultural practices in the Santa Ana River Watershed. From 1986 onwards, the nitrogen water quality objective (WQO) for the Santa Ana River at Prado has been exceeded. A significant increasing trend in concentrations was observed and it was recognized that the nitrogen wasteload allocations specified in the 1983 Basin Plan were no longer adequate. The Regional Board derived a new nitrogen allocation, using computer modeling, and recommended that publicly owned treatment works (POTW) discharges be limited to 10 mg/L TIN. However, POTW dischargers argued that additional studies were required to verify the Regional Board's analysis.

In early 1988, a Nitrogen Task Force was formed to finance and oversee these studies, and its scope of work was broadened to include TDS and groundwater. In the interim, the Regional Board adopted a WQO of 10 mg/L TIN for new discharges, while requiring existing discharges to conform to their 1987 July-September average TIN concentrations. The studies conducted by the nitrogen task force were used in developing the 1995 Basin Plan.

Hydrocarbons have been detected in Chadwick Channel in the past and are believed to have originated from an offsite automobile crushing facility upstream of the EGS. The EGS collects water samples from the channel, both upstream and downstream of the station property, to monitor offsite and onsite stormwater discharges. Table 7.14-3 summarizes results for Chadwick Channel water samples collected from recent storm events.

Table 7.14-3
Water Analysis Results for Chadwick Channel

Water Quality Parameter	Units	10/17/04		3/19/05		12/31/05		2/27/06	
		U/S	D/S	U/S	D/S	U/S	D/S	U/S	D/S
pH	Standard units	8.67	8.97	9.68	9.22	9.22	9.14	8.98	8.49
Total Suspended Solids (TSS)	mg/L	27	360	2,800	290	680	490	200	63
Specific Conductance	umhos/cm	1,200	650	220	320	360	400	770	370
Oil and Grease	mg/L	8.5	6.1	5.1	4.6	12	11	6.3	ND
Total Organic Carbon	mg/L	64	43	12	13	17	19	36	10
Iron (Fe)	mg/L	29	28	180	25	51	38	11	2.6

U/S = upstream, D/S = downstream, ND = non detect

Sources:

Reliant Energy Etiwanda, 2005 and 2006.

Notes:

1. Upstream sampling location is at sampling location D-2, which is located at plant's northern property boundary and represents creek water as it enters the EGS property (see Figure 7.14-4).
2. Downstream sampling location is at sampling location D-3, which represents Chadwick Channel discharge as it leaves the EGS property (see Figure 7.14-4).

Surface Water Beneficial Uses

Beneficial uses of the Santa Ana River (Reach 3) include agricultural supply, groundwater recharge, recreation, industrial, freshwater habitat, and wildlife habitat (SARWQCB, 1995 and as amended in 2004).

7.14.1.3 Climate and Precipitation

The proposed SGGS site is located in the central portion of the Santa Ana River watershed. The watershed extends from peaks in the San Bernardino National Forest to the Pacific Ocean. The climate of the watershed is Mediterranean with hot, dry summers and cooler, wetter winters. Average annual precipitation within the San Ana River watershed ranges from 12 inches per year in the coastal plain to 18 inches per year in the inland alluvial valleys, reaching 40 inches or more in the San Bernardino Mountains (SAWPA, 2005). Most of the precipitation occurs between November and March in the form of rain, with variable amounts of snow in the higher elevations.

Climate data from 1971 through 2000 for Fontana, California, which is located approximately x miles east of the proposed project site, is summarized in Table 7.14-4. Average maximum July and January temperatures are approximately 95°F and 67°F, respectively. Average annual precipitation is 16.82 inches, with approximately 90 percent occurring between November and April.

Table 7.14-4
Climate Summary for Fontana, California[1]
Period of Record: 1971 to 2000

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (°F)	67.4	69.5	70.3	73.8	79.7	88.4	95.2	94.1	90.1	82.3	70.6	68.2	79.4
Average Min. Temperature (°F)	44.0	44.4	45.8	47.5	52.0	56.7	61.0	62.2	60.6	54.5	45.87	43.6	51.6
Daily Max. Extreme Temp. (°F)	93	92	97	102	112	111	114	111	117	108	96	93	117
Daily Min. Extreme Temp. (°F)	22	28	30	30	35	42	48	48	44	3	30	23	22
Average Total Precipitation (inches)	3.57	4.11	3.31	0.93	0.29	0.03	0.00	0.30	0.43	0.45	1.33	2.08	16.82
Average Total Snowfall (inches)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Average Snow Depth (inches)	0	0	0	0	0	0	0	0	0	0	0	0	0

Source: Western Region Climate Center http://www.wrcc.dri.edu

Notes:

1. Data is for Station Number 043120-6, Fontana Kaiser. Averages based on 1971 through 2000; extremes based on 1951 to 1984.

The climatological cycle of the region results in high surface water flows in the spring and early summer, followed by low flows during the dry season. Winter and spring floods generated by storms are not uncommon in wet years. Similarly, during the dry season, infrequent summer storms can cause torrential floods in local streams.

Based on the National Oceanic and Atmospheric Administration Atlas 14 (NOAA, 2006), the 25-year, 24-hour, and the 100-year, 24-hour rainfall amounts for the project site are approximately 5.78 inches and 7.47 inches, respectively.

7.14.1.4 Current and Proposed Water Use

IEUA was formed in 1950 and was formerly known as the Chino Basin Municipal Water District. IEUA is a member agency of the MWD of Southern California for the purpose of importing supplemental water from the Colorado River and Northern California to augment local water supplies. IEUA serves the cities of Chino, Chino Hills, Fontana, Montclair, Ontario, and Upland, as well as the Monte Vista Water District (MVWD) and the Cucamonga Valley Water District (CVWD). Its service area encompasses approximately 242 square miles in southwestern San Bernardino County, California. IEUA provides numerous utility services for a population of about 750,000 within its service area:

- Distributes water;
- Desalts groundwater to produce potable water;
- Provides wastewater collection, treatment, and disposal;
- Produces and distributes recycled water for groundwater recharge, irrigation of agricultural crops, municipal parks, and landscaping, cooling tower supplies, and other types of reuse;
- Conducts co-composting of wastewater biosolids;
- Provides manure digestion; and
- Offers regional disposal of nonreclaimable industrial wastewater and brine.

In order to provide these water recycling services, IEUA owns and operates a regional wastewater sewer collection system, five water reclamation treatment facilities, and a regional recycled water distribution system. IEUA is also the lead agency for cooperatively operated groundwater recharge basins.

Water will be supplied to the SGGS by the existing EGS water supply system. The EGS currently draws water from the existing 4-acre reservoir, located at the northeast corner of the property, to use as makeup water for the Units 3 and 4 cooling towers. Reservoir water is also circulated through the EGS heat exchangers to provide cooling for auxiliary equipment. Water used for equipment cooling is returned to the reservoir.

The reservoir receives water from four sources: reclaimed water, groundwater, MWD aqueduct water, and cooling water return. The primary source of water is reclaimed water from the IEUA, which is provided under an existing water services agreement. Groundwater, which is provided from three existing onsite wells, is added to the reservoir during periods of high ambient temperatures to reduce the temperature of the makeup water supply. MWD aqueduct water is added to the reservoir only on an emergency basis, e.g., if the reclaimed water and well water sources are not capable of providing sufficient makeup water to the reservoir. MWD aqueduct water was used historically at the EGS but has not been used since the plant began using reclaimed water in 2003.

In 2005 and 2006, approximately 65 percent of the EGS water supply came from reclaimed water. Table 7.14-5 summarizes the water utilized during operation of the EGS in afy from 1994 through 2006.

Table 7.14-5
Summary of Water Supplied to and Discharged by EGS from 1994 to 2006

Year	Groundwater From On-Site Wells (AFY)	MWD Supplied Fresh Water (AFY)	IEUA Reclaimed Water (AFY)	Total Water Supply (AFY)	Wastewater Discharge (AFY)
1994	1,894	1,767	0	3,661	720
1995	2,331	347	0	2,678	599
1996	1,365	63	0	1,428	455
1997	1,927	117	0	2,044	557
1998	1,477	274	0	1,751	432
1999	2,399	203	0	2,602	611
2000	3,931	1,284	0	5,215	1,177
2001	2,730	89	0	2,819	617
2002	1,838	64	0	1,902	251
2003	961	0	20	981	599
2004	363	0	396	759	173
2005	747	0	1,455	2,202	758
2006	762	0	1,402	2,164	664
Average					

Notes:
Units 1, 2 and 5 were retired in 2003.
Connection to IEUA reclaimed water system began in 2003.

The Applicant has a long-term agreement with IEUA for use of recycled water at the EGS. This agreement (AKB02019) was signed in July 2002 and is effective for 20 years. The agreement sets forth a rate structure and minimum water quality requirements for the reclaimed water to be delivered to the EGS. The agreement does not limit the quantity of water supply. IEUA has an abundant amount of reclaimed water available to the region and is currently in the process of tripling the existing capacity of its wastewater treatment plant (RP#4) just south of the EGS. The amount of reclaimed water produced by IEUA is greater than the ability to deliver to the plant. The current limit on delivering recycled water to the plant is the supply line size which limits the flow to 5,000 gallons per minute.

There are three onsite groundwater wells. Locations of these wells are shown on Figure 7.14-4. The EGS has adjudicated rights to 954 acre-feet per year from the Chino Basin. The EGS can augment its groundwater supply through temporary water right transfers from other existing groundwater users in the basin. As shown on Table 7.14-5, the plant has reduced its use of groundwater since it began using reclaimed water in 2003.

The EGS can also purchase Colorado River water from MWD via the district’s Upper Feeder Canal. Due to the cost of this water supply, the EGS would only use this source as a backup water supply. Since 2003, the EGS has not used MWD supplied water.

The proposed project will connect to the EGS’ water supply system, which consists primarily of reclaimed water provided by IEUA under an existing water services agreement. Daily and annual water consumptive requirements are summarized in Table 2.5-7 and Table 7.14-6. Average daily requirements are based on the plant operating approximately 50 percent of the time under Case 1A conditions and 50 percent of the time under Case 2A conditions (see Table 2.5-8). Both CTG inlet air evaporative coolers are in-service and there is no duct firing. Maximum daily requirements are based on water consumption at maximum operating conditions of 105ºF and 15 percent relative humidity (i.e., Case 1A shown on Table 2.5-8). Both CTG inlet air evaporative coolers are in-service at maximum duct firing. The estimated annual water consumption is the total amount of water that will be used by the plant, in acre-feet. The annual water use is estimated to be the average daily water consumption rate for 274 days (75 percent capacity factor). Table 2.5-8 in Chapter 2, Facility Description and Location, provides the estimated daily continuous water flow rates in gallons per minute corresponding to the heat and material balance case descriptions presented in Table 2.5-1.

Table 7.14-6
Daily and Annual Average Water Consumption Requirements and Wastewater Discharge

Water Service/Use	Average Daily Use[1] (gpm)	Maximum Daily Use[2] (gpm)	Annual Use[3] (acre-feet)
Demineralized Water to Steam Cycle Makeup	40	40	48
Water to CTG Evaporative Coolers	74	123	90
Miscellaneous Uses	37	37	44
Makeup Water to Plant	182	240	220
Total Plant Makeup Water Usage Requirements	**182**	**240**	**220**
Well Water to Potable Water System	<1	5	1
Process Wastewater	109	128	132

CTG = combustion turbine generator
gpm = gallons per minute

Notes:

1. Average daily use is based on 50% of proposed plant operation Case 1A plus 50% of Case 2A, with a 75% capacity factor. See Section 2.5.6 and Table 2.5-8.
2. Maximum daily use is based on Case 1A.
3. Average annual use is assumed to be the average daily use at a 75% capacity factor.

The water balance diagram (see Figure 2.5-8 in Chapter 2) shows the proposed project's water treatment processes and the distribution of treated water. Water treatment varies according to the quality required for each of the plant's various water uses. Details about the plant's water uses and treatment are provided in Section 2.5.6 of this application. Briefly, the water uses at the plant include:

- CTG Evaporative Coolers – Makeup water for the CTG evaporative coolers will be supplied from the evaporative water storage tank. Water evaporates from the cooler and passes through the CTG. Minerals are concentrated in the remaining water that is not evaporated. To prevent minerals from concentrating to levels above the CTG design, the remaining water will be removed as blowdown to approximately five cycles of concentration. The blowdown will be discharged to the IEUA system under the EGS's existing Industrial User's permit. As required, makeup water is added to replace the water that is lost to evaporation and blowdown.

- HRSG Makeup – Water for the HRSGs must meet stringent specifications for suspended and dissolved solids. To meet these specifications, HRSG makeup water will be processed through the plant demineralized water treatment system. Demineralization is accomplished using a microfiltration and reverse osmosis water treatment process followed by a mix bed polishing demineralizer. Storage of demineralized product water is provided in a 250,000-gallon demineralized water storage tank, which provides sufficient capacity for approximately 7.5 days of peak load operation coinciding with an outage of the water treatment system.

Additional conditioning of the condensate and feedwater circulating in the steam cycle will be provided by means of a chemical feed system. To minimize corrosion, an amine will be injected into the condensate system downstream of the condensate pumps and directly upstream of the HRSG preheaters. Additionally, a caustic solution will be fed into both the high pressure and intermediate pressure drums of the HRSG. The chemical feed system includes chemical containers, one caustic container for each HRSG, one common amine container for both HRSGs, and one amine container at the condensate pumps. Two full-capacity metering pumps will be provided for each chemical container. A steam cycle sampling and analysis system will monitor the water quality at various points in the plant's steam cycle. The resulting water quality data will be used to guide adjustments in water treatment processes and to determine the need for other corrective operational or maintenance measures. Steam and water samples will be routed to a sample panel, where steam samples will be condensed and the pressure and temperature of all samples will be reduced as necessary. The samples will then be directed to automatic analyzers for continuous monitoring of conductivity and pH. All monitored values are indicated at the sample panel, and critical values will be transmitted to the plant control room. Grab samples will be periodically obtained at the sample panel for chemical analyses that will provide information on a range of water quality parameters.

- Service Water – Utility stations in various locations of the facility will provide service water to washdown tools, equipment, and areas adjacent to the utility station. Demineralized water will also usually be combined with a glycol solution and a corrosion inhibitor for filling of the closed air-cooled auxiliary cooling system.

- Potable Water – Potable water will be obtained by treating well water supplied from the existing EGS well water system. The SGGS potable water treatment system will consist of filtration and chlorination as well as associated tanks and pumps. The SGGS potable water system will distribute potable water to the plant's washrooms, safety eyewash showers and other potable water uses.

During construction, water will be supplied by the EGS existing water supply. Average daily use of construction water is estimated to be about 8,000 gallons. A maximum daily water usage is estimated at 85,000 gallons during the hydrotest of the HRSG and associated piping. There will be three cycles of water to be disposed of during the hydrotest. Depending on the test or washing cycle, the water to be discharged may include some metals or detergents. The water used during the hydrotest will be tested. If suitable for discharge, it will be routed to the sedimentation/detention basin and then discharged to the plant's existing wastewater discharge system. If the water quality is not suitable for discharge, it will be transported by trucks to an approved offsite disposal facility. Similarly, water used to test the gas pipelines will be tested and disposed.

7.14.1.5 Wastewater Discharge

EGS wastewater currently is discharged through the IEUA connection to the County Sanitation Districts of Los Angeles County treatment system. Industrial Wastewater Discharge Permit No. 14896 authorizes the discharges of boiler blowdown, cooling tower blowdown, equipment condensate, floor/equipment washdown, rainwater contaminated with oils, treated acid boiler cleaning wastewater, and circulating water system blowdown. A copy of the wastewater discharge permit is provided in Appendix J.

EGS wastewater discharge flow and quality are monitored quarterly at discharge locations and quarterly reports are issued to the IEUA, as required by the Industrial Waste Discharge Permit. Quarterly wastewater discharge flows from EGS for the years 1996 through 2000 and permit limits are summarized in Table 7.14-7. EGS routinely manages wastewater discharge rates based on peak flow maximum (in gallons per minute [gpm]) and daily maximum (in gallons per day [gpd]) limits, and has maintained discharge flows well within permit limits. IEUA does not use the daily average flow for compliance purposes; it represents historic levels of discharge. EGS manages discharge using two active retention ponds, one 600,000-gallon aboveground storage tank, and, if needed, an inactive retention pond, all of which are at the EGS facility.

Table 7.14-7
Summary of Wastewater Discharge Flow by EGS from 1996 to 2006

Quarter	Daily Average (gpd)	Daily Maximum (gpd)	Peak Flow (gpm)
1st 1996	134,935	202,402	94
2nd 1996	102,066	153,099	110
3rd 1996	524,000	786,000	546
4th 1996	1,737,000	2,605,500	1,809
1st 1997	Not Available	Not Available	Not Available
2nd 1997	471,940	707,910	492
3rd 1997	1,642,000	2,463,000	1,711
4th 1997	1,100,000	1,650,000	1,146
1st 1998	434,000	651,000	452
2nd 1998	835,000	1,252,500	870
3rd 1998	738,100	1,107,150	769
4th 1998	42,000	63,000	45
1st 1999	65,000	97,500	68
2nd 1999	174,000	261,000	182
3rd 1999	1,879,000	2,818,500	1,958
4th 1999	753,000	1,129,500	785
1st 2000	122,000	183,000	127
2nd 2000	1,016,000	1,524,000	1,058
3rd 2000	1,690,500	1,635,750	1,136
4th 2000	926,567	1,389,850	965
1st 2001	321,000	481,500	334
2nd 2001	917,133	1,375,700	955
3rd 2001	No Flow		
4th 2001	956,000	1,434,000	996

Table 7.14-7 (Continued)
Summary of Wastewater Discharge Flow by EGS from 1996 to 2006

Quarter	Daily Average (gpd)	Daily Maximum (gpd)	Peak Flow (gpm)
1st 2002	714,000	1,071,000	744
2nd 2002	171,000	256,500	178
3rd 2002	No Flow		
4th 2002	20,000	30,000	21
1st 2003	20,000	30,000	21
2nd 2003	10,000	20,000	10
3rd 2003	2,090,000	3,135,000	2,177
4th 2003	20,000	30,000	21
1st 2004	No Flow		
2nd 2004	10,142	15,214	11
3rd 2004	495,532	743,298	1,680
4th 2004	94,445	141,668	184
1st 2005	430,222	645,333	672
2nd 2005	496,604	744,907	776
3rd 2005	727,239	1,090,859	1,136
4th 2005	1,050,783	1,576,174	1,095
1st 2006	613,733	920,600	639
2nd 2006	652,275	978,412	679
3rd 2006	543,641	815,462	566
4th 2006	526,424	789,636	548
Average 1996-2003	613,320	892,011	618
Average 2004-2006*	470,087	705,130	666
Permit Limit	630,000	3,240,000	2,250

*Units 1, 2, and 5 were retired in December 2003.

Quarterly analytical results of wastewater samples collected at the EGS discharge locations from sampling events in the years 2003 to 2004 and permit limits are summarized on Table 7.14-8. Wastewater quality results at the discharge locations were well within the permit limits during these years of operation.

The EGS uses an onsite septic system for disposal of sanitary wastewater. This system consists of a septic tank and seepage pits. Historic performance of the system has been excellent.

Table 7.14-8
Summary of Process Wastewater Discharge Quality by EGS

Water Quality Parameter	Units	EPA Method	Permit Limit	Range of ETGS Discharge Sample Results
Arsenic (As), Total	mg/L	6010B	3	<0.05
Cadmium (Cd), Total	mg/L	6010B	15	0.0005 – 0.002
Chromium (Cr), Total	mg/L	6010B	10	0.0024 – 0.007
Copper (Cu), Total	mg/L	6010B	15	0.029 – 0.049
Cyanide (CN), Total	mg/L	335.2	10	<0.05
Lead (Pb), Total	mg/L	6010B	40	<0.005 – 0.0017
Mercury (Hg), Total	mg/L	7470A	2	<0.0003 - 0.00098
Nickel (Ni), Total	mg/L	6010B	12	<0.004 – 0.013
Silver (Ag), Total	mg/L	6010B	5	<0.01
Zinc (Zn), Total	mg/L	6010B	25	0.03 – 1.1
Oil and Grease, Total	mg/L	413.1 / 1664	NA	<10
pH	pH units	9040B	6.0 - 12.4	6.9 – 9.3
Sulfides (Dissolved)	mg/L	376.2	0.1	<0.1
Total Dissolved Solids (TDS)	mg/L	160.1	N/A	145 – 237
Total Suspended Solids (TSS)	mg/L	160.2	450	4.0 – 28
Chemical Oxygen Demand (COD)	mg/L	410.4	900	<20 – 410

Notes:

Results are for five sampling events: 11/11/03, 3/19/04, 6/11/04, 9/14/04, and 11/29/04.

N/A Not applicable
Mg/L Milligram per liter

The proposed project will have two separate wastewater collection systems that will connect to the EGS' wastewater systems. The first is the plant's process wastewater system, which collects wastewater from the CTG evaporative coolers and HRSGs, water treatment system, chemical feed area drains, and general plant drains. Process wastewater will be discharged to the LACSD through the IEUA's nonreclaimable industrial waste lines under the plant's existing Industrial User's permit. A copy of the wastewater discharge permits is provided in Appendix J.

The second is the sanitary system, which collects sanitary wastewater from sinks, toilets, and other sanitary facilities. Sanitary wastewater will be discharged to an onsite septic system that will include a septic tank and leachfield. The system will be sized for peak use based on 25 people at a rate of 50 gallons per day per person. The septic tank will be approximately 1,875 gallons. Wastewater will be discharged to the leachfield via five 4-inch-diameter perforated PVC pipes. The leachfield will be approximately 30 feet wide by 40 feet long, based on an application rate of 1.6 gallons per day per square feet. Based on soil information, soils at the proposed project site have high permeability values and would be well suited for a septic system (see Section 7.9, Soils). In addition, the depth to groundwater is very deep, more than 400 feet. Percolation tests would be conducted in accordance with the San Bernardino County's requirements to design and size the septic system (County of San Bernardino Department of Public Health, 1992). The system will be designed to meet the minimum distances for siting individual waste disposal systems set forth by the County. The septic tank would be more than 100 feet from the onsite wells, more than 25 feet from Chadwick Channel (an ephemeral stream), and more than 25 feet from the property line. The leachfield would be more than 100 feet from the onsite wells, more than 50 feet from Chadwick Channel, and more than 50 feet from the property line. The system would be designed and permitted in conformance with the SARWQCB's "Guidelines for Waste Disposal from Land Developments."

The water balance diagram on Figure 2.5-8 shows the SGGS's wastewater streams and the disposition of wastewater.

The plant's process wastewater streams and treatments are described below.

- Evaporative Cooler Blowdown – The concentration of dissolved solids in the evaporative cooler water is maintained below given limits, primarily for TDS, by withdrawing a portion of the evaporative cooler water (i.e., evaporative cooler blowdown) and replacing it with fresh makeup water from the evaporative cooler water storage tank. The blowdown stream will be sent to the plant process wastewater discharge.

- HRSG Blowdown – Water circulating in the plant's steam cycle will accumulate dissolved solids, which must be maintained below given limits to prevent deposition of solid particles on the steam turbine blading of the STG. The concentration of dissolved solids will be maintained below such limits by withdrawing a portion of the water from the HRSG steam drums (i.e., HRSG blowdown), and replacing it with product water from the demineralization process described previously. HRSG blowdown will be routed to the plant wastewater discharge.

- Water Treatment System Demineralizer – Wastewater from the demineralizer system's microfiltration and reverse osmosis system will be discharged to the plant wastewater system. The mixed bed demineralizer will be regenerated off site and consequently will not generate on site wastes.

- Chemical Feed Area Drainage – The chemical feed area will be provided with a containment area to keep any spilled chemical out of the plant drainage system. Spilled chemicals will be cleaned up or neutralized before being discharged to the plant wastewater system.

- General Plant Drainage – General plant drainage will consist of wastewater collected by sample drains, equipment drains, equipment leakage, and area washdowns. Wastewater collected in the general plant drainage system will be routed to the plant wastewater discharge. General plant drainage that potentially contains oil or grease will be routed through an oily water separator.

To accommodate the proposed plant, the 17-acre site and a 15-acre construction laydown area will be graded. The proposed site drainage plan is shown on Figure 2.6-2 and the drainage plan for the laydown area is shown on Figure 2.7-4. Stormwater runoff from the project site will be collected by a surface drainage system and conveyed to a sedimentation detention basin. The basin will be designed to detain the difference in runoff before-construction (predevelopment) and after-construction (post-development) conditions. The detention pond will be designed to accommodate the peak runoff of the predevelopment condition resulting from a 10-year, 24-hour storm event. The flow of stormwater will generally follow the existing drainage pattern. The basin will be designed in accordance with San Bernardino County Detention Basin Design Criteria (see design criteria for the site drainage system are provided in Appendix A, Civil Engineering Design Criteria). A cross-section of the detention basin is provided in Figure 2.6-4. Discharge from the basin will be controlled using three 450-gpm pumps and released to Chadwick channel via a 36-inch-diameter reinforced concrete pipe (RCP). The 36-inch-diameter pipe will drain from an aft-bay connected to the downstream end of the detention basin. An overflow spillway weir will be provided and will be designed to carry the peak 1,000-year runoff. Erosion protection will be provided where the 36-per-diameter pipe enters Chadwick Channel.

7.14.1.6 Flooding

The current site topography ranges from an elevation of approximately 1,090 feet above msl on the south to approximately 1,130 feet above msl on the north. After construction, the plant site will be at an approximate elevation of 1,120 feet above msl. As shown on Figure 7.14-5, the proposed project site is not within or near the 100-year flood zones based on the most current FEMA Flood Insurance Rate Maps (FEMA, 1986a and 1986b).

The project site is within Zone 1 of the San Bernardino County Flood Control District (SBCFCD). This zone encompasses approximately 275 square miles within the southwestern portion of San Bernardino County. The SBCFCD was formed when state legislation was enacted in 1939 to provide flood control functions and related water conservation services throughout San Bernardino County. The SBCFCD has developed an extensive system of facilities, including dams, conservation/recharge basins, drainage channels, and storm drains to intercept and convey stormwater flows through and away from developed areas of the County.

7.14.2 Environmental Consequences

To evaluate the environmental consequences of the proposed SGGS relative to water supply, water quality, and flood hazards, the following criteria were used to determine whether project-related impacts would be significant. Impacts would be considered significant if the project would affect (by bulleted category):

- Groundwater
  - Substantially degrade groundwater quality.
- Surface Water
  - Substantially alter surface water chemistry or temperature;
  - Substantially alter the volume of water in a surface water body;
  - Contaminate a public water supply;
  - Substantially reduce the amount of water otherwise available for public water supplies;
  - Change currents or the course of direction of water movements in marine or fresh waters; or
  - Obstruct or alter any navigable water of the United States.
- Flood Hazard
  - Substantially increase the risk of flooding, erosion, or siltation; or

– Change absorption rates, drainage patterns, or the rate and amount of surface runoff.

7.14.2.1 Groundwater

Construction, operation, and maintenance of the proposed SGGS will not use groundwater. However, construction, operation, or maintenance of the facility could potentially affect groundwater quality through inadvertent spills or discharge that could then infiltrate and percolate down to groundwater. Estimated maximum depth of excavation for the proposed project is approximately 17 feet. Excavation dewatering during construction is not anticipated since the depth to groundwater at the site is approximately 400 feet bgs. Due to the depth to groundwater, degradation of groundwater is not expected.

The SGGS will use a small amount of groundwater for its potable water supply; therefore, no impacts to groundwater are anticipated.

The septic system would be designed and constructed in accordance with the County of San Bernardino and SARWQCB requirements, which will require the system to be protective of groundwater supplies. No impacts to groundwater are anticipated.

7.14.2.2 Surface Water

The estimated average annual water use is approximately 220 afy. The existing plant (Units 3 and 4) uses approximately 2,200 afy of water based on historical usage from 2003 through 2006, of which approximately 65 percent was reclaimed water. IEUA currently provides approximately 6,200 afy of reclaimed water to more than 150 customers (IEUA, 2007) and has plans to triple its delivery capacity within the next few years. The will serve letter from IEUA (see Appendix J) confirms adequate water supply is available for the proposed project. Delivery to the ECG and project site is currently limited by the capacity of the pipe system from IEUA's plant RP#4. The pipe capacity is approximately 5,000 gpm. Maximum daily use at the proposed plant is estimated to be approximately 240 gpm. The project will not require additional sources of water; current allotments are sufficient to meet the demands of the proposed project. The proposed project would increase the amount of water used at the EGS by approximately 10 percent. Even with this increase in water usage, the total amount of water used at the EGS is well below the amount of water currently allowed from the plant's water sources. No new offsite pipelines for well or reclaimed water will be constructed to supply needs for the proposed project. Therefore, there will be no adverse impact on water supply or other users of this source.

Process water will be discharged to the EGS' wastewater system, which discharges to the IEUA's wastewater system under the current permit. The estimated composition of the SGGS wastewater is shown in Table 7.14-9. The parameters presented in this table are based on plant operation at maximum ambient conditions with duct burners in operation (Case 1A in Table 2.5-8) because this is the case that generates the highest wastewater flow. The wastewater composition is also based on all plant makeup water being reclaimed water since this is the expected primary operation. The expected composition of the SGGS's process wastewater as shown on Table 7.14-9 would be significantly less than the discharge permit limits shown in Table 7.14-8. Therefore, there would be no adverse impact to IEUA's ability to meet its discharge water quality requirements.

While the SGGS is not a zero liquid discharge (ZLD) system, it does use dry cooling technology to minimize consumptive water use and thereby minimize wastewater discharge. The amount of wastewater generated by the SGGS is only 132 afy; therefore, a ZLD system would not be warranted.

Table 7.14-9
SGGS Wastewater Composition

Water Quality Parameters	Wastewater Composition
Calcium (Ca)	76.3
Magnesium (Mg)	18.6
Sodium (Na)	211.6
Potassium (K)	N/A
Alkalinity ($CaCO_3$)	212
Chloride (Cl)	194
Sulfate (SO_4)	129.5
Phosphate (PO_4)	1.4
Nitrite (NO_2)	0.030
Nitrate (NO_3)	19.2
Fluoride (F)	0.40
Silica (SiO_2)	N/A
pH	6.0 - 9.0
TDS	974
Turbidity (NTU)	1.9
Residual Chlorine	N/A
Aluminum	N/A
Antimony	0.010
Arsenic	0.010
Barium	0.03
Beryllium	0.002
Boron	0.599
Cadmium	0.002
Chromium	0.002
Cobalt	0.010
Copper	0.007
Iron	0.136
Lead	0.004
Lithium	N/A
Manganese	0.013
Mercury	0.0004
Molybdenum	N/A
Nickel	0.006
Selenium	0.010
Silver	0.004
Strontium	N/A
Thallium	0.010
Tin	N/A
Titanium	N/A
Vanadium	N/A
Zinc	0.049

Notes: All concentrations in mg/L as substance unless indicated otherwise.
N/A indicates that data for a particular water quality parameter is not available

Construction, operation, or maintenance of the proposed project facility could affect surface water quality of local creeks and the Santa Ana River through inadvertent spills or discharges. Construction activities could also increase the potential for erosion and uncontrolled runoff of stormwater contaminated with sediments or other pollutants that could impact surface water quality and sedimentation. The site drainage plan and erosion control plans of the proposed facility during and after construction are shown in Figures 2.6-1 and 2.6-2. Best management practices (BMPs) such as silt fences, hay bales, etc., will be used during construction to minimize the potential for erosion. A construction SWPPP will be prepared and implemented (see Appendix H for a draft construction SWPPP). A sedimentation basin would be provided to detain stormwater runoff and sediment. With the project as designed and implementation of the mitigation measures proposed in Section 7.14.4.2, the impacts to surface water quality would be less than significant.

Stormwater collected in curbed areas of the plant will be collected and routed through an oil-water separator and detained in a new stormwater detention basin before being discharged into Chadwick Channel. Stormwater within the curbed area has the highest likelihood of coming into contact with potential contaminants. A SWPPP for operations will be prepared in accordance with the NPDES Industrial General Permit requirements and will include BMPs to protect water resources. BMPs similar to those established for the EGS will be implemented as part of the proposed project. Therefore the proposed project will have no adverse impacts to surface water quality.

The SGGS will not alter currents or direction of water flow since there will be no significant increase in discharges off site; nor will it obstruct or alter navigable waters because nearby streams are ephemeral.

7.14.2.3 Flooding

Development of the proposed project, which includes buildings, structures, and impermeable surfaces, will reduce the amount of stormwater that infiltrates into the ground and will increase the amount of water that runs off the site. Stormwater runoff will be collected in the plant site area using catch basins, conveyed via a storm drain system and detained in a sedimentation/detention basin. The basin will be designed in accordance with San Bernardino County Detention Basin Design Criteria that requires post-project runoff to be less than preproject runoff. Therefore, proposed the project’s impact on runoff volume and resulting increase in downstream flooding is considered less than significant.

The proposed SGGS will be located on a site elevated well above and away from the 100-year floodplain. The plant site will be graded, as shown on Figure 2.6-2, to promote drainage to prevent onsite flooding and minimize the potential for flooding to neighboring areas. The new bridge across Chadwick Channel would be constructed as a clear span bridge; therefore, there would be no encroachment into the channel and no impediment to flood flows or flood elevations.

Grading and construction will be performed in accordance with the City of Rancho Cucamonga’s grading standards (Municipal Code Chapter 19.04) and floodplain management regulations (Municipal Code Chapter 19.12). No significant impacts related to flooding are expected as a result of the proposed project.

7.14.3 Cumulative Impacts

Past, current and potential future projects, including the proposed project, would require a water supply. Impacts on water supply could be considered cumulatively significant due to the scarcity of water in the region. The proposed project will use a very small amount of water (approximately 220 afy), which would have a negligible effect on surface water availability in the region. Because the project will use primarily reclaimed water from IEUA, there would be a negligible increase in groundwater extraction and potable surface water supplies. Therefore, the proposed project would not contribute to a cumulatively significant impact, and cumulative impacts of the proposed project would be less than significant.

7.14.4 Mitigation Measures

This section discusses mitigation measures proposed by the Applicant that will be implemented to ensure that project-related impacts to water resources are less than significant.

7.14.4.1 Groundwater

No significant impacts to groundwater are anticipated, therefore, no mitigation measures are warranted.

7.14.4.2 Surface Water

WR-2 Construction Best Management Practices. As discussed in Section 7.9.1.4 (Soils; Soil Loss and Erosion), impacts to surface water from erosion are expected to be minimal during construction. Erosion will be controlled in accordance with an approved Erosion Control Plan as discussed in Section 7.9.2.2 (Soils; Construction). In addition, all construction activities will be performed in accordance with the California NPDES General Permit for Stormwater Discharge Associated with Construction Activities (SWRCB, 1999), requiring the implementation of BMPs to control sediment and other pollutants mobilized from construction activities.

Temporary BMPs are discussed in Section 7.9.3.1 (Soils; Temporary Erosion Control Measures) and may include revegetation, slope stabilization, construction of berms and ditches, and sediment barriers such as straw bales or silt fences to prevent sediment discharges from the site. These measures will be developed and described for the construction activities in a Construction SWPPP that must be prepared before construction begins. With proper implementation of BMPs, no significant impacts to surface water quality are anticipated during short-term construction activities. In addition, use of existing infrastructure will minimize physical impacts from construction activities. No significant impacts to surface water are anticipated as a result of construction activities.

WR-3 Project Operation Best Management Practices. Permanent erosion control measures are discussed in Section 7.9.3.4 (Soils; Permanent Erosion Control Measures) and include drainage systems and revegetation. Operation of the facility will be in conformance with the California NPDES General Permit for Stormwater Discharge Associated with Industrial Activities (SWRCB, 1997). In accordance with this permit, the existing plant's industrial SWPPP will be prepared for the proposed project. BMPs for the proposed project would be similar to the BMPs currently being implemented to control pollutants in stormwater discharges fro the EGS. BMPs will include refueling and maintenance of equipment only in designated lined and/or bermed areas, isolating hazardous materials from stormwater exposure, and preparing and implementing spill contingency plans in specified areas. In addition, the proposed project will prepare a Water Quality Management Program (WQMP) in accordance with the local municipal stormwater permit. With proper implementation of these and other BMPs in the SWPPP, no significant impacts to surface water quality are anticipated during the long-term operation of the facility.

7.14.5 Laws, Ordinances, Regulations, and Standards

The primary agency for regulating surface water and groundwater pollution in California is the RWQCB. The State Water Resources Control Board (SWRCB) delegates authority for implementation of regulations to RWQCB but creates general policies and plans. The SWRCB and RWQCB are agencies within the California Environmental Protection Agency. The federal agencies (e.g., U.S. EPA) have delegated most authority on water pollution issues to the state. Consequently, the RWQCB determines allowable concentration limits for effluents, issues permits, and enforces the regulations.

Local water districts, water suppliers, and health departments may also act when a pollutant has the potential to threaten their drinking water supply. Effluent limitations, and toxic and effluent standards are established pursuant to Sections 301, 302, 303(d), 304, 307, and 316 of the Clean Water Act.

The RWQCB for the Santa Ana Region produced the most recent Santa Ana *Water Quality Control Plan* in 1995. This document outlines general water quality goals for the Santa Ana River. Industrial service supply water (e.g., process water supply) is identified as a beneficial use and as such has “essentially no water quality limitations except for gross constraints…” (SARWQCB, 1995).

The proposed project will operate in accordance with all applicable laws, ordinances, regulations and standards (LORS). The LORS that are potentially applicable to the water resources components of this project are identified below. Several LORS involve conformance only by reporting to the applicable agency if a spill or release occurs or require notification/approval for structural work within a surface body, etc. Project conformance with the LORS is summarized in Table 7.14-10.

7.14.5.1 Federal

The Clean Water Act of 1977 (including 1987 amendments) §402; 33 USC §1342; 40 CFR Parts 122-136

Administering Agency: RWQCBs

Compliance: In lieu of an NPDES Permit, the proposed project will use Notices of Intent (NOIs) to comply with the general NPDES requirements that regulate stormwater and other discharges to water by establishing effluent limitations and monitoring and reporting requirements as described in Section 7.14.7.

7.14.5.2 State

California Porter-Cologne Water Quality Control Act of 1998; California Water Code §13000-14957; Division 7, Water Quality

Administering Agency: SWRCB, RWQCB

Compliance: Discharge of waste to land, such as septic seepage pits and leach fields, must comply with the Waste Discharge Requirements.

The Porter-Cologne Act established the jurisdiction of the nine California RWQCBs, granting them the authority to issue Waste Discharge Requirements (WDRs) that impose annual discharge fees and establish discharge limits, operation and maintenance requirements for treatment equipment, and monitoring, record keeping, and reporting requirements.

The septic system will be designed pursuant to the Guidelines for Waste Disposal from Land Developments and will be permitted by the County of San Bernardino Department of Public Health, Division of Environmental Health Services and SARWQCB.

California Water Code § 13260

Administering Agency: RWQCB

Table 7.14-10
Applicable Water Resources Laws, Ordinances, Regulations, and Standards

Laws, Ordinances, Regulations, and Standards	Applicability	Administering Agency	AFC Section
Federal			
CWA	Regulates discharges of wastewater and storm water to protect nation's waters. Applies to wastewater discharged to septic leach field and storm water runoff.	RWQCB	Discharges of wastewater subject to WDR permit and storm water subject to NPDES permits (Sections 7.14.2.1 and 7.14.2.2). Permits (Appendix 7.14-1) to be obtained through SWRCB.
RCRA	Controls storage, treatment, disposal of hazardous waste.	RWQCB	Hazardous waste will be handled and stored in conformance with Subtitle C. Section 7.13.4.
CERCLA	Places responsibility for releases of hazardous materials into the environment.	RWQCB	Obtain waste generator number and waste discharge/disposal permits as appropriate.
State			
SWRCB Water Quality Orders	Regulates industrial storm water discharges during construction and operation of the facility.	RWQCB	Part of federal NPDES permit requirements. Compliance monitored by CVRWQCB. Section 7.14.2.2.
Porter-Cologne Water Quality Control Act	Controls discharge of wastewater to the surface and groundwaters of the state.	RWQCB	Discharge will be in accordance with CWA/Porter-Cologne NPDES/WDR permit. Section 7.14.5.2.
Safe Drinking Water and Toxic Enforcement Act	Proposition 65 prohibits certain discharges to drinking water sources.	RWQCB	Part of federal NPDES permit requirements. Compliance monitored by RWQCB.
California Water Code Section 461 and SWRCB Resolution 77-1	Encourages conservation of water resources.	RWQCB	Effective practices for water conservation and reuse were engineered into the facility design. Section 7.14.
California Environmental Quality Act (CEQA)	Water Supply superseded by CEC process	San Bernardino County	7.1 CEC review of CEQA equivalent process
Local			
General Plan	Address issues such as drainage, erosion control, hazardous material spill control, facility siting in flood zones, and storm water discharge.	City of Rancho Cucamonga	Project will comply with the General Plan of Rancho Cucamonga. Sections 7.14.3 and 7.14.4.

CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act
SARWQCB = Santa Ana Regional Water Quality Control Board
CWA = Clean Water Act
NPDES = National Pollutant Discharge Elimination System
RWQCB = Regional Water Quality Control Board
SWRCB = State Water Resources Control Board
WDR = Waste Discharge Requirements

Compliance: Requires a Report of Waste Discharge for any discharge waste that could affect the "quality of the waters of the State, other than into a community sewer system.". This relates to the discharge of waste in the septic leach field, which will comply as discussed above.

California Water Code (CWC) § 13550 et seq.

Administering Agency: SWRCB; RWQCB

Compliance: Requires use of reclaimed water where available and appropriate. The SWRCB also adopted Resolution 75-58, which encourages the use of wastewater for power plant cooling and established the following order of preference for cooling purposes:

1. Wastewater discharged to the ocean
2. Ocean water
3. Brackish water or irrigation return flow
4. Inland wastewater with low total dissolved solids
5. Other inland water

The proposed project will use air cooling technology that will reduce the amount of water used by the plant. The project will also use reclaimed water as its primary source of water.

California Water Code § 13260

Administering Agency: RWQCB

Compliance: The proposed project will discharge process wastewater into a community sewer system. Sanitary wastewater will be discharged to an onsite septic system.

California Water Code §13271-13272; 23 CCR §2250-2260

Administering Agency: RWQCB; California Office of Emergency Services

Compliance: Requires filing a report of release of specified reportable quantities of hazardous substances including oil and petroleum products when the release is into or will likely discharge into waters of the state.

California Constitution, Article 10 §2

Administering Agency: SWRCB

Compliance: Prohibits waste or unreasonable use of water. The proposed project will use reclaimed water from IEUA and dry cool technology to reduce water consumption.

The California Safe Drinking Water and Toxics Enforcement Act (California Health and Safety Code 25249.5 et seq.)

Administering Agency: RWQCB

Compliance: Prohibits actions contaminating drinking water with chemicals known to cause cancer or possessing reproductive toxicity. The proposed project will not discharge process water to surface water.

7.14.5.3 Local

City of Rancho Cucamonga General Plan (City of Rancho Cucamonga, 2001)

Administering Agency: City of Rancho Cucamonga

Compliance: The proposed project will protect water quality and conserve water supplies (Policy 2.3.3.3). It will minimize sedimentation and erosion through control of grading and vegetation removal (Policy 2.3.3.4).

City of Rancho Cucamonga Municipal Code

Administering Agency: City of Rancho Cucamonga

The City of Rancho Cucamonga has specific LORS related to Grading Standards (Chapter 19.04), Floodplain Management (Chapter 19.12) and Stormwater and Urban Runoff management and Discharge Control (Chapter 19.20). Grading permits obtained from the City of Rancho Cucamonga will outline requirements relating to soil erosion control and protection of water quality. The proposed project will not be constructed within a floodplain and will comply with the NPDES Industrial General Permit and the San Bernardino Municipal Stormwater Permit.

7.14.6 Involved Agencies and Agency Contacts

Issue	Agency/Address	Contact/Title	Telephone
Water Supply	Inland Empire Utilities Agency 6075 Kimball Avenue Chino, CA 91710	Richard Atwater Chief Executive Officer General Manager	(909) 993-1600
Water Quality	Santa Ana Regional Water Quality Control Board 3737 Main Street, Suite 500 Riverside, CA 92501-3348	Mark Smythe, Section Chief, Stormwater Unit	(909) 782-4998
Water Quality	City of Rancho Cucamonga 10500 Civic Center Drive Rancho Cucamonga, CA 91730	William Makshanoff, Building Official Department of Building and Safety	(909) 477-2710
Water Quality	County of San Bernardino Department of Public Health, Division of Environmental Health Services 385 North Arrowhead Ave., 2nd Floor San Bernardino, CA 92415-0160	Joan Mulcare, REHS Program Manager, Water/Wastewater Management and Land Uses	(909) 884-4056

7.14.7 Permits Required and Permit Schedule

This section describes the required permits related to water resources for the SGGS. The following table summarizes these required permits.

Responsible Party	Permit/Approval	Schedule
Santa Ana RWQCB	Construction Activities Stormwater General Permit; California RWQCB Water Quality Order 99-08-DWQ (Addresses stormwater during construction)	30 days prior to construction
Santa Ana RWQCB	Industrial Activities Stormwater General Permit; California RWQCB Water Quality Order 97-03-DWQ (Addresses stormwater during plant operation)	30 days prior to start of plant operations
Santa Ana RWQCB	San Bernardino County Municipal NPDES Stormwater Permit; California RWQCB Water Quality Order R8-2002-0012 (Addresses stormwater during plant operation)	30 days prior to start of plant operations
City of Rancho Cucamonga, Department of Building and Safety	Grading Permit	Prior to earth moving activities, Project owner must obtain Grading Permit.
County of San Bernardino Department of Public Health	Soil Percolation Test Report (Addresses onsite septic system)	Prior to submittal of Form 200
Santa Ana RWQCB	Form 200 – Application Report of Waste Discharge General Information for NPDES Permits and Waste Discharge Requirements (Addresses onsite septic system)	

The California SWRCB Water Quality Order 99-08-DWQ: "National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges Associated With Construction Activity (General Permit)" authorizes a general permit for stormwater discharges associated with construction activities that disturb more than 5 acres. Construction activities subject to the permit include cleaning, grubbing, grading, stockpiling, and excavation activities. The General Permit requires submittal of an NOI to comply with the permit and the development of a SWPPP for construction activities. The SWPPP will describe BMPs to prevent stormwater pollution during construction activities. BMPs include erosion controls, sediment controls, and other controls to prevent stormwater from contracting pollutants. The SWPPP will also include a stormwater monitoring program.

The California SWRCB Water Quality Order No. 97-03-DWQ "General Permit to Discharge Stormwater Associated With Industrial Activity" authorizes a general permit to regulate industrial stormwater discharges. An NOI will be filed with the CVRWQCB prior to commencement of operation. In accordance with NPDES permit requirements, a SWPPP that addresses stormwater pollution prevention during operations must be developed. The SWPPP will identify BMPs to be used at the facility and a stormwater monitoring program.

The Santa Ana RWQCB issued a municipal stormwater permit to the County of San Bernardino County and 16 incorporated cities of the county (order No. R8-2002-0012, NPDES Permit No. CAS618036) on April 26, 2002 (SARWQB, 2002). The City of Rancho Cucamonga is one of the incorporated cities covered by this permit. The permit requires that all new development and redevelopment, including industrial developments of 100,000 square feet or more, develop a WQMP that demonstrates that pollutants in post-development runoff will be reduced using controls that utilize best available technology and best conventional technology. WQMP requirements must be incorporated into the project design and shown on project plans prior to bidding for construction contracts and before the start of construction (see San Bernardino County Stormwater Program, 2004).

The proposed project plant will discharge process wastewater to the LACSD through the IEUA's nonreclaimable industrial waste lines under the plant's existing Industrial User's permit, and there will be no discharge of process water to surface waterbodies. Therefore, a Report of Waste Discharge does not need to be filed with the RWQCB.

Pursuant to the California Water Code Section 13260, a ROWD must be filed with the SARWQCB if a project will discharge waste that could affect the quality of the waters of the state. Form 200, Application/Report of Waste Discharge, General Information for NPDES Permits and Waste Discharge Requirements, will be filled out and submitted to start the application process for waste discharge requirements for the discharge of sanitary wastewater to the septic leach field. A County-approved percolation test report must be submitted with the Form 200.

7.14.8 References

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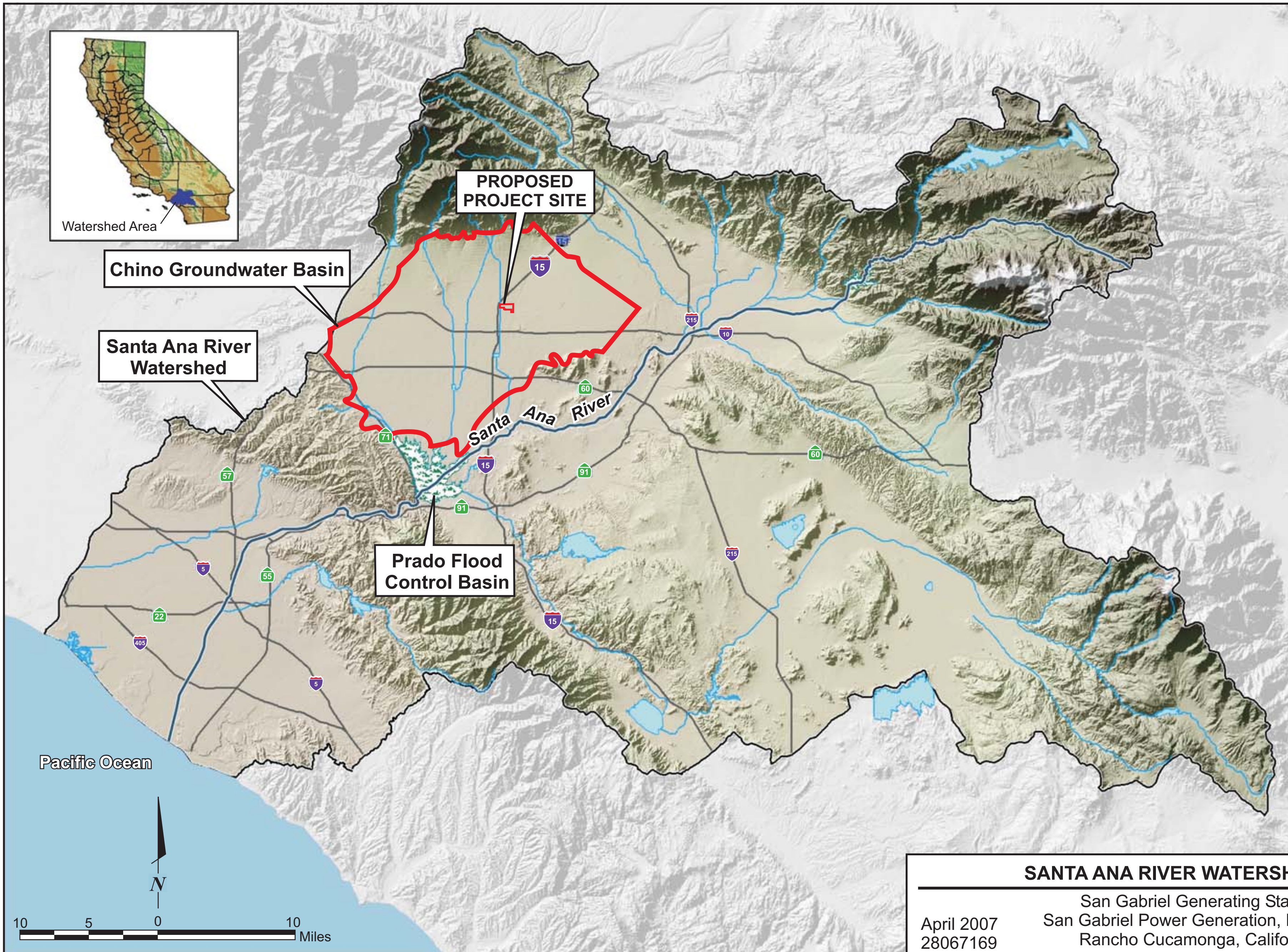


SANTA ANA RIVER WATERSHED

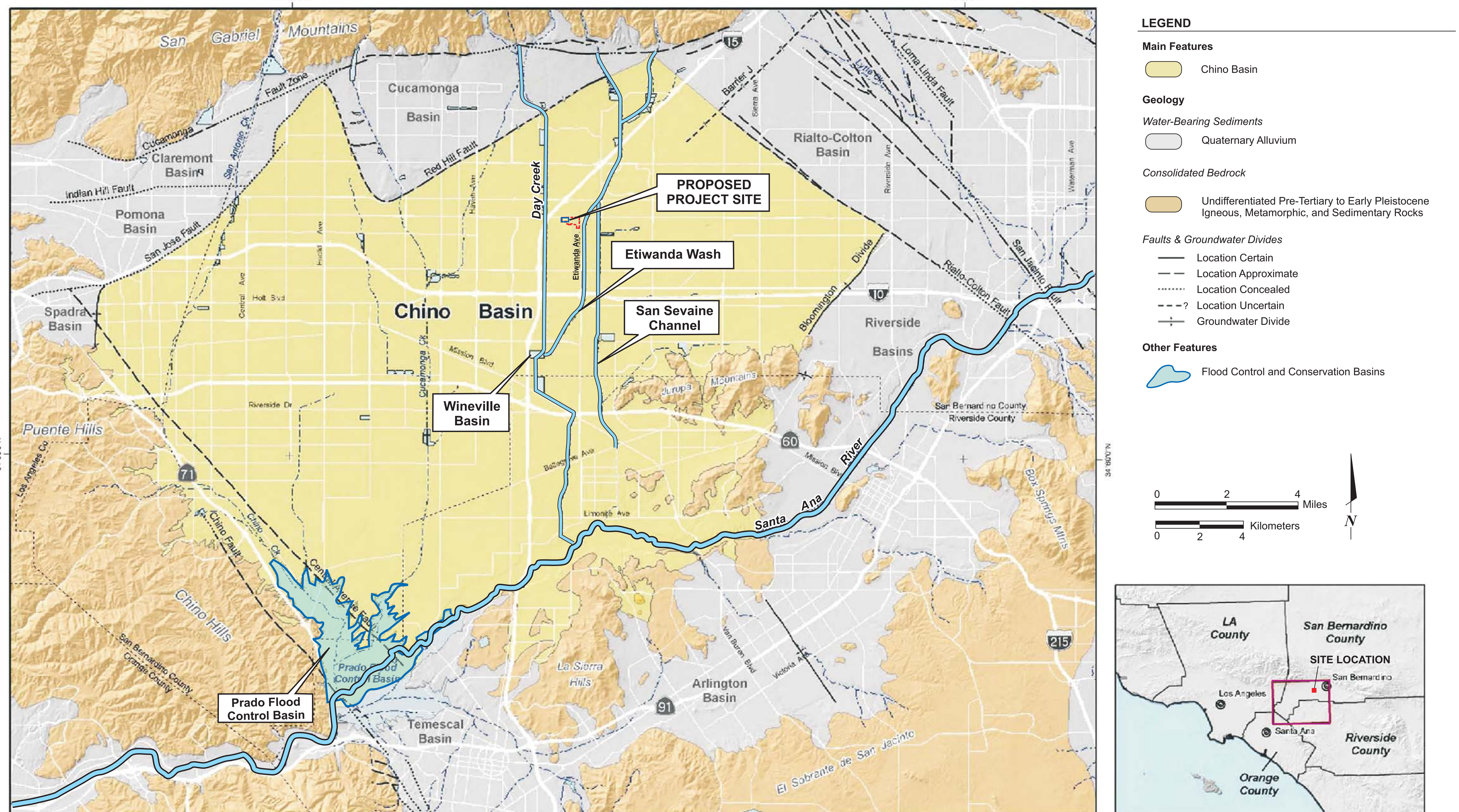
April 2007
28067169

San Gabriel Generating Station
San Gabriel Power Generation, LLC
Rancho Cucamonga, California

URS

FIGURE 7.14-1

3/27/07 vsa/hk ..\Reliant Etiwanda\Graphics\7.14 Water Resources\7.14-1_watershed.cdr



Source:
WILDERMUTH ENVIRONMENTAL, INC. 2003

CHINO GROUNDWATER BASIN

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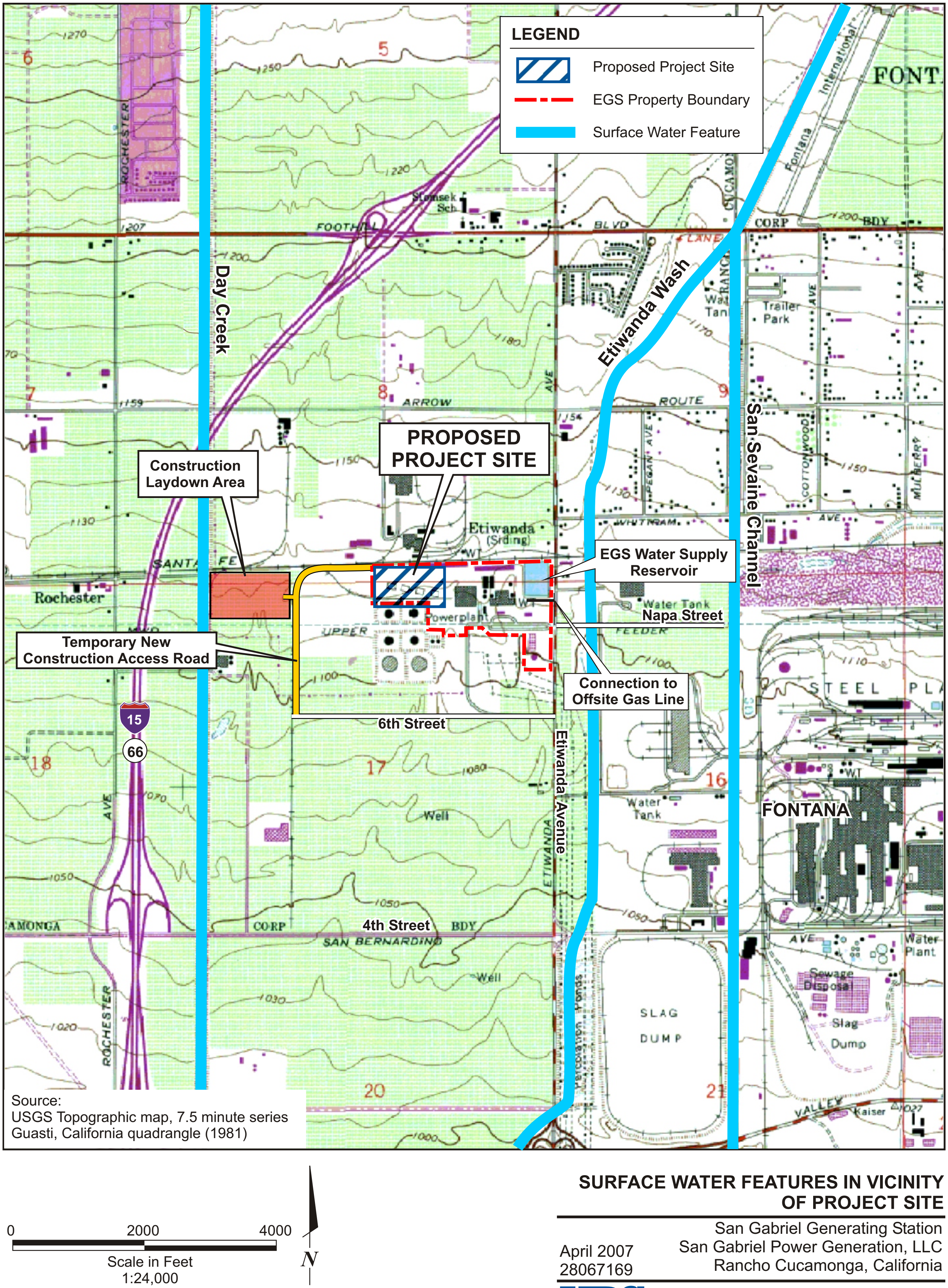
FIGURE 7.14-2

3/27/07 vsa/hk ..\Reliant Etiwanda\Graphics\7.14 Water Resources7.14-2_chino gw basin.cdr



SURFACE WATER FEATURES IN VICINITY OF PROJECT SITE

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San Gabriel Power Generation, LLC
Rancho Cucamonga, California

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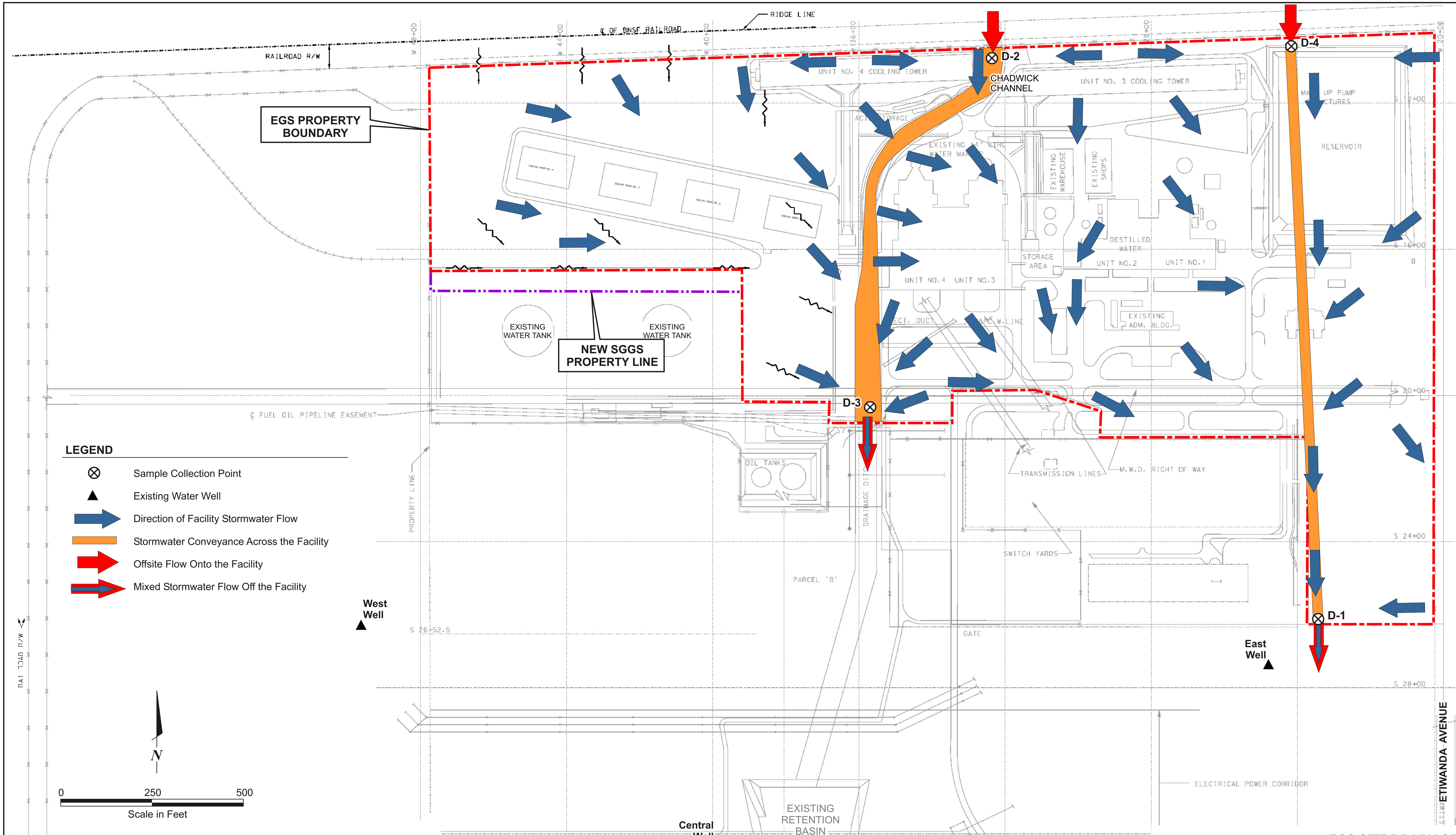
FIGURE 7.14-3

4/05/07 vsa/hk ..\Reliant Etiwanda\Graphics\7.14 Water Resources\7.14-3_vicinity.cdr



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EGS SITE DRAINAGE

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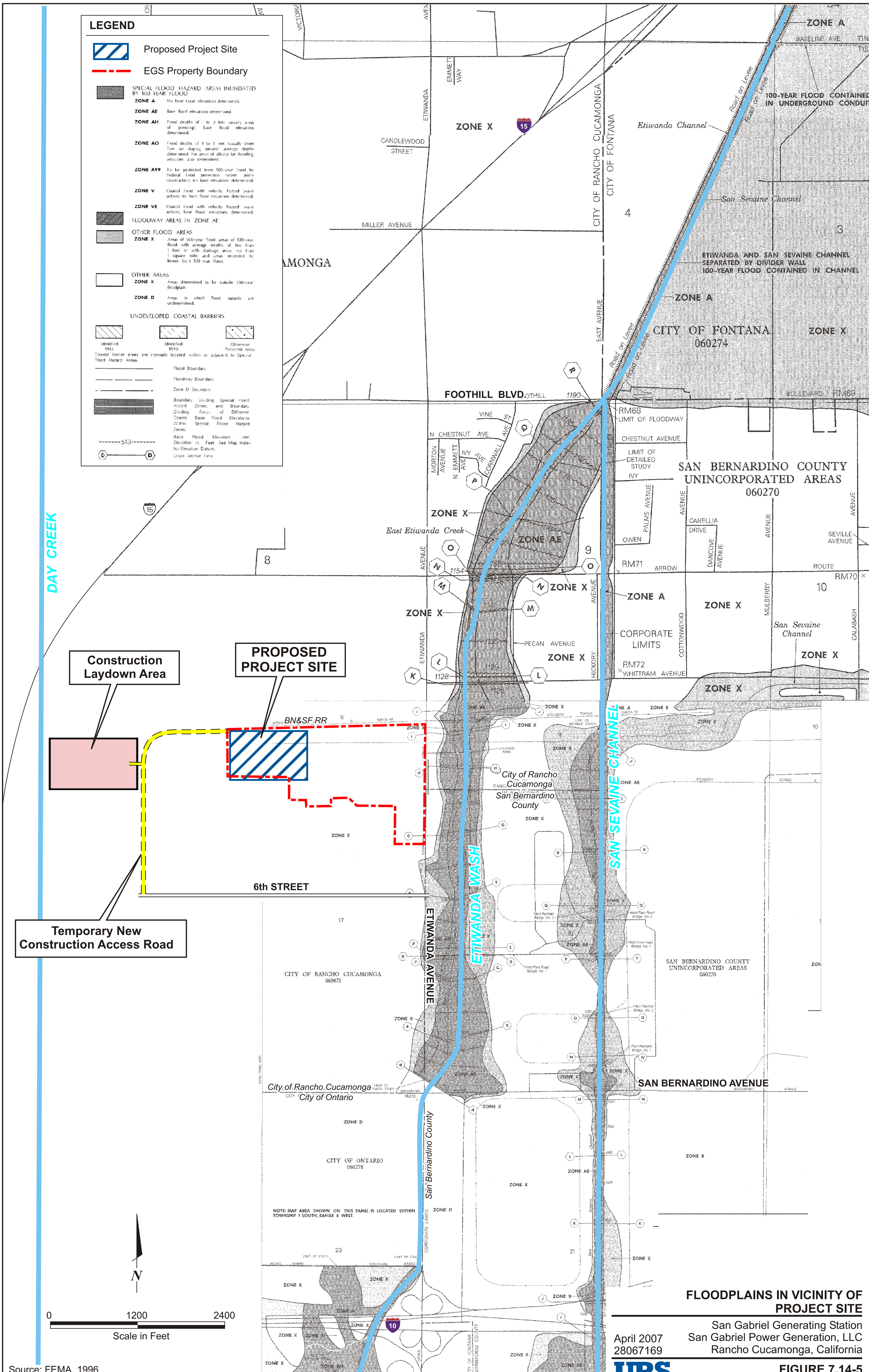
FIGURE 7.14-4



FLOODPLAINS IN VICINITY OF PROJECT SITE

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Rancho Cucamonga, California

April 2007
28067169

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FIGURE 7.14-5

Source: FEMA, 1996

4/05/07 vsa ..\Reliant Etiwanda\Graphics\7.14 Water Resources\7.14-5_floodplain.cdr