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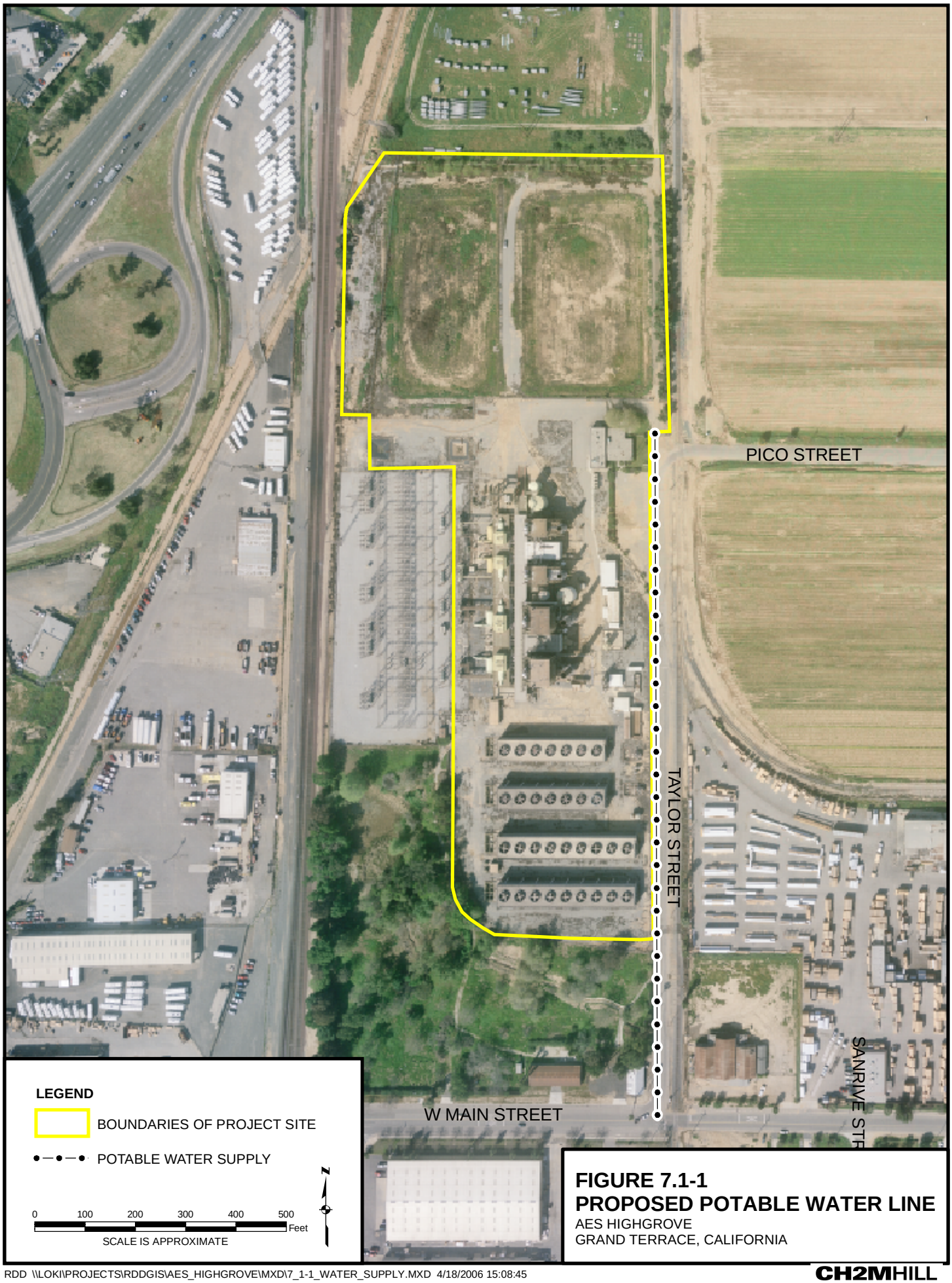
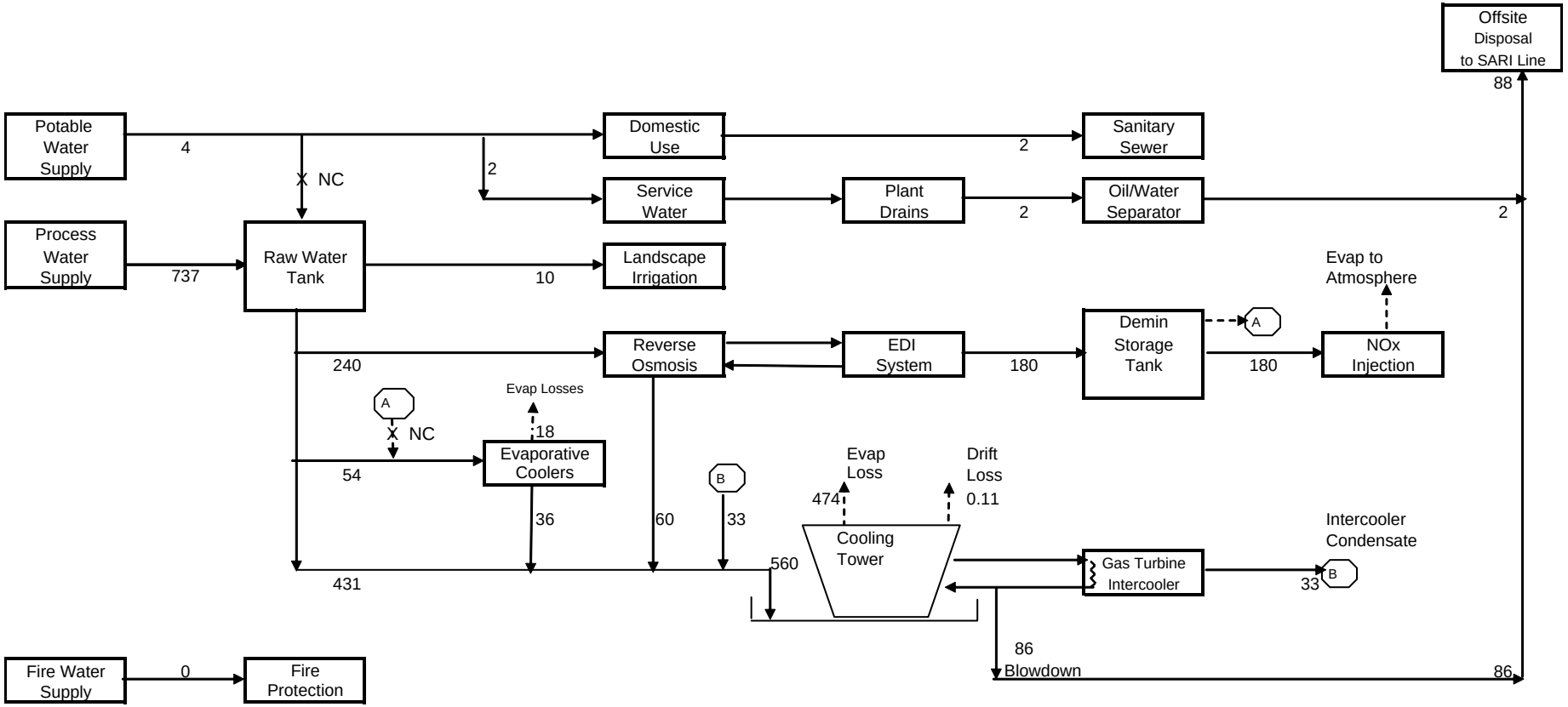


FIGURE 7.1-1
PROPOSED POTABLE WATER LINE
AES HIGHGROVE
GRAND TERRACE, CALIFORNIA

CH2MHILL



Notes

1. Numerical values represent steady state flows in gpm
2. Cooling tower blowdown is estimated at expected maximum cycles of concentration (6.5 x)
3. Ambient temperature assumed for this water balance is 80 F DBT/60% RH

NC = Normally Closed

FIGURE 7.1-2a
ANNUAL AVERAGE WATER BALANCE DIAGRAM
AES HIGHGROVE
GRAND TERRACE, CALIFORNIA

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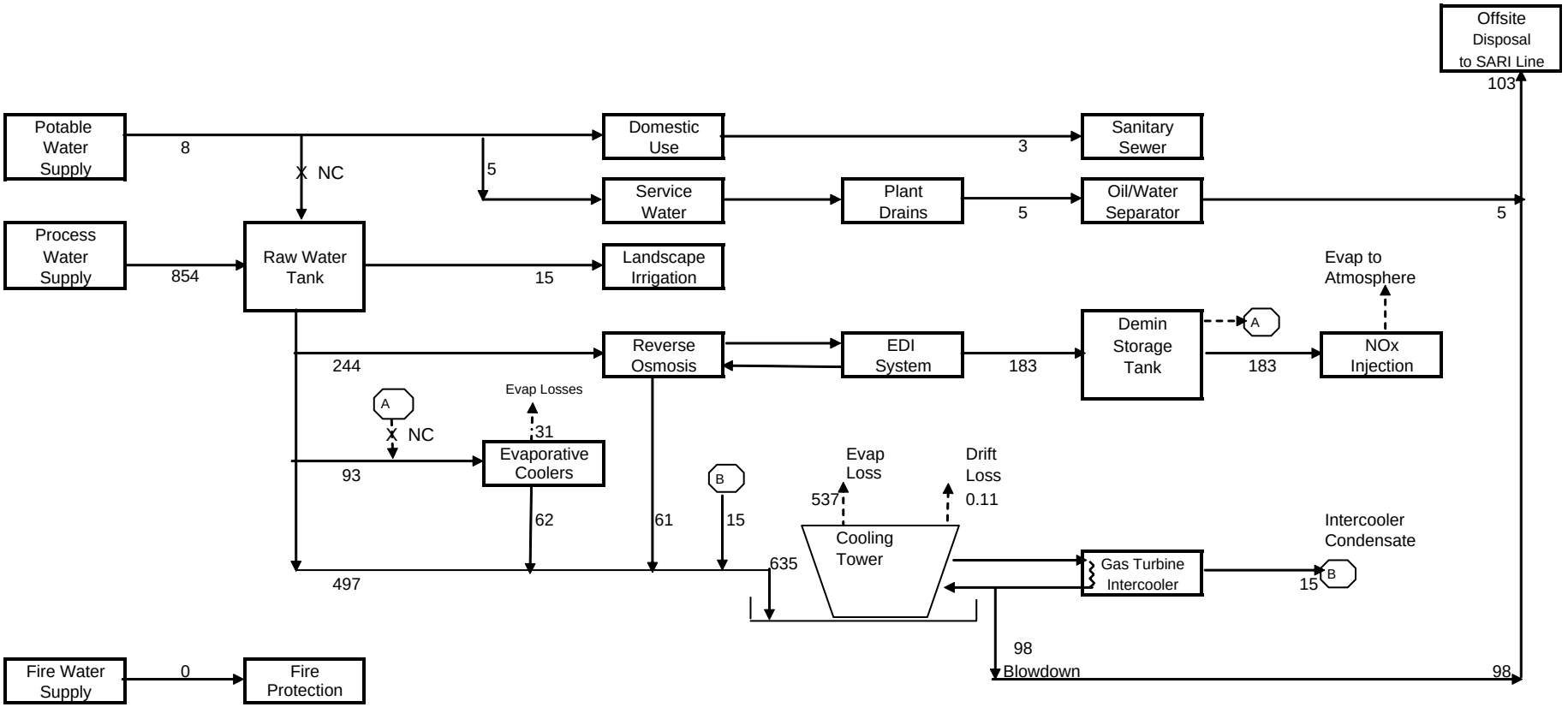

Notes

1. Numerical values represent steady state flows in gpm
2. Cooling tower blowdown is estimated at expected maximum cycles of concentration (6.5 x)
3. Ambient temperature assumed for this water balance is 97 F DBT/20% RH

NC = Normally Closed

FIGURE 7.1-2b
PEAK WATER BALANCE DIAGRAM
AES HIGHGROVE
GRAND TERRACE, CALIFORNIA

IS032006003RDD_08 (5/3/06)

CH2MHILL

SECTION 8.0

Environmental Information

The following subsections, 8.1 through 8.16, provide the environmental information required for the AES Highgrove Project Application for Certification:

8.1 Air Quality

8.2 Biological Resources

8.3 Cultural Resources

8.4 Land Use

8.5 Noise

8.6 Public Health

8.7 Worker Health and Safety

8.8 Socioeconomics

8.9 Agriculture and Soils

8.10 Traffic and Transportation

8.11 Visual Resources

8.12 Hazardous Materials Handling

8.13 Waste Management

8.14 Water Resources

8.15 Geologic Hazards and Resources

8.16 Paleontological Resources

8.1 Air Quality

8.1.1 Introduction

Subsection 8.1 describes the existing air quality setting, maximum potential impacts from project construction and operation, and mitigation measures to reduce these impacts below thresholds of significance. The project will use fuel-efficient simple-cycle generation technology with secondary air pollution control systems to generate electricity, which would minimize the amount of fuel needed, emissions of criteria pollutants, and potential impacts on ambient air quality. Additional project design features that would minimize adverse air quality impacts include the following:

- Using clean-burning natural gas for fuel
- Applying water injection capability to minimize oxides of nitrogen (NO_x) emissions formed during combustion
- Operating with a selective catalytic reduction system (SCR) to minimize NO_x emissions following combustion
- Operating with an oxidation catalyst to reduce carbon monoxide (CO) and volatile organic compound (VOC) emissions
- Installing appropriately-sized stacks to reduce ground-level concentrations of exhaust pollutants
- Installing a continuous emissions monitoring system (CEMS) for NO_x, CO and oxygen (O_2) to assist in maintaining and documenting compliance with emissions limits

Subsection 8.1.2 presents the air quality setting, including geography, topography, climate, and meteorology. Subsection 8.1.3 provides an overview of the ambient air quality standards. Subsection 8.1.4 discusses existing air quality in the vicinity of the project and describes each of the criteria pollutants. The laws, ordinances, regulations, and standards (LORS) that can affect the project and project conformance, as well as the air quality regulatory agencies relevant to the project are identified in Subsection 8.1.5. The environmental analysis of emissions from the construction and operation of the project, as well as, the procedures used in assessing facility emissions and air quality impacts are presented in Subsection 8.1.6. The results of the health risk assessment are also summarized in Subsection 8.1.6. Subsection 8.1.7 discusses compliance with LORS applicable to the project. An analysis of cumulative impacts is presented in Subsection 8.1.8. Mitigation for project air quality impacts is discussed in Subsection 8.1.9. A list of references used in preparing the subsection is provided in Subsection 8.1.10.

Potential public health risks posed by emissions of non-criteria pollutants are also addressed in more detail in Subsection 8.6, Public Health.

8.1.2 Air Quality Setting

8.1.2.1 Geography and Topography

The proposed AES Highgrove Project site is located in an industrially zoned area of the City of Grand Terrace, San Bernardino County. The site is located at 12700 Taylor Street, north of the intersection of Taylor and Main streets. The new facility will be located on the property of a former oil-fired power plant owned by the Applicant. The project site is relatively flat; at an elevation of approximately 940 feet above sea level. La Loma Hills are located approximately 0.5 mile to the west and rise to an elevation of approximately 1,390 feet. Blue Mountain lies approximately 1.5 miles to the east of the project site, rising to an elevation of 1,500 feet above sea level. The Box Springs Mountains are 1.7 miles to the southeast of the project site and rise to a height of 2,843 feet above sea level.

8.1.2.2 Climate and Meteorology

The semi-permanent high-pressure zone of the eastern Pacific dominates the climate of southern California including the City of Grand Terrace, where the Highgrove Project will be located. Seasonally, the high-pressure zone oscillates in a north-south direction. During the summer, the high-pressure zone moves northward over the southwest United States, including southern California, resulting in increased subsidence and clear skies inland, while the coastal sections of southern California experience increased coastal stratus and fog caused by the relatively cool ocean surface temperatures. Frequent inversions, which are caused by subsidence of air that warms when it is compressed over relatively cool, moist marine air, occur during the summer.

In winter, the high-pressure zone moves south of southern California, which allows storms originating in the Gulf of Alaska and the mid-latitudes of the Pacific Ocean to impact southern California, bringing rain and wind. The majority of the annual precipitation falls between the months of November and April.

The climate of the South Coast Air Basin, including the City of Grand Terrace, is influenced primarily by terrain and geographical location. The relative close proximity to the ocean tends to moderate air temperatures, especially near the coast. For example, daytime summer temperatures near Los Angeles average about 75 degrees Fahrenheit (°F) while cities a relatively short distance to the east, such as Grand Terrace, record average summer temperatures well above 90°F. Daytime winter temperatures average about 65°F in both locations (WRCC, 2006). A climate summary, including average annual rainfall, for the nearby city of Riverside, is included in Appendix 8.1C (Table 8.1C-9a and 9b).

A majority of the rainfall in the Grand Terrace area falls during winter and spring as frontal storms move from the northwest to southeast. Over 70 percent of the average annual rainfall of about 10 inches occurs in the winter months (WRCC, 2006). Monsoon moisture and remnants from Eastern Pacific hurricanes occasionally produce showers in the Los Angeles Basin during the summer. Rainfall amounts usually tend to be light and isolated during these events.

Wind speed and wind direction patterns in the Los Angeles Basin are dominated by diurnal cycles driven by the differences in temperature between the land and the ocean, as well as the mountainous terrain surrounding the basin. Synoptically, frontal storms and Santa Ana

flow episodes frequently tend to break the diurnal onshore/offshore wind pattern cycle during the period of September through March. Overall, the basin experiences light, average wind speeds with little seasonal variation. The South Coast Air Quality Management District's (SCAQMD) 1981 Riverside meteorological data file for dispersion modeling was used to represent typical winds at the Highgrove Project site. This data set was proposed in an air quality modeling protocol for the project that was submitted to the California Energy Commission and SCAQMD. Figures 8.1-1a to 8.1-1e (figures can be found at the end of this subsection) present the annual and quarterly wind rose plots for the Riverside monitoring station. As indicated by the plot in Figure 8.1-1a, the winds are predominantly out of the west, northwest.

8.1.3 Overview of Air Quality Standards

The U.S. Environmental Protection Agency (USEPA) has established national ambient air quality standards (NAAQS) for the following seven pollutants, termed "criteria pollutants": ozone, nitrogen dioxide (NO_2), CO, sulfur dioxide (SO_2), particulate matter with aerodynamic diameter less than or equal to 10 microns (PM_{10}), particulate matter with aerodynamic diameter less than or equal to 2.5 microns ($PM_{2.5}$) and airborne lead (Pb). The federal Clean Air Act (CAA) requires the USEPA to designate areas (counties) as attainment or nonattainment with respect to each criteria pollutant, depending on whether the areas meet the NAAQS. An area that is designated nonattainment means the area is not meeting the NAAQS and is subject to planning requirements to attain the standard.

In addition to the seven pollutants listed above, the California Air Resources Board (CARB) has also established state standards for visibility-reducing particles, sulfates, hydrogen sulfide, and vinyl chloride. Similar to the USEPA, CARB designates counties in California as attainment or nonattainment with respect to the California ambient air quality standards (CAAQS). The state standards were designed to protect the most sensitive members of the population, such as children, the elderly, and people who suffer from lung or heart diseases.

Both state and federal air quality standards were based on two variables: maximum concentration and an averaging time over which the concentration would be measured. Maximum concentrations were based on levels which may have an adverse effect to human health. The averaging times were based on whether the damage caused by the pollutant would occur during exposures to a high concentration for a short time (e.g., 1 hour), or to a relatively lower average concentration over a longer period (8 hours, 24 hours, or 1 month). For some pollutants, there is more than one air quality standard, reflecting both short-term and long-term effects. Table 8.1-1 presents the NAAQS and CAAQS.

TABLE 8.1-1
Ambient Air Quality Standards

Pollutant	Averaging Time	California	National
Ozone	1 hour	0.09 ppm (180 µg/m^3)	0.12 ppm[a]
	8 hours	0.07 ppm (137 µg/m^3)	0.08 ppm (157 µg/m^3) (3-year average of 4th-highest daily maximum 8-hour concentrations)
CO	8 hours	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)
	1 hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)
NO_2	Annual arithmetic mean	-	0.053 ppm (100 µg/m^3)
	1 hour	0.25 ppm (655 µg/m^3)	-
SO_2	Annual arithmetic mean	-	0.03 ppm (80 µg/m^3)
	24 hours	0.04 ppm (105 µg/m^3)	0.14 ppm (365 µg/m^3)
	3 hours	-	0.5 ppm[b] (1300 µg/m^3) (Secondary standard)
	1 hour	0.25 ppm (470 µg/m^3)	-
PM_{10}	24 hours	50 µg/m^3	150 µg/m^3
	Annual arithmetic mean	20 µg/m^3	50 µg/m^3 (3-year average of the weighted annual mean concentration)
$PM_{2.5}$	Annual arithmetic mean	12 µg/m^3	15 µg/m^3 (3-year average of the weighted annual mean concentrations)
	24 hours	-	65 µg/m^3 (3-year average of 98th percentile of 24-hour concentrations)
Sulfates	24 hours	25 µg/m^3	-
Lead	30 day average	1.5 µg/m^3	-
	Calendar quarter	-	1.5 µg/m^3
Hydrogen sulfide	1 hour	0.03 ppm (42 µg/m^3)	-
Vinyl chloride	24 hours	0.010 ppm (26 µg/m^3)	-
Visibility-reducing particles	8 hours (10am to 6pm PST)	In sufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70 percent.	-

[a] As of June 15, 2005 the federal 1-hour ozone standard is no longer used, except in Early Action Compact (EAC) areas.

[b] This is a national secondary standard, which is designed to protect public welfare.

ppm = parts per million

µg/m^3 = micrograms per cubic meter

On June 15, 2005, the federal 1-hour ozone standard was revoked for all areas except the 8-hour ozone nonattainment Early Action Compact areas (these areas do not yet have an effective date for their 8-hour designations). This means that the previous 1-hour federal standard of 0.12 ppm was replaced by the 8-hour average standard of 0.08 ppm.

On December 20, 2005, EPA proposed changes to the federal particulate matter standards. However, these standards are in the rule-making process and are not expected to be promulgated until 2008 or later. On April 14, 2006, the California Office of Environmental Health Hazard Assessment (OEHHA) and CARB staff proposed to lower the existing 1-hour average standard for NO_2 to 0.18 ppm and establish a new annual average standard for NO_2 at 0.030 ppm. Public comments on the proposal are being accepted through May 31, 2006 with the CARB Board hearing on the proposal expected at the end of 2006.

8.1.4 Existing Air Quality

The reported ambient air quality data were obtained from data published by SCAQMD, CARB (ADAM website), and the USEPA (AIRS website). The three CARB-certified monitoring stations located closest to the project site are: (1) the Metropolitan Riverside County 1 monitoring station located at 5888 Mission Boulevard, which is less than 8 kilometers (km) south-west of the project site, (2) the Metropolitan Riverside County 2 monitoring station located at 7002 Magnolia Avenue, which is approximately 10 km south-west of the project site, and (3) the Central San Bernardino Valley 2 located at 24302 East 4th Street, which is approximately 11 km north-east from the project site. Ambient concentrations of ozone, NO_2, CO, SO_2, PM_{10} and $PM_{2.5}$ are recorded at the 5888 Mission Boulevard and East 4th Street monitoring stations. The 7002 Magnolia Avenue station only monitors CO and $PM_{2.5}$.

The locations of the monitoring stations, relative to the proposed project, are such that ambient concentrations recorded at the 5888 Mission Boulevard monitoring station were assumed to represent area-wide ambient conditions rather than the localized impacts of any particular facility. Due to its proximity, the data from the 5888 Mission Boulevard monitoring station were assumed to best represent the background ambient air quality for the project. Consequently, data from this monitoring station were used to estimate background concentrations.

8.1.4.1 Ozone

Ozone is a photochemical oxidant that is formed when volatile organic compounds (VOCs) and NO_x react in the presence of ultraviolet sunlight (SCAQMD, 2001). The South Coast Air Basin is designated as a nonattainment area for ozone by both the USEPA and CARB.

Table 8.1-2 shows the annual maximum hourly ozone levels recorded at the 5888 Mission Boulevard monitoring station during the period 2002 to 2004, as well as the number of days in which the state and federal standards were exceeded. Data from the 5888 Mission Boulevard station shows that over the 3-year period, ozone concentrations have been consistently above both state and federal standards.

TABLE 8.1-2
Ozone Levels at 5888 Mission Blvd, Riverside, 2002-2004

	2002	2003	2004
Highest 1-hour Average (ppm)	0.155	0.169	0.141
Highest 1-hour Average (µg/m^3)	304.3	331.8	276.8
Highest 8-hour Average (ppm)	0.124	0.14	0.117
Highest 8-hour Average (µg/m^3)	243.4	274.8	229.7
Number of Days Exceeding			
State Standard (180 µg/m^3, 1-hour)	56	80	59
State Standard (137 µg/m^3, 8-hour)	NA	NA	75
Federal Standard (157 µg/m^3, 8-hour)	38	62	35
Federal Standard (225.8 µg/m^3, 1-hour)	12	18	8

Source: South Coast Air Quality Management District by Year: http://www.aqmd.gov/smog/historicaldata.htm.

8.1.4.2 Nitrogen Dioxide

NO_2 is a byproduct of combustion sources such as motor vehicle exhaust or stationary combustion sources (SCAQMD, 2001). The principle form of nitrogen oxide produced by combustion is nitric oxide (NO), but NO reacts quickly to form NO_2, creating a mixture of NO and NO_2 commonly called NO_x (SCAQMD, 2001). The South Coast Air Basin is designated attainment status for NO_2 by both the USEPA and CARB. As previously noted, CARB and OEHHA staff recently proposed lowering the state's 1-hour NO_2 standard and establishing an annual NO_2 standard. The CARB's board is tentatively scheduled to conduct hearings on this issue in Fall 2006.

Table 8.1-3 shows the maximum 1-hour and annual-average NO_2 levels recorded at the 5888 Mission Boulevard monitoring station between 2002 and 2004. Ambient NO_2 concentrations measured at this monitoring station did not violate either the state 1-hour standard or the NAAQS (0.053 ppm, annual average). Over the 3-year period (2002 to 2004), the measured concentrations remained well below the state standard (0.25 ppm) and indicated a downward trend in the annual average concentration.

TABLE 8.1-3
Nitrogen Dioxide Levels at 5888 Mission Blvd, Riverside, 2002-2004

	2002	2003	2004
Highest 1-hour Average (ppm)	0.10	0.09	0.09
Highest 1-hour Average (µg/m^3)	188.1	169.3	169.3
Annual Average (ppm)	0.0237	0.0217	0.0172
Annual Average (µg/m^3)	44.6	40.8	32.4
Number of Days Exceeding			
State Standard (470 µg/m^3, 1-hour)	0	0	0

Sources: SCAQMD Historical Air Quality Data by Year: http://www.aqmd.gov/smog/historicaldata.htm
CARB: http://www.arb.ca.gov/adam/welcome.html.

8.1.4.3 Carbon Monoxide

CO is a colorless, odorless gas formed by incomplete combustion of fossil fuels (SCAQMD, 2001). Industrial sources typically contribute less than 10 percent of ambient CO levels. Peak CO levels occur typically during winter months, due to a combination of higher emission rates and stagnant weather conditions. The South Coast Air Basin is designated attainment status for the state CO standards by CARB. Since there have been no recorded violations of the CO NAAQS over the required 3-year duration, in March 2005, the SCAQMD requested to have USEPA redesignate the basin as CO attainment. Action on the redesignation request is expected by the end of 2006.

Table 8.1-4 shows the California and federal air quality standards for CO, and the maximum 1- and 8-hour average levels recorded at the 5888 Mission Boulevard monitoring station during the period 2002 to 2004.

TABLE 8.1-4
Carbon Monoxide Levels at 5888 Mission Blvd Station, Riverside, 2002-2004

	2002	2003	2004
Highest 8-hour average (ppm)	3.0	3.7	3.0
Highest 8-hour average (mg/m^3)	3.436	4.237	3.436
Highest 1-hour average (ppm)	8	5	4
Highest 1-hour average (mg/m^3)	9.162	5.726	4.581
Number of Days Exceeding			
State Standard (10 mg/m^3, 8-hr)	0	0	0
State Standard (23 mg/m^3, 1-hr)	0	0	0
Federal Standard (10 mg/m^3, 8-hr)	0	0	0
Federal Standard (40 mg/m^3, 1-hr)	0	0	0

Sources: SCAQMD Historical Air Quality Data by Year: http://www.aqmd.gov/smog/historicaldata.htm
USEPA AIRS: http://www.epa.gov/air/data/monvals.html.

8.1.4.4 Sulfur Dioxide

Sulfur dioxide is a colorless, pungent gas formed primarily by the combustion of sulfur-containing fossil fuels (SCAQMD, 2001). The South Coast Air Basin is designated attainment status for SO_2 by both the USEPA and CARB.

Table 8.1-5 presents the maximum SO_2 levels recorded at the 5888 Mission Boulevard Station in Riverside. During the period shown, the annual average SO_2 concentrations have been well under the federal standard (80 $\mu g/m^3$). The state 24-hour average standard (105 $\mu g/m^3$) has not been exceeded at this location in the 3-year period, 2002 to 2004. In the past 10 years, maximum 1-hour SO_2 levels have typically been about one-tenth of the state standard (470 $\mu g/m^3$).

TABLE 8.1-5
Sulfur Dioxide Levels at 5888 Mission Blvd, Riverside 2002-2004

	2002	2003	2004
Highest 1-hour average (ppm)	0.02	0.02	0.02
Highest 1-hour average (µg/m^3)	52.4	52.4	52.4
Highest 3-hour average (ppm)	0.010	0.015	0.016
Highest 3-hour average (µg/m^3)	26.2	39.3	41.9
Highest 24-hour average (ppm)	0.002	0.012	0.015
Highest 24-hour average (µg/m^3)	5.2	31.4	39.3
Annual Average, All Hours (ppm)	0.001	0.003	0.004
Annual Average, All Hours (µg/m^3)	2.6	7.9	10.5
Number of Days Exceeding			
State Standard (655 µg/m^3, 1-hour)	0*	0*	0*
State Standard (105 µg/m^3, 24-hour)	0	0	0
Federal Standard (1300 µg/m^3, 3-hour)	0	0	0
Federal Standard (365 µg/m^3, 24-hours)	0	0	0

Sources: SCAQMD Historical Air Quality Data by Year: http://www.aqmd.gov/smog/historicaldata.htm
USEPA AIRS: http://www.epa.gov/air/data/monvals.html
CARB: http://www.arb.ca.gov/adam/welcome.html.

* Number of days exceeding the 1-hour state standard were not available via the SCAQMD, CARB, or AIRS databases. However, because the maximum 1-hour SO_2 concentration (52.4 µg/m^3) is less than 655 µg/m^3, it was assumed the number of hours exceeding 655 µg/m^3 was zero.

8.1.4.5 Particulate Sulfates

Particulate sulfates are the product of further oxidation of SO_2. The South Coast Air Basin is designated attainment status for particulate sulfates by the CARB. A federal standard has not been established for particulate sulfates.

Table 8.1-6 shows the maximum 24-hour average sulfate levels recorded at the 5888 Mission Boulevard monitoring station from 2002 through 2004. The maximum 24-hour average sulfates over this period show that the maximum levels have declined to about 50 percent of the state standard.

TABLE 8.1-6
Particulate Sulfate Levels at 5888 Mission Blvd., 2002-2004 (µg/m3)

	2002	2003	2004
Maximum 24-hour average	11.7	10.1	9.8
Number of Days Exceeding			
State Standard (25 µg/m^3, 24-hour)	0	0	0

Source: SCAQMD Historical Air Quality Data by Year: http://www.aqmd.gov/smog/historicaldata.htm.

8.1.4.6 Fine Particulates (PM_{10} and $PM_{2.5}$)

PM_{10} arises from sources such as road dust, diesel soot, combustion products, tire and brake abrasions, construction activities, and fires (SCAQMD, 2001). $PM_{2.5}$ consists mostly of products from the atmospheric reaction of NO_x and SO_2 with ammonia, as well as secondary organics, and finer dust particles (SCAQMD, 2001). The South Coast Air Basin is designated a nonattainment area for both federal and state PM_{10} and $PM_{2.5}$ standards by the USEPA and CARB.

Table 8.1-7 shows the maximum 24-hour and annual concentration of PM_{10} recorded at the 5888 Mission Boulevard monitoring station during 2002 to 2004. The maximum 24-hour PM_{10} levels exceed the state standard several times per year, but the federal 24-hour standard has only been exceeded twice over this time period.

TABLE 8.1-7
PM_{10} Levels at 5888 Mission Blvd. Station, Riverside, 2002-2004 (µg/m^3)

	2002	2003	2004
Highest 24-hour average	130	164	137
Annual Arithmetic Mean (Federal Standard = 50 µg/m^3)	58.5	56.9	55.5
Number of Days Exceeding[a]			
State Standard (50 µg/m^3, 24-hour)	81	62	72
Federal Standard (150 µg/m^3, 24-hour)	0	2	0
Maximum Expected Violation Days[a,b]			
State Standard (50 µg/m^3, 24-hour)	228.1	201.4	210.1
Federal Standard (150 µg/m^3, 24-hour)	0	6.2	0

[a] Based on readings every three days.

[b] Based on multiplying exceedance readings by a factor of three due to readings taken only once per three days. The actual number of violation days is expected to be less since some of the days readings not taken will be within the standards.

Sources: SCAQMD Historical Air Quality Data by Year: http://www.aqmd.gov/smog/historicaldata.htm
California Air Quality Data, CARB: http://www.arb.ca.gov/adam/welcome.html.

The reported $PM_{2.5}$ data were obtained from the 5888 Mission Boulevard monitoring station for 2002 to 2004. Table 8.1-8 presents the maximum 24-hour average concentration and annual arithmetic mean reported by CARB, and the 3-year average levels of those readings.

As previously mentioned, EPA has proposed changes to the federal 24-hr $PM_{2.5}$ standard, addition of a new $PM_{2.5\text{-}10}$ standard, elimination of the annual PM_{10} standard and partial elimination of the 24-hour PM_{10} standard. Because the outcome of this proposal is uncertain, this ambient air quality impact assessment does not include these proposed changes.

TABLE 8.1-8
$PM_{2.5}$ Levels at 5888 Mission Blvd Station, Riverside, 2002-2004 ($\mu g/m^3$)

	2002	2003	2004
Highest 24-hour Average	77.6	104.3	91.7
Number of Days Exceeding the National Standard	8	8	5
98th Percentile 24-hour Average Concentration	66.3	76.6	59.5
3-Year Average—98th Percentile of 24-hour Average Concentrations (Federal Standard = 65 $\mu g/m^3$)	73	72	67
Annual Arithmetic Mean	27.5	24.9	22.1
3-Year Average of Annual Arithmetic Mean (Federal Standard = 15 $\mu g/m^3$)	28	27	24

Sources: SCAQMD Historical Air Quality Data by Year: http://www.aqmd.gov/smog/historicaldata.htm
California Air Quality Data, CARB: http://www,arb.ca.gov/adam/welcome.html.

8.1.4.7 Airborne Lead

Lead concentrations once exceeded the state and federal air quality standards by a wide margin, but have not exceeded state or federal standards at any regular monitoring station since 1982 (SCAQMD, 2001). The South Coast Air Basin is designated attainment status for lead by both the USEPA and CARB. Table 8.1-9 lists the airborne lead levels recorded at the 5888 Mission Boulevard monitoring station between 2002 and 2004.

TABLE 8.1-9
Airborne Lead Levels at 5888 Mission Blvd, Riverside, 2002-2004 ($\mu g/m^3$)

	2002	2003	2004
Highest Monthly Average	0.03	0.02	0.02
Highest Quarterly Average	0.02	0.02	0.01

Source: SCAQMD Historical Air Quality Data by Year: http://www.aqmd.gov/smog/historicaldata.htm

8.1.5 Laws, Ordinances, Regulations, and Standards

The Clean Air Act, implemented by the USEPA, requires major new and modified stationary sources of air pollution to obtain a construction permit prior to commencing construction through a program known as Federal New Source Review (NSR). The requirements of the NSR program are dependent on whether the air quality in the area where the new source (or modified source) is being located attains the NAAQS. The program that applies in areas that are in attainment of the NAAQS is the Prevention of Significant Deterioration (PSD). The program that applies to areas where the air does not meet the NAAQS (termed nonattainment areas) is the nonattainment NSR.

The USEPA implements the NSR program through regional offices. Arizona, California, Hawaii, Nevada, and specific Pacific trust territories are administrated out of USEPA Region IX office located in San Francisco. The USEPA typically delegates its NSR, Title V, and Title IV authority to local air quality agencies that have sufficient regulatory structure to implement these programs consistent with requirements of the Clean Air Act and implementing regulations. The SCAQMD has been delegated several of these programs. However, EPA currently retains authority for administering the PSD program in SCAQMD.

The CARB was established by the state legislature in 1967 with the purpose of attaining and maintaining healthy air quality, conducting research into causes and solutions to air pollution, and addressing the impacts that motor vehicles have on air quality. To this end, the CARB implements the following programs:

- Establish and enforce motor vehicle emission standards, including fuel standards.
- Monitor, evaluate, and set health-based air quality standards.
- Conduct research to solve air pollution problems.
- Establish toxic air contaminant (TAC) control measures.
- Oversee and assist local air quality districts.

Air pollution control districts were established shortly after the CARB, based on meteorological and topographical factors. The districts were established to enforce air pollution regulations for the purpose of attaining and maintaining all state and federal ambient air quality standards. The districts regulate air emissions by issuing air permits to stationary sources of air pollution in compliance with approved regulatory programs. Each district promulgates rules and regulations specific to air quality issues within its jurisdiction. The air emissions sources regulated by each district vary. The types of air pollution sources that might be regulated include: manufacturers, power plants, refineries, gasoline service stations, and auto body shops.

Federal and state agencies and SCAQMD have specific regulations applicable to stationary combustion sources. These applicable regulations are presented in Table 8.1-10. Subsection 8.1.6 presents a detailed discussion of the project's conformance with the applicable regulations. An Authority to Construct/Title V permit will be filed with the SCAQMD within 30 days of submittal of the Application for Certification (AFC) filing with the California Energy Commission (CEC).

TABLE 8.1-10
Air Quality Agencies

Agency	Authority	Contact
USEPA Region IX	Regulatory Oversight	Gerardo Rios USEPA Region IX 75 Hawthorne Street San Francisco, CA 94105 (415) 947-3974
CARB	Regulatory oversight	Michael Tollstrup Project Assessment Branch California Air Resources Board 2020 L Street Sacramento, CA 95814 (916) 322-6026
SCAQMD	Permit issuance, enforcement	John Yee South Coast Air Quality Management District 21865 Copley Drive Diamond Bar, CA 917635 (909) 396-2531

8.1.5.1 Federal

The USEPA promulgates and enforces federal air quality laws, with Region IX administering the federal air programs in California. The federal Clean Air Act provides the legal authority to regulate air pollution from stationary sources. The applicable federal regulations are presented in below and summarized in Table 8.1-11, along with the agency responsible for administration of the regulation.

8.1.5.1.1 National Standards of Performance for New Stationary Sources

Title 40, Code of Federal Regulations, Part 60, Subparts GG - Standards of Performance for Stationary Gas Turbines, limits NO_x and SO_2 emissions from gas turbines.

Proposed 40 CFR Part 60 Subpart KKKK – NO_x Emission Limits for New Stationary Combustion Turbines, was proposed on February 18, 2005, and is expected to be promulgated shortly. It would apply to all new combustion turbines that commence construction, modification, or reconstruction after February 18, 2005. The proposed rule would require natural-gas-fired turbines greater than or equal to 30 megawatts (MW) to meet a NO_x emission limit of 50 nanograms/Joule (ng/J) (0.39 pounds per megawatt-hour [lb/MW-hr]), and an SO_2 limit of 73 ng/J (0.58 lb/MW-hr). Alternatively, a fuel sulfur limit of 500 parts per million by weight (ppmw) could be met. Stationary combustion turbines regulated under this subpart would be exempt from the requirements of Subpart GG.

The Highgrove Project facility turbines will utilize low NO_x technology along with a selective catalytic reduction (SCR), and will utilize pipeline-quality natural gas, so they will comply with both the NO_x and SO_2 limits. The NO_x and SO_2 emissions from the turbines will be 0.1 lb/MW-hr and 0.009 lb/MW-hr, respectively. The certified NO_x CEMS will ensure compliance with the standard. Records of natural gas usage will ensure compliance with the SO_2 limit.

8.1.5.1.2 National Emission Standards for Hazardous Air Pollutants

Title 40, Code of Federal Regulations, Part 63 - National Emission Standards for Hazardous Air Pollutants for Source Categories, establishes emission standards to limit emissions of hazardous air pollutants from specific source categories. Sources subject to Part 63 requirements must either use the maximum achievable control technology (MACT), be exempted under Part 63, or comply with published emission limitations. The applicable MACT standard to the project is Subpart YYYY, which sets a formaldehyde emission limit or an operational limit for subject sources

8.1.5.1.3 Prevention of Significant Deterioration Program

Title 40, Code of Federal Regulations, Parts 51 and 52 establish a pre-construction review and permitting program for new or modified major stationary sources to prevent significant deterioration of ambient air quality. As indicated above, the PSD program applies to areas where the ambient concentrations of air pollutants do not exceed the NAAQS. The program was designed to facilitate economic growth while protecting public health and welfare and Class I areas (national parks, wilderness areas, and national monuments, etc.). Although SCAQMD has adopted PSD regulations, USEPA currently retains permitting authority for the PSD program.

TABLE 8.1-11
Applicable Laws, Ordinances, Regulations, Standards (LORS), and Permits for Protection of Air Quality

LORS	Purpose	Regulating Agency	Permit or Approval	Schedule and Status of Permit
Federal				
Title 40 CFR Parts 51 and 52, NSR	Requires NSR facility permitting for construction or modification of specified stationary sources. NSR applies to pollutants for which ambient concentration levels are higher than NAAQS.	SCAQMD, with USEPA Region IX oversight	After project review, issues DOC with conditions limiting emissions	Permit application submitted by June 2006. Agency approval to be obtained before start of construction.
Title 40 CRF part 70 (Title V)	Requires reductions in NO_x and SO_2 emissions.	Permit application will be submitted 24 months prior to operation. SCAQMD, with USEPA Region IX oversight	Issues Acid Rain monitoring plan error report after review of application.	Meet compliance deadlines listed in regulations; no permit issued.
Title 40 CFR Part 64 (CAM Rule)	Establishes onsite monitoring requirements for emission control systems.	SCAQMD, with USEPA Region IX oversight	Monitoring conditions included in RECLAIM/Title V permit.	Permit application will be submitted as part of the NSR/Title V permit, June 2006.
State				
California Code of Regulations Sections 93300-93347 (Toxic "Hot Spots" Act)	Requires preparation and biennial updating of facility emission inventory of hazardous substances; risk assessments.	SCAQMD with CARB oversight	After project review, issues DOC with conditions limiting emissions.	Health Risk Assessment submitted as part of AFC.
Local				
SCAQMD Rule 201 (Permit to Construct)	Establishes an orderly procedure for the review of new and modified sources of air pollution through the issuance of permits	SCAQMD, with CARB and USEPA Region IX oversight	After project review, issues Final DOC with conditions limiting emissions.	Agency approval to be obtained before start of construction.
SCAQMD Regulation XIII (Rule 1303), Rule 2005 (NSR)	Combines federal and state NSR requirements. Establishes pre-construction requirements for new or modified facilities. Rule 2005 applies to RECLAIM facilities.	SCAQMD, with CARB and USEPA Region IX oversight	After project review, issues Final DOC with conditions limiting emissions.	Agency approval to be obtained before start of construction.
SCAQMD Rule 212 (Standards for Approving Permits)	Requires facility to distribute public notice if the source is within 1,000 feet from school, or emissions or risks exceeding applicable thresholds	SCAQMD, with CARB and USEPA Region IX oversight	Agency to prepare and publish notice prior to permit issuance.	Public notice to be published 30 days prior to permit issuance.
SCAQMD Rule 1401 (NSR of Toxic Contaminants)	Establishes allowable health risks for new or modified sources.	SCAQMD, with CARB oversight	After project review, issues Final DOC with conditions limiting emissions.	Agency approval to be obtained before start of construction.
Proposed SCAQMD Rule 1401.1 (Requirements for New and Relocated Sources Near Schools)	Establishes allowable health risks for new or modified sources near schools	SCAQMD, with CARB oversight	This rule will apply to this project. SCAQMD to assess compliance during permit review	Agency approval to be obtained before start of construction

TABLE 8.1-11
Applicable Laws, Ordinances, Regulations, Standards (LORS), and Permits for Protection of Air Quality

LORS	Purpose	Regulating Agency	Permit or Approval	Schedule and Status of Permit
SCAQMD Regulation XXX (Title V Permits)	Provides for the issuance of federal operating permits mandated by Title V of the Clean Air Act.	SCAQMD, with USEPA Region IX oversight	Agency to issue Title V Permit.	Agency approval to be obtained before start of construction.
SCAQMD Rule 401 (Visible Emissions)	Establishes limits for visible emissions from stationary sources	SCAQMD, with CARB oversight	After project review, issues Final DOC with conditions limiting emissions.	Agency approval to be obtained before start of construction.
SCAQMD Rule 402 (Nuisance)	Prohibits the discharge from a facility of air pollutants that cause injury, detriment, nuisance, or annoyance to the public, or that damage business or property.	SCAQMD, with CARB oversight	After project review, issues Final DOC with conditions limiting emissions.	Agency approval to be obtained before start of construction.
SCAQMD Rule 403 (Fugitive Dust)	Establishes requirements to reduce the amount of particulate matter entrained in the ambient air as a result of man-made fugitive dust sources.	SCAQMD, with CARB oversight	After project review, issues Final DOC with conditions limiting emissions.	Agency approval to be obtained before start of construction.
SCAQMD Rule 404 (Particulate Matter—Concentration)	Establishes limits for particulate matter emission concentrations.	SCAQMD, with CARB oversight	After project review, issues Final DOC with conditions limiting emissions.	Agency approval to be obtained before start of construction.
SCAQMD Rule 405 (Particulate Matter—Weight)	Establishes limits for particulate matter mass emission rates.	SCAQMD, with CARB oversight	After project review, issues Final DOC with conditions limiting emissions.	Agency approval to be obtained before start of construction.
SCAQMD Rule 407 (Liquid and Gaseous Air Contaminants)	Limits CO and SO_x emissions from stationary sources.	SCAQMD, with CARB oversight	After project review, issues Final DOC with conditions limiting emissions.	Agency approval to be obtained before start of construction.
SCAQMD Rule 409 (Combustion contaminants)	Establishes limits for particulate emissions from fuel combustion sources	SCAQMD, with CARB oversight	After project review, issues Final DOC with conditions limiting emissions.	Agency approval to be obtained before start of construction.
SCAQMD Rule 431.1 (Sulfur Content of Gaseous Fuels)	Establishes limits for the sulfur content of gaseous fuels to reduce SO_x emissions from stationary combustion sources.	SCAQMD, with CARB oversight	After project review, issues Final DOC with conditions limiting emissions.	Agency approval to be obtained before start of construction.
SCAQMD Rule 474, H&SC §40000 et seq., §40400 et seq. (Fuel Burning Equipment—Oxides of Nitrogen)	Limits NO_x emissions from stationary sources.	SCAQMD, with CARB oversight	Not applicable because the facility is subject to RECLAIM	Not applicable
SCAQMD Rule 475, H&SC §40000 et seq., §40400 et seq. (Electric Power Generating Equipment)	Establishes limits for combustion contaminant (i.e., PM) emissions from subject equipment.	SCAQMD, with CARB oversight	After project review, issues Final DOC with conditions limiting emissions.	Agency approval to be obtained before start of construction.

TABLE 8.1-11
Applicable Laws, Ordinances, Regulations, Standards (LORS), and Permits for Protection of Air Quality

LORS	Purpose	Regulating Agency	Permit or Approval	Schedule and Status of Permit
SCAQMD Rule 1134, H&SC §40000 et seq., §40400 et seq. (Emissions of Oxides of Nitrogen from Stationary Gas Turbines)	Limits NO_x from stationary gas turbines.	SCAQMD, with CARB oversight	Not applicable because the facility is subject to RECLAIM	Not applicable
SCAQMD Rule 1135, H&SC §40000 et seq., §40400 et seq. (Emissions of Oxides of Nitrogen from Electric Power Generating Systems)	Limits NO_x from electric power generating systems.	SCAQMD, with CARB oversight	Not applicable because the facility is subject to RECLAIM	Not applicable
SCAQMD Rule 1404, (Hexavalent Chromium Emissions from Cooling Towers)	Prohibits the use of hexavalent chromium containing water treatment chemicals	SCAQMD, with CARB oversight	After project review, issues Final DOC with conditions limiting emissions.	Agency approval to be obtained before start of construction.

As a simple-cycle gas turbine electric generating plant, the Highgrove Project facility will not be one of the 28 listed PSD source categories with an applicability threshold of 100 tons per year (tpy). Thus, the threshold for PSD review of the Highgrove Project will be 250 tpy of any criteria pollutant. Since emissions of criteria pollutants will not exceed this applicability threshold, the Highgrove Project will not be subject to PSD review.

8.1.5.1.4 Title IV—Acid Rain Program

Title 40, Code of Federal Regulations, Part 72 – Acid Rain Program, establishes emission standards for SO_2 and NO_x emissions from electric generating units through the use of market incentives, requires sources to monitor and report acid gas emissions, and requires the acquisition of SO_2 allowances sufficient to offset SO_2 emissions on an annual basis. This program is implemented through the SCAQMD's Regulation XXXI.

8.1.5.1.5 Title V—Operating Permits Program

Title 40, Code of Federal Regulations, Part 70 – Operating Permits Program, requires the issuance of operating permits that identify all applicable federal performance, operating, monitoring, recordkeeping, and reporting requirements. These requirements are implemented at the local level through SCAQMD Regulation XXX. The Title V permit is tied to the SCAQMD NSR regulations. A parallel application will be made to the SCAQMD in addition to the CEC AFC application.

8.1.5.1.6 CAM Rule

Title 40, Code of Federal Regulations, Part 64 - Compliance Assurance Monitoring (CAM), requires facilities to monitor the operation and maintenance of emissions control systems and report any control system malfunctions to the appropriate regulatory agency. If an emission control system is not working properly, the CAM rule also requires a facility to take action to correct the control system malfunction. The CAM rule applies to emissions units with uncontrolled potential to emit levels greater than applicable major source thresholds. Emission control systems governed by Title V operating permits requiring continuous compliance determination methods are generally compliant with the CAM rule.

Exemptions from CAM are presented in 40 CFR 64.2(b). Since the Highgrove Project will participate in the SCAQMD's Regional Clean Air Incentives Market (RECLAIM) Cap and Trade program, which has been submitted and approved as part of the State Implementation Plan (SIP), the Highgrove Project would qualify for the CAM exemption for NO_x emission sources provided in 40 CFR 64.2(b)(1)(iv). Thus, it is further believed that this exemption also exempts the Highgrove Project from a requirement to prepare and submit a CAM plan for NO_x emissions from the proposed fuel-fired equipment.

8.1.5.1.7 Toxic Chemical Release Inventory Program

The Emergency Planning and Community Right-to-Know Act (EPCRA), through the Toxic Chemical Release Inventory (TRI) program, establishes reporting requirements for toxic releases to the environment if the facility (1) produces more than 25,000 pounds of a listed chemical per year; (2) processes more than 25,000 pounds of a listed chemical per year; or (3) uses more than 10,000 pounds of a listed chemical per year.

Electric utilities, in Standards Industrial Classification (SIC) Codes 4911, 4931, and 4939, that combust coal and/or oil for the purpose of generating electricity for distribution in commerce must report under this regulation. The Highgrove Project falls under SIC Code 4911, which covers establishments engaged in the generation, transmission, and/or distribution of electric energy for sale. However, the Highgrove Project will not combust coal and/or oil for the purpose of generating electricity for the distribution in commerce. Therefore, the TRI program does not apply to the Highgrove Project and will not be addressed further.

8.1.5.2 State

CARB's primary responsibilities are to develop, adopt, implement, and enforce the state's motor vehicle pollution control program; to administer and coordinate the state's air pollution research program; to adopt and update, as necessary, the state's ambient air quality standards; to review the operations of the local air pollution control districts; and to review and coordinate preparation of the SIP for achievement of the federal ambient air quality standards.

The California Health and Safety Code, Section 41700 prohibits the discharge from a facility of air pollutants that cause injury, detriment, nuisance, or annoyance to the public, or which endanger the comfort, repose, health, or safety of the public, or that damage business or property.

The state has promulgated numerous laws and regulations at the state level (i.e., Toxic Air Contaminants and Air Toxic Hot Spots) that are effectuated at the local level by the air districts. A discussion of these LORS is presented in Section 8.1.5.3.

8.1.5.3 Local

When the state's air pollution statutes were reorganized in the mid-1960s, local districts were required to be established in each county of the state. There are three different types of districts: county, regional, and unified. In addition, special air quality management districts (AQMDs), with more comprehensive authority over non-vehicular sources as well as transportation and other regional planning responsibilities, have been established by the Legislature for several regions in California, including the SCAQMD. AQMDs have principal responsibility for developing plans for meeting the NAAQS and California ambient air

quality standards; for developing control measures for non-vehicular sources of air pollution necessary to achieve and maintain both state and federal air quality standards; for implementing permit programs established for the construction, modification, and operation of sources of air pollution; and for enforcing air pollution statutes and regulations governing non-vehicular sources.

8.1.5.3.1 South Coast Air Quality Management District Air Quality Plans

The SCAQMD plans define the proposed strategies, including stationary source control measures and NSR rules, whose implementation will attain the state ambient air quality standard (AAQS). The air quality plans also demonstrate a five percent annual reduction in emissions of nonattainment pollutants in the SCAQMD. The relevant stationary source control measures and NSR requirements are discussed with SCAQMD Rules and Regulations.

SCAQMD Rule 201—Permit to Construct

Rule 201 (Permit to Construct) establishes an orderly procedure for the review of new and modified sources of air pollution through the issuance of permits. Rule 201 specifies that any facility installing nonexempt equipment that causes or controls the emission of air pollutants must first obtain a Permit to Construct from the SCAQMD.

SCAQMD Preconstruction Review for Criteria Pollutants

SCAQMD has three separate preconstruction review programs for new or modified sources of criteria pollutant emissions:

- Regulation XIII (New Source Review) combines the federal and state NSR requirements into a single rule. Regulation XIII establishes pre-construction requirements for new or modified facilities to ensure that operation of such facilities does not interfere with progress towards the attainment of AAQS. For RECLAIM facilities, this rule applies only to those nonattainment pollutants, or their precursors, not regulated under the RECLAIM program. Since the Highgrove Project will be a NO_x RECLAIM facility, NSR provisions for NO_x are addressed under Rule 2005, and not under Regulation XIII.

- Regulation XVII (Prevention of Significant Deterioration) implements the PSD requirements of the federal Clean Air Act for attainment pollutants (i.e., NO_2 and SO_2). Regulation XVII establishes pre-construction review requirements for new or modified facilities to ensure that operation of such facilities does not significantly deteriorate air quality in attainment areas while maintaining a margin for future growth. The PSD requirements apply on a pollutant-specific basis to any project that is a new major stationary source or a major modification to an existing major stationary source. SCAQMD classifies an unlisted source (which is not in the specified 28 source categories) that emits or has the potential to emit 250 tpy of any pollutant regulated by the Act as a major stationary source. For listed sources, the threshold is 100 tpy. NO_x or SO_x emissions from a modified major source are subject to PSD if the cumulative emission increases for either pollutant exceeds 40 tpy. In addition, a modification at a non-major source is subject to PSD if the modification itself would be considered a major source. Although SCAQMD conducts the PSD review required by Regulation XVII, USEPA currently retains PSD permitting authority. However, as previously mentioned, the project will not be subject to PSD review.

- Rule 2005 (NSR for RECLAIM) integrates the NSR requirements of the federal and California Clean Air Acts with the SCAQMD's RECLAIM program. Rule 2005 establishes pre-construction requirements for new or modified RECLAIM facilities to ensure that operation of such facilities does not interfere with progress towards the attainment of AAQS without unnecessarily restricting economic growth. RECLAIM is a "Cap and Trade" market incentive program designed to allow facilities flexibility in achieving emission reduction requirements for NO_x and SO_x using methods that include add-on emission controls, equipment modifications, reformulated products, operational changes, shutdowns, and the purchase of excess emission reductions. Since the Highgrove Project will be a NO_x RECLAIM facility, it will be subject to the NO_x NSR requirements of Rule 2005. The proposed equipment will not be subject to the SO_x NSR requirements of Rule 2005 because the RECLAIM program does not include SO_x emissions from natural gas combustion equipment for applicability purposes.

A facility can be subject to more than one of these preconstruction review programs depending on the type of criteria pollutants and criteria pollutant precursors they will emit. The relevant criteria pollutants and precursors are summarized in Table 8.1-12. A new or modified facility can be subject to the elements of all three programs.

TABLE 8.1-12
Criteria Pollutant Precursors

Criteria Pollutants	Precursors
Ozone	VOC, NO_x
NO_2	NO_x
SO_2	SO_x
Sulfate	SO_x
PM_{10}	VOC, NO_x, SO_x

Preconstruction Air Quality Monitoring. The SCAQMD may, at its discretion, require preconstruction ambient air quality monitoring data gathered over a one-year period to characterize local ambient air quality. However, the proximity of the existing monitoring stations to the project site are believed to be representative of the ambient air potentially impacted by the project. Therefore, it is likely preconstruction monitoring will not be required.

Best Available Control Technology. Best Available Control Technology (BACT) must be applied to any new or modified source resulting in an increase in criteria pollutant, ozone depleting compound, and ammonia emissions. The SCAQMD defines BACT as the following unless the limitations are demonstrated to be unachievable:

- Most stringent emission limitation achieved in practice by a control device or technique for that category or class of sources.
- Any control device or technique determined to be technologically feasible and cost-effective.

- Most stringent emission limitation on a comparable emission source contained in any approved SIP (i.e., cannot be less stringent than the emission control required by any applicable federal, state, or SCAQMD laws, rules, or regulations).

Emission Offsets. For a new or modified facility located in SCAQMD Zone 2 ("Inland Zone") (as is the Highgrove Project), except as exempted in Rule 1304, sufficient emission reduction credits (ERCs) must be provided to offset the increase in CO, PM_{10}, SO_x, and VOC emissions at a 1.2 to 1 offset ratio. If the offsets are being obtained from the SCAQMD's Priority Reserve, the offset ratio is also 1.2 to 1 (Rule 1303).

For a new or modified facility located in SCAQMD Zone 2 (as is the Highgrove Project), sufficient RECLAIM Trading Credits (RTCs) must be provided to offset the actual anticipated NO_X emissions for the first year of operation at a 1 to 1 offset ratio (Rule 2005). NO_x RTCs will need to be provided annually prior to the beginning of each subsequent year throughout the life of the facility.

Air Quality Impact Analysis. An air quality dispersion analysis must be conducted, using a mass emissions-based analysis contained in the rule or an approved dispersion model, to evaluate impacts of increased criteria pollutant emissions from any new or modified facility on ambient air quality. The Highgrove Project emissions must not cause a significant increase in ambient concentrations of nonattainment pollutants as shown in Subsection 8.1.6.2.4.

SCAQMD Rule 212—Standards for Approving Permits

Rule 212 requires projects subjected to this rule to distribute the public notice to each address within a quarter-mile radius of the project. Additionally, if a K-12 school is located within the notice zone, then a copy of the notice must be distributed to the parents of each child attending that school. A project is required to notify the public if it will:

- Emit air contaminants within 1,000 feet from the outer boundary of a school; or
- Have onsite emission increases exceeding any of the daily maximums as specified in Rule 212 subdivision (g); or
- Have onsite increases in emissions of TACs to which a person may be exposed to an individual cancer risk greater than, or equal to, one in one million as specified in Rule 1401.

An analysis of the potential impacts to nearby schools is presented in Subsection 8.1.6.3.

SCAQMD Rule 1401—New Source Review of Toxic Air Contaminants

Rule 1401 (New Source Review of Toxic Air Contaminants) establishes allowable health risks for new or modified sources of TAC emissions. Rule 1401 specifies permit unit limits for maximum individual cancer risk (MICR), cancer burden, and noncarcinogenic acute and chronic hazard indices (HIs) for new or modified sources of TAC emissions. While Rule 1401 does not specifically require the application of best available control technology for toxics (T-BACT) to any new or modified source emitting carcinogenic TACs, the rule allows a higher MICR risk threshold when T-BACT is applied. The health risks resulting from project emissions, as demonstrated with a risk assessment, must not exceed the following risk thresholds:

- MICR and Cancer Burden

  - An increased MICR greater than one in one million at any receptor location if the permit unit is constructed without T-BACT
  - An increased MICR greater than ten in one million at any receptor location if the permit unit is constructed with T-BACT
  - A Cancer Burden greater than 0.5
- Chronic HI
  - Cumulative HI increase for any target organ system will not exceed 1.0 at any receptor location.
- Acute HI
  - Acute HI for any target organ system will not exceed 1.0 at any receptor location.

Rule 1401.1—Requirements for New and Relocated Facilities Near Schools

Rule 1401.1 specifies limits for MICR, cancer burden, and noncarcinogenic acute and chronic HIs for new or modified sources of TAC emissions that are within 1,000 feet of a school. As there is a planned high school within 1,000 feet of the site, this rule is applicable to the proposed project.

SCAQMD Regulation XXX—Federal Operating Permit

Regulation XXX (Title V Permits) provides for the issuance of federal operating permits that contain all federally enforceable requirements for stationary sources as mandated by Title V of the Clean Air Act. Regulation XXX requires major facilities and acid rain facilities undergoing modifications to obtain an operating permit containing the federally enforceable requirements mandated by Title V of the Clean Air Act. A facility shall not construct, modify, or operate equipment at a Title V facility without first obtaining a permit revision that allows such construction, modification, or operation. An application must be submitted to the SCAQMD that presents all information necessary to evaluate the subject facility and determine the applicability of all regulatory requirements.

SCAQMD Regulation XXXI—Acid Rain Permit Program

Regulation XXXI provides for the issuance of acid rain permits in accordance with Title IV of the Clean Air Act. Regulation XXXI requires a subject facility to hold emissions allowances for SO_x, and to monitor SO_x, NO_x, and CO_2 emissions and exhaust gas flow rates (monitoring of operating parameters such as fuel use and fuel consumption is an allowable alternative to exhaust continuous emission monitoring (CEM) systems). An acid rain facility, such as the Highgrove Project, must also obtain an acid rain permit as mandated by Title IV of the Clean Air Act. A permit application must be submitted to the SCAQMD at least 24 months before operation of the new units commence. The application must present all relevant sources at the facility, a compliance plan for each unit, applicable standards, and estimated commencement date of operation. The necessary Title IV applications will be included with the Title V/RECLAIM/NSR permit application submitted to the SCAQMD.

SCAQMD Regulation IX—Standards of Performance for New Stationary Sources

Regulation IX incorporates, by reference, the provisions of Part 60, Chapter 1, Title 40 of the Code of Federal Regulations. Regulation IX requires compliance with federal Standards of Performance for Stationary Gas Turbines.

Subpart GG (Standards of Performance for Stationary Gas Turbines) applies to gas turbines with a heat input at peak load equal to or greater than 10.7 gigajoules per hour (Gj/hr), or 10 million British thermal units per hour (MMBtu/hr), at the lower heating value. The New Source Performance Standards (NSPS) limits the sulfur content of fuel to 0.8 percent. For gas turbines larger than 107.2 Gj/hr or 100 MMBtu/hr, the NSPS also limits NO_x emissions as determined by the following equation:

$$STD = [0.0075 (14.4) + F]/Y$$

where:

STD = allowable NO_x emissions (percent by volume at 15 percent Oxygen (O_2) on a dry basis)

Y = manufacturer's rated heat rate at peak load (kilojoules per watt hour)

F = NO_x emission allowance for fuel-bound nitrogen (assumed to be zero for natural gas)

Proposed 40 CFR Part 60 Subpart KKKK – NO_x Emission Limits for New Stationary Combustion Turbines

The USEPA conducted a review of the NSPS for stationary combustion turbines and on February 10, 2005, the USEPA proposed new standards for new, modified, or reconstructed stationary combustion turbines constructed/modified after February 18, 2005. The proposed rule would require natural-gas-fired turbines greater than or equal to 30 MW to meet a NO_x emission limit of 50 ng/J (0.39 lb/MW-hr), and an SO_2 limit of 73 ng/J (0.58 lb/MW-hr). Alternatively, a fuel sulfur limit of 500 ppmw could be met. Stationary combustion turbines regulated under this subpart would be exempt from the requirements of Subpart GG.

SCAQMD Prohibitory Rules

Relevant prohibitory rules of the SCAQMD applicable to the project include the following:

- **Rule 401—Visible Emissions:** Establishes limits for visible emissions from stationary sources. Rule 401 prohibits visible emissions as dark as or darker than Ringlemann No. 1 for more than 3 minutes in any hour.
- **Rule 402—Nuisance:** Prohibits the discharge from a facility of air pollutants that cause injury, detriment, nuisance, or annoyance to the public, or that damage business or property.
- **Rule 403—Fugitive Dust:** Establishes requirements to reduce the amount of particulate matter entrained in the ambient air as a result of man-made fugitive dust sources. Rule 403 requires the implementation of best available control measures to minimize fugitive dust emissions and prohibits visible dust emissions beyond the property line, a 50 $\mu g/m^3$ incremental increase in PM_{10} concentrations across a facility as measured by upwind and downwind concentrations), and track-out of bulk material onto public, paved roadways.

- **Rule 404—Particulate Matter—Concentration:** Establishes limits for particulate matter emission concentrations. This rule does not apply to emissions resulting from the combustion of liquid or gaseous fuels in steam generators or gas turbines.
- **Rule 405—Particulate Matter—Weight:** Establishes limits for particulate matter mass emission rates. Emission rate limits are based upon the process weight (i.e., fuel burned) per hour.
- **Rule 407—Liquid and Gaseous Air Contaminants:** Establishes limits for CO and SO_x emissions from stationary sources. Rule 407 prohibits CO and SO_x emissions in excess of 2,000 ppm and 500 ppm, respectively, from any source. In addition, equipment that complies with the requirements of Rule 431.1 is exempt from the SO_x limit. Since the facility will comply with Rule 431.1, the SO_x provisions of Rule 407 will not be addressed further.
- **Rule 409—Combustion Contaminants:** Establishes limits for particulate emissions from fuel combustion sources. Rule 409 prohibits particulate emissions in excess of 0.1 grains per cubic foot of gas at 12 percent CO_2 at standard conditions.
- **Rule 431.1—Sulfur Content of Gaseous Fuels:** Establishes limits for the sulfur content of gaseous fuels to reduce SO_x emissions from stationary combustion sources. Rule 431.1 limits the sulfur content of natural gas calculated as hydrogen sulfide (H_2S) to be less than 16 ppmv.
- **Rule 431.2—Sulfur Content of Liquid Fuels:** Establishes limits for the sulfur content of liquid fuels to reduce SO_x emissions from stationary combustion sources. Rule 431.2 limits the sulfur content of diesel fuel purchased after June 1, 2004 to 15 ppmw.
- **Rule 474—Fuel Burning Equipment—Oxides of Nitrogen:** Establishes limits for emissions of NO_x from stationary combustion sources. However, NO_x RECLAIM facilities are exempt from the provisions of Rule 474. Since the Highgrove Project will be a NO_x RECLAIM facility, Rule 474 is not applicable and will not be addressed further.
- **Rule 475—Electric Power Generating Equipment:** Establishes limits for combustion contaminant (i.e., PM) emissions from subject equipment. Rule 475 prohibits PM emissions that exceed both 11 lbs/hr (per emission unit) and 0.01 grains per dry standard cubic foot (gr/dscf) at 3 percent O_2. These provisions do not apply to replacement equipment if such equipment reduces NO_x emissions by at least 50 percent provided that PM emissions do not exceed 0.05 gr/dscf.
- **Rule 476—Steam Generating Equipment:** Establishes limits for NO_x and PM emissions from steam generating equipment with a maximum heat input rating exceeding 50 MMBtu/hr. However, NO_x RECLAIM facilities are exempt from the NO_x requirements for this rule. Therefore, only the PM provisions of this rule will apply. The proposed Highgrove Project is not a steam generating facility and this rule would not apply.
- **Rule 53A—Specific Contaminants:** Established limits for emissions of sulfur compounds (i.e., SO_x) and combustion contaminants (i.e., PM) from stationary sources. Rule 53A prohibits SO_2 and PM emissions of 500 ppm and 0.1 gr/dscf at 12 percent CO_2, respectively.

SCAQMD Source Specific Standards

Relevant source-specific standards of the SCAQMD applicable to the project include the following:

- **Rule 1134—Emissions of Oxides of Nitrogen from Stationary Gas Turbines:** Establishes limits for emissions of NO_x from the stationary gas turbines. However, NO_x RECLAIM facilities are exempt from the provisions of Rule 1134. Therefore, Rule 1134 is not applicable to the Highgrove Project and will not be addressed further.
- **Rule 1135—Emissions of Oxides of Nitrogen from Electric Power Generating Systems:** Establishes limits for emissions of NO_x from the electricity generating systems. However, NO_x RECLAIM facilities are exempt from the provisions of Rule 1135. Therefore, Rule 1135 is not applicable to the Highgrove Project and will not be addressed further.

SCAQMD Toxics and Other Non-Criteria Pollutant Standards

Relevant toxics and other non-criteria pollutant standards of the SCAQMD applicable to the project include the following:

- **Rule 1404—Hexavalent Chromium Emissions from Cooling Towers:** Prohibits the addition of hexavalent chromium-containing water treatment chemicals to cooling tower circulating water.

Proposed SCAQMD Rules

Proposed rules of the SCAQMD applicable to the project include the following:

- **Proposed Rule 1309.1—Priority Reserve:** If approved, the provisions that authorized electric generating facilities (EGFs) access to the Priority Reserve that expired on December 31, 2003 would be re-established with a revised sunset date of December 31, 2008. This amendment would allow, as previously done, EGFs access to the AQMD Priority Reserve account for the purpose of obtaining offsets, after having first established that the required offsets are not reasonably available in the open market, paying a mitigation fee and adhering to certain other requirements of the rule. This rule is being proposed due to the shortage of ERCs, specifically SO_x and PM_{10} in the open market. It is anticipated that this rule will be on the agenda of the SCAQMD Governing Board in April 2006.

All applicable LORS are summarized in Table 8.1-11.

8.1.6 Environmental Analysis

8.1.6.1 Methodology for Estimating Facility Impacts

The proposed Highgrove Project includes the following emission sources, three gas turbines with advanced combustion controls combined with SCR and oxidation catalysts and three two-cell cooling towers, one for each combustion turbine generator. The expected operating profile for the turbines will be between 50 percent and 100 percent of their maximum rated output. Inlet air cooling will be used to increase power output under maximum output conditions, by way of evaporative cooling. The emission control systems will be fully functional during all conditions throughout the operating profile, with the exception of startups and shutdowns. The annual emissions are based on operation of the project at the

ambient average temperature firing rates and include the expected maximum number of startup periods that may occur in a year. The emissions during the turbine startup and shutdown may be higher than the steady-state operation because the emission control systems will not be capable of operating at their design efficiencies during these events.

An analysis of the project's ambient air quality impact was conducted to demonstrate compliance with the local, state, and federal air quality requirements for criteria pollutants (NO_2, CO, SO_2, PM_{10} and $PM_{2.5}$), noncriteria pollutants during operations, and construction phase impacts. The following subsections describe the facility, the project phases for which emissions have been evaluated, the ambient impact analyses results, and the evaluation of facility compliance with the applicable local, state, and federal air quality regulations.

8.1.6.1.1 Emission Estimates

The new equipment will consist of three GE LMS100 natural-gas-fired combustion turbine generators (CTG), rated at 100 MW (nominal at site design conditions), and three two-cell wet cooling towers (one for each CTG). Vendor specifications are provided in Appendix 8.1B (see Tables 8.1B-1A, -1B, and -1C in Appendix 8.1B) for the turbines and cooling tower.

Noncriteria pollutants will also be emitted by the facility, including ammonia, which will be used as a reactant by the SCR systems to control NO_x. Emissions of all of the criteria and noncriteria pollutants have been characterized and quantified in this application.

Emission Profile

There will be three discrete phases of the project, which are addressed in this air quality assessment. The first phase is the demolition of the existing power plant and construction of the new facility, the second phase is the new facility commissioning, and the final phase is the new facility operation.

Demolition/Construction. The proposed 14-month construction schedule consists of five months of demolition (months 1-5) and eleven months of power plant construction (months 4-14). To evaluate the emissions expected to occur during the construction period, the emission sources were divided into two categories: sources within the boundary of the proposed power plant site (i.e., onsite) and activities related to the project which occur outside the boundary (i.e., offsite). Onsite construction emissions would be generated during demolition of existing structures and power plant construction. During demolition, the contractor hired to demolish the existing structures would mitigate asbestos emissions by complying with all local, state, and federal laws and regulations. In addition, painted steel members, which may contain lead, would be torch cut and removed in compliance with all local, state, and federal laws and regulations. Onsite emission sources include exhaust emissions from construction equipment and motorized vehicles, and fugitive dust emissions.

Offsite construction emissions would be generated during construction of the natural gas pipeline and potable water line, and offsite motorized vehicle travel resulting from demolition and power plant construction. Offsite emission sources include the exhaust emissions from construction equipment and motorized vehicles used to install the project-related linears (i.e., the natural gas and potable water lines), as well as the exhaust emissions from motor vehicles traveling to and from the proposed work site. Minor amounts of fugitive dust would also be generated from construction activities and from

vehicle travel on roadways. Table 8.1-13 presents the total project emissions and the maximum daily emission rate for each pollutant during construction. The methodology used to estimate the construction emissions is provided in Appendix 8.1A.

TABLE 8.1-13
Total Project Construction Emissions

Total Tons for Project Construction	**NO_x**	**CO**	**VOC**	**SO_2**	**PM_{10}**
Onsite Demolition (tons)	2.2	0.88	0.20	0.01	1.9
Onsite Power Plant Construction (tons)	9.9	4.4	1.1	0.04	3.0
Offsite Demolition Motor Vehicles (tons)[a]	0.12	0.44	0.049	0.0004	0.28
Offsite Power Plant Construction Motor Vehicles (tons)[a]	0.83	3.8	0.41	0.003	2.0
Offsite Linear Construction (tons)[b]	3.4	2.3	0.57	0.01	1.5
Total Tons (Onsite plus Offsite)	**16.4**	**11.7**	**2.3**	**0.07**	**8.6**
Maximum Lb/day					
Onsite Demolition (lbs/day)	85.7	33.9	7.7	0.44	47.8
Onsite Power Plant Construction (lbs/day)	131.2	58.6	14.7	0.61	35.4
Offsite Demolition Motor Vehicles (lbs/day)	2.3	8.0	0.89	0.007	5.1
Offsite Power Plant Construction Motor Vehicles (lbs/day)	15.7	41.6	4.5	0.03	28.6
Offsite Linear Construction (lbs/day)	55.4	38.7	15.1	0.20	25.0
Maximum Combined Emissions (lb/day)[c]	**210.5**	**136.8**	**34.1**	**0.90**	**113.7**

[a] Offsite motor vehicles includes vehicle emissions from worker commute trips and delivery truck trips to the site.
[b] Offsite linear construction represents emissions from the construction of the natural gas and potable water lines.
[c] The combined emissions represents the month where overlap of demolition, power plant construction, offsite vehicles, and offsite linear construction results in the maximum lb/day. The maximum emissions occur in month 7 for CO and VOC, month 4 for NO_x and PM_{10}, and month 5 for SO_x.

Commissioning Phase. Prior to the plant being declared operational, the plant will undergo commissioning. During commissioning the CTGs will be operated at various loads to:

- break-in the plant equipment,
- develop water injection control parameters,
- commission the Automatic Voltage Regulator (AVR) system,
- tune the SCR system's ammonia injection grid, and
- perform final operational checks.

Air emissions during the commissioning phase were estimated based on vendor data and best engineering estimates. The emission estimates are based on the duration of each commissioning event, emission control efficiencies expected for each event, and turbine operating rates.

The maximum hourly commissioning emission rates for NO_x, CO, and VOC are presented in Table 8.1-14. An annual evaluation was not conducted since the commissioning phase is expected to occur over a 10- to 20-day period. The Highgrove Project will ensure that air pollutant emissions during commissioning are reduced to the extent practical. Appendix 8.1B

presents the commissioning schedule, turbine operating rate, and an estimate of emissions during each commissioning event.

TABLE 8.1-14
Facility Commissioning Emission Rate (per Turbine)

	NO_x	CO	VOC	SO_2	PM_{10}
Maximum Hourly, lb/hour	175	255	5	*	*
Maximum Hourly, grams/second	22.0	32.1	0.6	*	*

* Not emitted in amounts greater than normal operating rates.
See Appendix 8.1B, Table 8.1B-3.

Operational Phase. Operational emission estimates were prepared for the two expected operating modes. The first operating mode is the startup and shutdown mode and the second is the steady state operating mode. Emission estimates for these two operating modes are based on vendor data, emissions presented in other licensing cases, and engineering estimates.

The CTG operational emission rates for steady state operations have been estimated from vendor data, project design criteria, and established emission calculation procedures. Emission estimates and vendor data are provided in Appendix 8.1B. The emission rates for the combustion turbines are shown in Table 8.1-15.

TABLE 8.1-15
Maximum Pollutant Emission Rates, Each Gas Turbine[a]

Pollutant	ppmvd @ 15% O_2	Each Gas Turbine (lb/hr)[b]
NO_x	3.5	11.2
CO	6	11.7
VOC	2	2.3
PM_{10}[c]	[d]	6
SO_2[e]	<1.0	0.6
Ammonia	5	6.0

[a] Maximum values exclude startups and shutdowns.
[b] Baseload operating case at ambient temperature of 30°F without the evaporative cooler operating.
[c] 100 percent of particulate matter emissions assumed to be emitted as PM_{10} and $PM_{2.5}$; $PM_{10}/PM_{2.5}$ emissions include both front and back half as those terms are used in USEPA Method 5.
[d] Not available.
[e] Assessed using 0.25 grains of sulfur per 100 cubic feet of natural gas.
See Tables 8.1B-2 and 8.1B-6 in Appendix 8.1B.

Startup and Shutdown Emissions

During the startup and shutdown operating modes, the emission control systems are not fully functional, which may result in higher air emission rates relative to the steady-state operating model. A startup is expected to take approximately 37 minutes to full load operation. Likewise, a shutdown is also expected to take approximately 11 minutes from full load operation until the fuel flow is discontinued.

The maximum startup and shutdown emission rates are presented in Table 8.1-16, on a pounds per event and a lb/hr basis. The hourly emission rates are based on the startup/shutdown time, with the remainder of the hour consisting of steady-state operations at base load (80°F with the evaporators operating). The methodology used to estimate the startup and shutdown emissions are provided in Appendix 8.1B, Table 8.1B-5.

TABLE 8.1-16
Facility Startup/Shutdown Emission Rates*

	NO_x	CO	VOC	SO_x	PM_{10}
Startup (lb/event)	7.0	15.4	2.1	0.36	3.5
grams per event	3,175	6,985	953	163	1,588
Startup (lb/hr)	11.1	19.7	3.0	0.59	5.8
Grams per second	1.4	2.5	0.4	0.07	0.73
Shutdown (lb/event)	4.3	18.2	1.6	0.11	1.1
grams per event	1,950	8,255	726	50	499
Shutdown (lb/hr)	13.1	27.5	3.4	0.6	6.0
Grams per second	1.7	3.5	0.4	0.08	0.8

* Estimated based on vendor data and emissions per startup or shutdown event. See Appendix 8.1B, Table 8.1-5.

8.1.6.1.2 Maximum Fuel Usage

Natural gas will be the only fuel consumed during plant operation; the typical natural gas composition is shown in Table 8.1-17. There will be no distillate fuel oil firing at the Highgrove Project.

Natural gas combustion results in the formation of NO_x, CO, unburned hydrocarbons (VOC), SO_2, PM_{10}, and $PM_{2.5}$. Because natural gas is a clean-burning fuel, there will be minimal formation of combustion PM_{10}, $PM_{2.5}$, and SO_2. Advanced combustion controls that minimize the formation of NO_x and CO will be installed on the combustion turbines. In addition, NO_x and CO emissions will be further reduced by installing SCR and oxidation catalyst systems in the turbine exhaust ducts.

TABLE 8.1-17
Typical Natural Gas Specifications

Component Analysis		Chemical Analysis	
Component	Average Concentration, Volume	Molecular Weight	Weighted Average
CH_4	96.19	16.04	15.43
C_2H_6	1.67	30.07	0.50
C_3H_8	0.27	44.00	0.12
C_4H_{10}	0.098	58.12	0.057
C_5H_{12}	0.0072	72.15	0.0052
C_6H_{14}	0.022	86.18	0.019

TABLE 8.1-17
Typical Natural Gas Specifications

Component Analysis		Chemical Analysis	
Component	**Average Concentration, Volume**	**Molecular Weight**	**Weighted Average**
N_2	0.41	28.01	0.11
CO_2	1.34	44.01	0.59
		AVERAGE	**16.83**

Reference: See Table 8.1B-8 in Appendix 8.1B.

Table 8.1-18 presents the maximum fuel usage expected for each CTG and for the facility. The maximum fuel usage was estimated based on the maximum CTG firing rate and the annual operating hours for the facility. The daily fuel usage was based on 24 hours per day of operation at the maximum hourly fuel usage rate.

TABLE 8.1-18
Maximum Facility Fuel Use (MMBtu)*

Period	Gas Turbine (each)	Total Fuel Use (all units)
Per Hour	881	2,643
Per Day	21,144	63,432
Per Year	4,823,475	14,470,425

* Based on firing rates at 30ºF, 24 hours per day and 15 hours per day, 365 days per year per turbine. See Table 8.1B-8 in Appendix 8.1B.

8.1.6.1.3 Facility Emissions

Emissions from the cooling tower were calculated from the maximum design cooling water total dissolved solids (TDS) level of 280 milligrams per liter, 10 cycles of concentration (a conservative, worst-case basis used in the air quality impact analysis), and a design cooling water recirculation rate of 6,900 gallons per minute. The annual emissions reflect 15 hours per day, 365 days per year of operations per cooling tower. However, the project is expected to operate at a maximum capacity factor of 30 percent.

The facility emission estimates were based on the turbine emission rates shown in Table 8.1-15; the startup emission rates shown in Table 8.1-16, and the ambient operating conditions that result in the highest emission rates. The maximum annual, daily, and hourly emissions for the project during normal operation are shown in Table 8.1-19. Detailed emission estimates are provided in Appendix 8.1B, Tables 8.1B-2 through 8.1B-8.

TABLE 8.1-19
AES Highgrove Project Facility Emissions

	NO_x	SO_2	VOC	CO	PM_{10}
Maximum Hourly Emissions per CTG, lb/hr					
Turbines	13.1	0.60	3.4	27.5	6.0
Cooling Tower	-	-	-	-	0.048
Total Project (lb/hr)	**13.1**	**0.60**	**3.4**	**27.5**	**6.05**
Maximum Facility Daily Emissions, lb/day					
Turbines[a]	503	26.8	112	657	269
Cooling Tower	-	-	-	-	2.2
Total Project (lb/day)	**503**	**27**	**112**	**657**	**271**
Maximum Annual Emissions, lbs/year[b]					
Turbines	183,518	9,783	40,794	239,874	98,112
Cooling Tower	-	-	-	-	793
Total Project (lb/yr)	**183,518**	**9,783**	**40,794**	**239,874**	**98,905**
Total Project (tpy)	**91.76**	**4.89**	**20.4**	**119.94**	**49.45**

[a] Daily emissions include two startups and two shutdowns per day of operation, and are based on a 15-hour day of operation.

[b] Annual emissions are based on 5,475 hours per year of operation for each CTG and cooling tower.

8.1.6.1.4 Toxic Air Contaminants and Noncriteria Pollutant Emissions

The project is expected to emit small quantities of TACs and noncriteria pollutants (ammonia). The TACs are compounds that have been identified as pollutants that may pose a significant health hazard by the CARB. Some of these pollutants are also regulated under the federal NSR program. These federally regulated pollutants include lead, asbestos, beryllium, mercury, fluorides, sulfuric acid mist, hydrogen sulfide, total reduced sulfur, and reduced sulfur compounds, but since they are expected to be emitted in quantities less than their federal thresholds, they are being analyzed as TACs. The federal Clean Air Act identifies 187 substances as potential hazardous air pollutants (Clean Air Act Sec. 112(b)(1) and the SCAQMD also published a list of compounds it defines as potential TACs (Rule 1401). Any pollutant that may be emitted from the project and is on the federal NSR list, the federal Clean Air Act list, and/or the SCAQMD Rule 1401 list has been evaluated as part of the AFC. For the purpose of this section, the term noncriteria pollutants will include TAC emissions.

Noncriteria pollutant emission factors for the analysis of emissions from the gas turbines were obtained from AP-42 (Table 3.1-3, 4/00, and Table 3.4-1 of the Background Document for Section 3.1). The turbines will be equipped with oxidation catalyst systems, therefore, acrolein, benzene, and formaldehyde emission factors reflect controlled emission levels. The polyaromatic hydrocarbon (PAHs) emission factor was based on the results of two separate source tests (2002 and 2004) from the Delta Energy Center located in Pittsburg, California.

The noncriteria pollutants that may be emitted from the project are shown in Table 8.1-20. Appendix 8.1B provides the detailed emission calculations for noncriteria pollutants. As emissions of each individual HAP are below 10 tpy and total HAP emissions are below 25 tpy, the turbines are not subject to the MACT requirements of 40 CFR 63.

TABLE 8.1-20
Noncriteria Pollutant Emissions For The Project

Pollutant	Emission Factor (pounds per million standard cubic feet [lb/MMscf])[a]	Emissions	
		lb/hr (each turbine)	tpy (total 3 turbines)
Ammonia[b]	5 ppm	6.0	49.2
Noncriteria			
Acetaldehyde	0.040600	0.035	0.5
Acrolein	0.003690	0.0032	0.04
Benzene	0.003330	0.0029	0.04
1,3-Butadiene	0.000436	0.00038	0.005
Ethylbenzene	0.032480	0.028	0.4
Formaldehyde	0.365400	0.317	4.2
Naphthalene	0.001320	0.001	0.015
PAHs[c]	0.000014	0.00001	0.0002
Propylene oxide	0.029435	0.0255	0.34
Toluene	0.131950	0.115	1.5
Xylene	0.064960	0.056	0.7
Total HAP emissions			7.7
Highest Individual HAP (formaldehyde)			4.2

Source: Appendix 8.1B, Tables 8.1B-6.

[a] Obtained from AP-42 Table 3.1-3 revised April 2000 for natural-gas-fired combustion turbines. Formaldehyde, benzene, and acrolein emission factors are from the Background Document for AP-42 Section 3.1, Table 3.4-1 for a natural-gas-fired combustion turbine with an oxidation catalyst.

[b] Based on an exhaust ammonia limit of 5 ppmv @ 15 percent O_2, an F-factor of 8710, and 15 operating hours per day, 365 days per year for each turbine. However, the health risk analysis was based on 24 operating hours per day, 365 days per year for each turbine (i.e., 78.9 tpy).

[c] Carcinogenic PAHs only; naphthalene considered separately. Emission Factor based on two separate source tests (2002 and 2004) from the Delta Energy Center located in Pittsburg, California.

The health risk analysis was conducted assuming that the combustion turbines would be operated 8,760 hours per year, at the maximum heat input rating. This would be a conservative estimate of emissions as the planned operating rates are assumed to be 15 hours per day, 365 days per year.

8.1.6.2 Air Quality Impact Analysis

An ambient air quality impact analysis was conducted to compare worst-case ground-level impacts resulting from the construction and operation of the proposed Highgrove Project with established state and federal AAQSs and applicable SCAQMD significance criteria. The analysis was conducted in accordance with the air quality impact analysis guidelines developed by the USEPA (40 CFR Part 51, Appendix W: *Guideline on Air Quality Models*).

The analysis includes an evaluation of the possible effects of simple, intermediate, and complex terrain, and aerodynamic effects (downwash) due to nearby building(s) and structures on plume dispersion and ground-level concentrations. A basic Guassion plume model was used in this analysis. The model assumes that the concentrations of emissions within a plume can be characterized by a Gaussian distribution of gaseous concentrations about the plume centerline. Gaussian dispersion models are approved by the USEPA and SCAQMD for regulatory use and are based on conservative assumptions (i.e., the models tend to over predict actual impacts by assuming steady-state conditions, no pollutant loss through conservation of mass, no chemical reactions, etc.).

The following subsections present:

- Modeling methodology for evaluating the impacts on ambient air quality
- Modeling scenarios and source data used to evaluate the impacts on ambient air quality
- Results of the ambient air quality modeling analyses

8.1.6.2.1 Modeling Methodology for Evaluating Impacts on Ambient Air Quality

This section outlines the air dispersion modeling techniques used to assess the impacts from the construction, commissioning, and operation of the proposed project. The modeling methodology is consistent with the modeling protocol submitted to the CEC and SCAQMD (Appendix 8.1C) and follows the modeling guidance provided in the USEPA's *Guideline on Air Quality Models* (40 CFR Part 51, Appendix W, November 9, 2005) as well as SCAQMD's modeling guidance.

Model Selection

The construction, commissioning, and operational air quality impact analyses were performed using the Industrial Source Complex, Short-Term Model (ISCST3, Version 02035). ISCST3 is a Gaussian dispersion model capable of assessing impacts from a variety of source types in areas of simple, intermediate, and complex terrain. The model can account for area, line, and volume source types; downwash effects; and gradual plume rise as a function of downwind distance. The model is capable of estimating concentrations for averaging periods from one hour to one year. The required emission source data inputs to ISCST3 include source locations, source elevations, stack heights, stack diameters, stack exit temperatures, stack exit velocities, and pollutant emission rates. The source locations are specified for a Cartesian (x,y) coordinate system where x and y are distances east and north in meters, respectively. The Cartesian coordinate system used for these analyses is the Universal Transverse Mercator Projection (UTM), 1927 North American Datum (NAD 27).

Model Options

ISCST3 model options include use of site-specific vertical profiles of wind speed and temperature, consideration of stack and building wake effects, and time-dependent exponential decay of pollutants. Except where explicitly stated (such as the no-calm processing routine), USEPA recommended default values were used for the construction, commissioning, and operational analyses. A number of these default values are required for USEPA and SCAQMD approval and are listed below.

- Urban dispersion coefficients
- Final plume rise
- Stack tip downwash
- Buoyancy induced dispersion

- No calm processing (SCAQMD requirement)
- No missing data processing
- Default wind profile exponents
- Default vertical potential temperature gradients
- 10-meter anemometer height

Pursuant to SCAQMD guidance that urban dispersion mixing should be assumed within the SCAQMD, the urban dispersion mode was used for this air quality impact analysis.

Meteorological Data

The CEC requires one year of meteorological data approved by the CARB or the local air pollution control district to be used in the air modeling. For dispersion modeling analyses in the area of the proposed site, the SCAQMD recommended the use of the 1981 Riverside meteorological data file[1], which has been pre-formatted for use with the Industrial Source Complex – Short Term (ISCST3) model. The monitoring location is approximately seven kilometers southwest of the proposed Highgrove Project site. The terrain between the monitoring location and the proposed project site is relatively flat, at an elevation of approximately 940 feet above sea level. Moderate terrain exists to the west and east of the monitoring location and the proposed project site. For example, La Loma Hills are located approximately 0.5 mile to the west and gradually rise approximately 450 feet and Blue Mountain lies approximately 1.5 miles to the east of the project site, gradually rising approximately 1,500 feet. However, based on the annual wind rose data (Figure 8.1-1a), the large scale flow is dominated by the land-sea breeze and the northwest/southeast oriented Santa Ana mountains, which affects both locations. Based on the proximity of the monitoring location to the proposed Highgrove Project site and the terrain similarities, it is assumed the 1981 SCAQMD Riverside meteorological data is representative of the proposed Highgrove Project site. Therefore, the 1981 data set was used to model the ambient air quality impacts from construction, commissioning, and operational activities.

Background Data

The background data need not be collected onsite, as long as the data are representative of the air quality in the subject area (40 CFR 51, Appendix W, Section 9.2). The following three criteria were used for determining whether the background data would be representative: (1) location, (2) data quality, and (3) data currentness. These criteria are defined as follows:

- **Location:** The measured data must be representative of the areas where the maximum concentration occurs for the proposed stationary source, existing sources, and a combination of the proposed and existing sources.

- **Data quality:** Data must be collected and equipment must be operated in accordance with the requirements of 40 CFR Part 58, Appendices A and B, and PSD monitoring guidance.

- **Data Currentness:** The data are current if they have been collected within the preceding three years and are representative of existing conditions.

[1] The surface wind speeds and directions were collected at the SCAQMD's Riverside monitoring station (Station ID 54139), while the upper air sounding data used to estimate hourly mixing heights were collected at the Ontario (El Monte & Ontario) monitoring station.

After evaluating the list of SCAQMD and CARB monitoring stations in the vicinity of the proposed project, it was determined the Riverside-Rubidoux monitoring station at 5888 Mission Blvd (USEPA AIRS No. 060658001) is the closest to the proposed project site, which is approximately 8 km to the southwest. It is assumed the SCAQMD and CARB data meet the requirements of Appendices A and B of 40 CFR Part 58, and subsequently meets the criterion for data quality. All of the data have been collected within the preceding 3 years, and subsequently meets the criterion for currentness. Therefore, the maximum background air quality data from the Riverside-Rubidoux monitoring station (Table 8.1-21) were considered a conservative representation of the background data in the vicinity of the proposed project.

TABLE 8.1-21
Background Air Concentrations for the Highgrove Facility [a, b] 2002 – 2004

Pollutant	Averaging Time	2002		2003		2004		Average	Maximum
		ppm	µg/m^3	ppm	µg/m^3	ppm	µg/m^3	µg/m^3	µg/m^3
NO_2	1-hour [c]	0.10	188	0.09	169	0.09	169	**175**	**188**
	Annual [c]	0.024	44.6	0.022	40.8	0.017	32.4	**39.3**	**44.6**
SO_2	1-hour [c]	0.02	52.4	0.02	52.4	0.02	52.4	**52.4**	**52.4**
	3-hour [d]	0.010	26.2	0.015	39.3	0.016	41.9	**35.8**	**41.9**
	24-hour [c]	0.002	5.2	0.012	31.4	0.015	39.3	**25.3**	**39.3**
	Annual [d]	0.001	2.6	0.003	7.9	0.004	10.5	**7.0**	**10.5**
CO	1-hour [c]	8	9,162	5	5,726	4	4,581	**6,490**	**9,162**
	8-hour [c]	3.0	3,436	3.7	4,237	3.0	3,436	**3,703**	**4,237**
PM_{10}	24-hour [c]	-	130	-	164	-	137	**144**	**164**
	Annual [c, e]	-	58.5	-	56.9	-	55.5	**57.0**	**58.5**
$PM_{2.5}$	24-hour [c]	-	77.6	-	104.3	-	91.7	**91.2**	**104.3**
	Annual [c, e]	-	27.5	-	24.9	-	22.1	**24.8**	**27.5**

[a] Data reported for the SCAQMD Metropolitan Riverside County 1 Station (a.k.a. 5888 Mission Blvd, Riverside-Rubidoux Monitoring Station – AIRS No. 060658001). The annual SCAQMD ambient air quality data summaries were used as the primary reference. The USEPA AIRS database was used when SCAQMD data were unavailable.

[b] Conversion from ppm to µg/m^3 at 25° Celsius and 760 torr.

[c] Source of data: http://www.aqmd.gov/smog/historicaldata.htm

[d] Source of data: http://www.epa.gov/air/data/monvals.html

[e] Annual Arithmetic Mean

In evaluating the impacts of construction, commissioning and operation on ambient air quality, modeling of the ambient impacts for the project were added to the representative background concentrations in Table 8.1-21, and the results were compared to the state and federal ambient air quality standards for SO_2, NO_2, PM_{10}, and CO. The modeled PM_{10} and NO_2 concentrations for each permit unit were also compared to the allowable increase significance thresholds established by the SCAQMD in Rule 1303 and Rule 2005 (NSR for RECLAIM) thresholds, respectively.

Receptor Data

Cartesian coordinate receptor grids were used to assess the ground-level pollution concentrations surrounding the project area, identify the extent of significant impacts, and identify the maximum impact locations.

For the construction air quality impact analyses, a receptor grid was set up starting from the property boundary and extending to approximately 2 km in all directions. Receptor spacing was 30 meters along the demolition and construction boundaries out to 500 meters, and 100 meter spacing out to 2 km.

For the commissioning and operational air quality impact analyses, a fine receptor grid (i.e., 30-meter resolution) was used around the fence line and extended out 10 kilometers (km). The fine receptor grid was used for both the screening and detailed modeling analysis. Concentrations within the facility fence line were not calculated.

Receptor elevations, including those around the fenceline, were determined using the 7.5-minute U.S. Geological Survey (USGS) Digital Elevation Model (DEM) data (i.e., 30-meter spacing between grid nodes). All coordinates were referenced to the UTM Zone 11, NAD27. Source base elevations, which are used in part to determine the height of the plume relative to the receptors, were based on the engineering site grading plan.

Building Downwash and Good Engineering Practice Assessment

For the commissioning and operational analyses, the USEPA's Building Profile Input Program (BPIP) (Dated 04112) was used to calculate the projected building dimensions required for ISCST3 evaluation of impacts from building downwash. The demolition and construction sites were represented as area sources, therefore, an evaluation of the GEP or building downwash was not applicable.

GEP as used in the modeling analyses is the maximum height allowed to ensure that emissions from the stack do not result in excessive concentrations of any air pollutant in the immediate vicinity of the source as a result of atmospheric downwash, eddies, or wakes that may be created by the source itself, nearby structures, or nearby terrain obstacles. In addition, the GEP modeling restriction ensures that any required regulatory control measure is not compromised by the effect of that portion of the stack that exceeds the GEP.

The USEPA guidance ("Guideline for Determination of Good Engineering Practice Stack Height," Revised 6/85) for determining GEP stack height (H_g) is based on the height of a nearby structure(s) measured from the ground-level elevation at the base of the stack (H) and the lesser dimension, height or projected width, of the nearby structure(s) (L) as follows:

$$Hg = H + 1.5L$$

Based on the onsite and offsite building dimensions as input into BPIP, the calculated GEP height for the facility stack is 29.93 meters. The proposed turbine stack height of 24.4 meters does not exceed GEP stack height.

8.1.6.2.2 Modeling Scenarios and Source Data Used to Evaluate Impacts on Ambient Air Quality

In evaluating the impacts of the proposed project on ambient air quality, modeling of the worst case ambient impacts for the project were added to representative background concentrations, and the results compared to the state and federal ambient air quality standards. For pollutants with ambient background concentrations that exceed the most stringent ambient air quality standards (i.e., 24 hour and annual PM_{10}), the modeling results were also compared to the significant change thresholds established by SCAQMD in Rule 1303.

Demolition/Construction Impacts Analysis

Based on the 14-month construction schedule, demolition would occur during the first five months of the proposed project and power plant construction would overlap with the demolition activities for two months beginning in month four. Therefore, three modeling scenarios were evaluated to determine whether the maximum modeled pollutant concentrations would result from demolition, power plant construction, or the overlapping period. Emissions were divided into three categories: onsite exhaust, fugitive dust from vehicle and construction equipment, and windblown fugitive dust. The Localized Significance Threshold Methodology (SCAQMD, 2003) was used to convert the predicted 1-hour NO_x concentration to NO_2. For the remaining pollutants, the maximum concentrations were added to background concentrations and compared to the applicable standards. A detailed summary of the assumptions and emission factors used to estimate the emission rates and the details of the dispersion modeling approach are presented in Appendix 8.1A.

Commissioning Impacts Analysis

During the commissioning period, the CTGs are operated without the emission control systems fully operational. The water-injected combustors will be tuned towards the middle of the commissioning period and the SCR systems will be installed and tuned towards the end of the commissioning period. Because emission control systems will not be fully operational during the commissioning period, emissions of NO_x and CO will be significantly higher than during other operating conditions. Therefore, the Applicant analyzed the ambient air quality impacts during commissioning.

A screening analysis was used to predict the maximum impact for each of the commissioning scenarios. The screening analysis was based on a unit emission rate of 1 g/sec and the 1981 SCAQMD Riverside meteorological data set. Because maximum PM_{10} and SO_2 impacts are expected to occur for scenarios with maximum fuel consumption (i.e., normal base load conditions), only short-term NO_x and CO impacts were evaluated for the commissioning scenarios. An annual analysis was not conducted because the commissioning phase is expected to occur over a 10- to 20-day period. A summary of the commissioning scenarios examined in this screening analysis, along with their exhaust and emission characteristics are shown in Appendix 8.1C. The screening analysis was evaluated to determine the maximum impact from each individual unit and the maximum impact for multiple turbines operating simultaneously. Because the cooling tower emissions are not included as part of the turbine commissioning analysis, a detailed analysis was not required and the maximum impacts predicted in the screening analysis were added to background concentrations and compared to the applicable standards. The results of the turbine commissioning analysis are presented in Subsection 8.1.6.2.3 and Appendix 8.1C. Table 8.1-22 presents the "worst case" total emissions for all units. The number of units undergoing simultaneous commissioning is indicated under the "Scenario" header. It should be noted that although higher NO_x emissions are expected during the Water Injection commissioning phase (see Appendix 8.1C, Table 8.1C-3), only one unit will be commissioned at a time and, therefore, the impacts are less than the scenario listed in Table 8.1-22. The exit velocity and exhaust temperature listed are for each of the commissioning turbines.

TABLE 8.1-22
Worst Case Model Input—Commissioning Scenario

Averaging Period	Scenario	Exit Velocity (m/s)	Exhaust Temp (K)	Emission Rates*			
				NO_x		CO	
				lb/hr	g/s	lb/hr	g/s
8-hour (CO)	Complete AVR Commissioning (3 units)	35.23	693	-	-	765	96.4
1-hour (CO)	Complete AVR Commissioning (3 units)	35.23	693	-	-	765	96.4
1-hour (NO_2)	Controlled Break In Operation (3 units)	20.08	710	297	37.4	-	-

* Total for all commissioning units
See Appendix 8.1C Table 8.1C-3.
g/s = grams per second
m/s = meter per second
K = Kelvin

Operation Impacts Analysis (Including Startup/Shutdown Turbine Cycles)

The emissions used for modeling the worst-case impacts were based on maximum short term emissions that assumed the highest pollutant emission rates based on either load, temperature, or whether the turbine was in a startup or shutdown cycle. It was assumed that the maximum 1-hour emission rate would include one startup and one shutdown and the maximum 3- and 8-hour emission rates would include two startups and two shutdowns per averaging period. For the daily emissions, it was assumed that the turbine would be operating approximately 24 hours under normal operating conditions which would include two startups and two shutdowns. For the annual worst-case impacts, each turbine and cooling tower was assumed to operate 15 hours per day with two starts and two stops each day, for 365 days per year. The cooling tower was assumed to operate at the maximum water recirculation rate for 5,475 hours. To ensure the operational impacts were based on maximum emission levels and worst-case dispersion conditions, screening and detailed modeling analyses were conducted.

The screening analysis was used to predict the maximum impact for each of the normal turbine operating conditions and the startup and shutdown cycles. The screening analysis was conducted using a unit emission rate, ISCST3, and the 1981 SCAQMD Riverside meteorological data set. Turbine emissions and stack parameters, such as flow rate and exit temperature, exhibit some variation with ambient temperature and operating load. Therefore, in order to calculate the worst-case air quality impacts, dispersion modeling was conducted with and without evaporative coolers on, at base, 75, and 50 percent loads, and at 97˚F, 80˚F, and 30˚F, which represent the design high, low, and weighted annual average ambient temperatures (annual average was weighted to reflect peak operation during the summer months). For the 30˚F scenario, evaporative coolers were not evaluated because the temperature is too low for this feature. Because the cooling tower emissions (i.e., PM_{10} emissions only) were independent of the turbine conditions, the cooling tower emissions were not included as part of the screening analysis. The screening analysis predicts that the

highest pollutant impacts would occur under the operating conditions; 80˚F at 50 percent load, 30˚F at 50 percent load, and 30˚F at base load, depending on contaminant and averaging period (Table 8.1-23).

TABLE 8.1-23
"Worst Case" Model Input for Normal Turbine Operation

Averaging Period	Scenario	Exit Velocity (m/s)	Exhaust Temp (K)	Emission Rates*							
				NO_x		CO		SO_2		PM_{10}	
				lb/hr	g/s	lb/hr	g/s	lb/hr	g/s	lb/hr	g/s
Annual (PM_{10},)	80˚F 50% Load	24.12	689	-	-	-	-	-	-	2.9	0.37
Annual (NO_x, SO_2)	30˚F Base Load	36.58	668	5.7	0.72	-	-	0.30	0.04	-	-
24-hour (PM_{10})	80˚F 50% Load	24.12	689	-	-	-	-	-	-	6.0	0.75
24-hour (SO_2)	30˚F Base Load	36.58	668	-	-	-	-	0.61	0.08	-	-
8-hour (CO)	30˚F 50% Load	24.64	675	-	-	13.8	1.7	-	-	-	-
3-hour (SO_2)	30˚F Base Load	36.58	668	-	-	-	-	0.60	0.08	-	-
1-hour (NO_2 and SO_2)	30˚F 50% Load	24.64	675	12.6	1.6			0.54	0.07	-	-
1-hour (CO)	80˚F 50% Load	24.12	689	-	-	35.0	4.4	-	-	-	-
Annual (PM_{10})	Cooling Tower (2 cells; Modeled with the maximum annual PM_{10} scenario)	9.24	307	-	-	-	-	-	-	0.030	0.004
24-hour (PM_{10})	Cooling Tower (2 cells; Modeled with the maximum 24-hour PM_{10} scenario)	9.24	307	-	-	-	-	-	-	0.048	0.006

* Emissions are for each unit (See Appendix 8.1C, Tables 8.1C-3 and 8.1C-4)

A summary of the operating conditions examined in this screening analysis, along with their exhaust and emission characteristics are shown in Appendix 8.1C, Tables 8.1C-1 and 8.1C-3.

For the proposed project, the three combustion turbines would be the only sources of NO_x, SO_x, and CO. Therefore, the modeling results from the unit emission rate-based screening analysis were multiplied by the actual NO_x, SO_x, and CO emission rates for each operating scenario and averaging period to obtain projected maximum concentrations. These

maximum concentrations were added to the background concentration and compared to the respective ambient air quality standards.

The results of the unit emission rate-based screening 24-hour and annual PM_{10} modeling for each permit unit were also multiplied by the actual PM_{10} emission rate for each operating scenario to obtain projected maximum concentrations that could be compared to the SCAQMD Rule 1303 significance levels. The screening analysis predicts that the highest PM_{10} impacts would occur under the 80˚F at 50 percent load (Table 8.1-23).

For comparison to the AAQSs, a detailed modeling analysis was conducted to predict the total PM_{10} and $PM_{2.5}$ impacts from the "worst case" turbine operating scenario identified in the screening analysis and the cooling tower emissions. The detailed analysis was conducted using the actual turbine emission rates combined with the cooling tower emissions for PM_{10}. The maximum concentrations were then added to the PM_{10} and $PM_{2.5}$ background concentrations and compared to the respective ambient air quality standards.

The results of the screening and detailed modeling analysis are presented in Subsection 8.1.6.2.3 and Appendix 8.1C.

8.1.6.2.3 Results Compared to the Ambient Air Quality Standards

Demolition/Construction Impacts Analysis

The results of the analysis (Table 8.1-24) indicate that the maximum demolition/ construction impacts will be below the AAQSs for each of the criteria pollutants and averaging periods, with the exception of the 24-hour PM_{10} and $PM_{2.5}$ concentrations and the annual PM_{10} and $PM_{2.5}$ concentrations. For both pollutants and averaging periods, the annual background concentrations exceed the AAQS without adding the modeled concentrations. Because the entire SCAQMD is nonattainment for the state PM_{10} standard, the incremental 24-hour and annual PM_{10} impacts from construction were compared to the SCAQMD allowable change in 24-hour concentration threshold of 10.4 $\mu g/m^3$ (SCAQMD Rule 403 and SCAQMD LST, 2003) and annual concentration threshold of 1 $\mu g/m^3$ (SCAQMD Rule 1303).

The predicted 24-hour and annual PM_{10} concentrations exceed the SCAQMD allowable change in concentration thresholds. However, based on the results of the analysis, approximately 90 percent of the particulate concentrations would be due to fugitive dust emissions. The assumptions used to estimate the project's fugitive emissions are conservative in nature and the fugitive dust control efficiencies expected to be achieved during construction are higher than those used in the emissions estimate. Additionally, the average annual rainfall during the construction period was not factored into the calculations, which would also further reduce the fugitive dust emissions from construction. Because the demolition/construction activity is finite and best available emission control techniques will be used throughout the 14-month construction activity period, impacts from construction would be less than significant.

TABLE 8.1-24
Maximum Modeled Impacts from Demolition/Construction and the Ambient Air Quality Standards

Pollutant	Averaging Period	Maximum ISCST3 Concentration[a] ($\mu g/m^3$)	Background Concentration[b] ($\mu g/m^3$)	Total Predicted Concentration ($\mu g/m^3$)	State Standard ($\mu g/m^3$)	Federal Standard ($\mu g/m^3$)
NO_2	1-hour	150[c]	188	338	470	-
	Annual	40	45	85	-	100
PM_{10}	24-hour	122	164	286	50	150
	Annual	18	59	77	20	50
$PM_{2.5}$[d]	24-hour	32	104	137	-	65
	Annual	5.9	27.5	33.4	12	15
CO	1-hour	506	9,162	9,667	23,000 (20 ppm)	40,000
	8-hour	255	4,237	4,493	10,000 (9 ppm)	10,000
SO_2	1-hour	5.2	52.4	58	655	-
	3-hour	4.3	41.9	46	-	1,300
	24-hour	1.1	39.3	40	105	365
	Annual	0.2	10.5	11	-	80

[a] The maximum 24-hour PM_{10} and $PM_{2.5}$ concentrations are predicted to occur during demolition. The maximum 1-hour and 8-hour CO concentrations are predicted to occur during power plant construction. The maximum 1-hour NO_2, and the 1-hour, 3-hour, and 24-hour SO_2 concentrations are predicted to occur during the overlap of demolition and construction activities.

[b] Background concentrations were the highest concentrations monitored during 2002 through 2004.

[c] The maximum 1-hour NO_2 concentration was derived from the predicted 1-hour NO_x concentrations at each receptor and the NO_2 to NO_x ratios as a function of downwind distance, as discussed in the SCAQMD Localized Significance Threshold Methodology (LST), 2003.

[d] Reported $PM_{2.5}$ concentration from exhaust and fugitive sources assumes all PM from exhaust emissions are less than 2.5 micron and 21 percent of the fugitive PM emissions are less than 2.5 micron (SCAQMD LST, 2003).

Commissioning Impacts Analysis

The ambient air quality impacts of the plant commissioning were assessed based on vendor-provided schedules and emissions. Table 8.1-25 presents a comparison of the maximum modeled project commissioning impacts to the AAQS. The analysis excluded a comparison to the annual averaging period standards or thresholds because commissioning will only occur once during the project lifetime, and is expected to last approximately 10 to 20 days. As shown in Appendix 8.1C, Table 8.1C-3, there are several phases to the commissioning of the turbines. The phase with the maximum impact is presented below for NO_2 and CO. The phase that gives rise to the largest predicted off-property impact for NO_x is the Controlled Break-In Operation scenario, and for CO, it is the Complete AVR Commissioning, as presented above in Table 8.1-25. Both of these phases involve the simultaneous commissioning of, and therefore emissions from, all three units.

TABLE 8.1-25
Turbine Commissioning Impacts Analysis—Maximum Modeled Impacts Compared to the Ambient Air Quality Standards
Simultaneous Turbine Emissions

Pollutant	Averaging Time	Maximum Facility Impact ($\mu g/m^3$)	Background ($\mu g/m^3$)[a]	Total Impact ($\mu g/m^3$)	State Standard ($\mu g/m^3$)	Federal Standard ($\mu g/m^3$)
NO_2	1-hour	622.0[b,c]	188	810.0	470	-
CO	1-hour	1,232.2[b]	9,162	10,394.2	23,000	40,000
	8-hour	399.5[b]	4,237	4,636.5	10,000	10,000

[a] Background concentrations were the highest concentrations monitored during 2002-2004
[b] 1st highest modeled concentrations were used
[c] A 100 percent conversion of NO_x to NO_2 was assumed

The results of the analysis indicate the maximum NO_2 concentration would exceed the 1-hour state ambient air quality standard. However, the 1-hour NO_2 concentrations were conservatively estimated assuming that all of the emitted NO_x from the turbines during commissioning operations is converted to NO_2. It should be emphasized as well that these are predicted impacts from commissioning of the turbines only and is not indicative of normal operations. Additional dispersion modeling will also be conducted employing the Ozone-Limiting Method to reduce the predicted 1-hour NO_2 commissioning impacts.

Operation Impacts Analysis (Including Startup/Shutdown Turbine Cycles)

The highest modeled concentrations were used to demonstrate compliance with the AAQS. Table 8.1-26 presents a comparison of the maximum Highgrove Project operational impacts to the ambient air quality standards. For those pollutants and averaging periods where the background concentrations do not exceed the AAQS, the project will not cause or contribute to the violation of a standard. For those pollutants where the background data is already in excess of the standards, the project's impact plus background is above the standard, and would further contribute to an existing violation of the standard absent mitigation. The Highgrove Project will be providing such mitigation in the form of emission reduction credits. The complete list of off-property impacts for the various scenarios and contaminants is presented in Appendix 8.1C, Table 8.1C-6. (Note: the results in the Appendix 8.1C, Table 8.1C-6 do not include background concentrations). The results in Table 8.1-26 present the maximum impact from all the scenarios modeled.

TABLE 8.1-26
Normal Operation Impacts Analysis—Maximum Modeled Impacts Compared to the Ambient Air Quality Standards
Facility-Wide Emissions

Pollutant	Averaging Time	Maximum Facility Impact ($\mu g/m^3$)	Background ($\mu g/m^3$)[c]	Total Impact ($\mu g/m^3$)	State Standard ($\mu g/m^3$)	Federal Standard ($\mu g/m^3$)
NO_2	1-hour [a]	74.0	188	262.0	470	-
	annual[a]	0.56	44.6	45.2	-	100
SO_2	1-hour	3.2	52.4	55.6	655	-
	3-hour	1.9	41.9	43.8	-	1,300
	24-hour	0.37	39.3	39.7	105	365
	annual	0.029	10.5	10.5	-	80
CO	1-hour	205.8	9,162	9,368	23,000	40,000
	8-hour	28.6	4,237	4,266	10,000	10,000

TABLE 8.1-26
Normal Operation Impacts Analysis—Maximum Modeled Impacts Compared to the Ambient Air Quality Standards
Facility-Wide Emissions

Pollutant	Averaging Time	Maximum Facility Impact (µg/m^3)	Background (µg/m^3)[c]	Total Impact (µg/m^3)	State Standard (µg/m^3)	Federal Standard (µg/m^3)
PM_{10}	24-hour	4.4	164	168.4	50	150
	annual[b]	0.33	58.5	58.8	20	50
$PM_{2.5}$	24-hour	4.4	104.3	108.7	-	65
	annual[b]	0.33	27.5	27.8	12	15

[a] 1-Hour and annual NO_2 predictions are conservatively based on 100 percent conversion to NO_2. In reality, NO to NO_2 conversion is limited by the amount of ambient ozone that is available to complete the conversion.

[b] Background concentrations were the highest concentrations monitored during 2002-2004

Fumigation Impacts Analysis

Inversion breakup fumigation occurs when a plume is emitted into a stable layer of air and that layer is then mixed to the ground in a short period of time through convective heating and microscale turbulence. Under these conditions, an exhaust plume may be drawn to the ground with little diffusion, causing high ground-level pollutant concentrations, although typically for periods less than 1 hour.

The effects of fumigation on the maximum modeled impacts were evaluated using the USEPA SCREEN3 model (Version 96043). For this evaluation, only impacts from the turbine stacks were evaluated. The same worst-case scenarios identified in the operational impacts screening analysis were considered for fumigation. The fumigation concentrations shown in Table 8.1-27 are less than 7 percent of the maximum predicted impacts predicted by ISCST3. Based on this evaluation, it is concluded that fumigation will not result in the worst-case impacts.

The nearest shoreline is approximately 65 km west of the proposed Highgrove Project site. Therefore, it is concluded that an assessment of the effects of shoreline fumigation on the maximum modeled impacts is not applicable to this site.

TABLE 8.1-27
SCREEN3 1-Hour Fumigation Impacts Analysis
Inversion Breakup Fumigation

Pollutant	Scenario	SCREEN3 Fumigation Result (µg/m^3)	Maximum ISCST3 Facility Impact (µg/m^3)	Percent of ISCST3 Concentration (%)
NO_x	30 F 50% Load	5.1	74	6.9
CO	80 F 50% Load	14.1	206	6.8
SO_x	30 F 50% Load	0.22	3.2	6.9

8.1.6.2.4 Results Compared to the SCAQMD New Source Review Requirements

Two SCAQMD rules, Rule 1303 and Rule 2005, require a demonstration that a proposed project will comply with applicable ambient AAQSs and not cause a significant change in

air quality concentrations. This section demonstrates the Highgrove Project's compliance with the ambient air quality impact demonstrations required by these two rules.

Operation Impacts Analysis (Including Startup/Shutdown Turbine Cycles)

Rule 1303 Compliance. To demonstrate compliance with SCAQMD modeling requirements of Rule 1303, Table 8.1-28 presents the maximum ambient air quality impacts for the Highgrove Project compared to the SCAQMD's significance thresholds for PM_{10}. Table 8.1-28 shows the maximum Highgrove Project modeled impacts for PM_{10} from any individual CTG will not exceed the SCAQMD significance thresholds. Therefore, the project's PM_{10} impacts are not considered significant as defined by the SCAQMD.

TABLE 8.1-28
Normal Operation Impacts Analysis for AES—SCAQMD Rule 1303 (Maximum Modeled Impacts)
Individual CTG Analysis

Pollutant	Averaging Time	Maximum CTG Impact (µg/m^3)	SCAQMD Rule 1303 Significance Threshold (µg/m^3)	Significant?
PM_{10}	24-hour	1.70	2.5	No
	annual*	0.11	1.0	No

* Annual Arithmetic Mean

Rule 2005 Compliance. To determine compliance with the SCAQMD's Rule 2005 (NSR for RECLAIM) ambient air quality impacts, the project impacts are compared to the NO_2 AAQS of 470 µg/m^3 on a 1-hour basis and 100 µg/m^3 on an annual basis. As shown in Table 8.1-29, the total NO_2 impacts from any individual CTG do not exceed the SCAQMD's Rule 2005 significance threshold. Therefore, the project's NO_2 impacts are not considered significant as defined by the SCAQMD.

TABLE 8.1-29
Normal Operation Impacts Analysis for AES —SCAQMD Rule 2005 (Maximum Modeled Impacts)
Individual CTG Analysis

Pollutant	Averaging Time	Maximum CTG Impact (µg/m^3)	SCAQMD Rule 2005 Significance Threshold (µg/m^3)	Significant?
NO_2	1-hour	25.8	470	No
	annual	0.19	100	No

8.1.6.2.5 Results Compared to the PSD Requirements

PSD Increment Consumption

The PSD program was established to allow emission increases (increments of consumption) that do not result in significant deterioration of ambient air quality in areas where criteria pollutants have not exceeded the NAAQS.

Because the PTE for the proposed power plant is less than 250 tpy for each of the PSD-regulated pollutants, and the facility is not considered one of the 28 major source categories (40 CFR 52.21(b)(1)(i), the project is not considered a major stationary source in

accordance with SCAQMD Rule 1702 [2] or the PSD regulations. Because the Highgrove Project is considered a minor source that is not subject to PSD review, a comparison of project impacts to PSD program requirements, such as allowable concentration increments and pre-construction monitoring thresholds are not applicable.

8.1.6.3 Health Risk Assessment

Potential health risk impacts associated with potential emissions of toxic air contaminants were evaluated in the Public Health section of the AFC (Section 8.6 and Appendix 8.6B). The risk assessment was prepared using guidelines developed under the SCAQMD's July 2005 *Risk Assessments Procedures for Rules 1401 and 212 Version 7* (SCAQMD, 2005a). For a detailed risk assessment, such as the assessment prepared in this evaluation, these procedures include the *SCAQMD July 2005 Supplemental Guidelines for Preparing Risk Assessments for the Air Toxics "Hot Spots" Information and Assessment Act (AB2588)* (SCAQMD, 2005b). Those guidelines supplement the *Air Toxics Hotspots Program Guidance Manual for Preparation of Health Risk Assessments* (OEHHA, 2003) and the CARB Recommended Interim Risk Management Policy for Inhalation-based Residential Cancer Risk (CARB, 2003). The TACs that were addressed in the assessment are listed in Table 8.6-4, along with their respective published OEHHA health-effect values.

Emissions of TACs that may be associated with the proposed facility (natural-gas-fired turbines) were estimated using emission factors approved by the SCAQMD, with the exception of PAH emissions. The PAH emission factor was based on source test results from two discrete tests conducted at the Delta Energy Center facility. It should be noted that the Delta Energy Center facility does not incorporate an oxidation catalyst system that would be expected to result in some reduction in organic compound emissions. Emissions from the stormwater oil/water separator are not included in this analysis because they are estimated to be negligible.

Concentrations of these substances in ambient air associated with the potential emissions were estimated using the SCAQMD-approved HARP model. HARP includes the USEPA's ISCST3 dispersion model, which estimates both short-term and long-term average ambient concentrations at receptor locations for use in a risk assessment. To estimate ambient concentrations, ISCST3 accounts for site-specific terrain, meteorological conditions and emissions parameters (such as stack exit velocities and temperatures). Health risks potentially associated with the estimated concentrations of chemical substances in ambient air were characterized in terms of excess lifetime cancer risks (for substances listed by OEHHA as cancer causing), or comparison with reference exposure levels for non-cancer health effects (for substances listed by OEHHA with non-cancer causing effects).

The term Maximum Exposed Individual (MEI)[3] is taken from OEHHA risk assessment guidelines (OEHHA, 2003) and refers to a Maximum Exposed Individual Resident (MEIR) or worker (MEIW) that is hypothetically located continuously at the point where the highest ambient concentrations of modeled chemical substances associated with facility emissions

[2] SCAQMD Rule 1702 is listed for completeness. However, the SCAQMD has relinquished authority to conduct PSD review back to USEPA and Rule 1702 will no longer be applicable to new or modified projects until such time as USEPA redelegates PSD authority back to the SCAQMD.

[3] The terms MEI, MEIR, and MEIW refer to a receptor location of maximum ambient exposure and do not incorporate a reference to cancer risk or to non-cancer acute or chronic exposures. In the SCAQMD, Rules 1401 and 1402 refer to Maximum Individual Cancer Risk which, by OEHHA terminology, would be termed the MEI for Cancer effects.

are predicted. Cancer risk and non-cancer health hazard were estimated for both the MEIR and MEIW based on the modeled ambient concentrations of substances of potential concern.

For the purposes of this evaluation, it was assumed that each modeled receptor location could potentially be either a residential location, or a worker location. This highly conservative assumption neglects the fact that certain locations are suitable for residents only or for workers only, and some physical locations are rarely ever occupied (i.e., steep slopes or roadways.)

Where the zone of impact, including the region surrounding the modeled facility, shows a potential maximum added lifetime cancer risk (all pathways, 70-year exposure) of one in one million or greater, OEHHA risk assessment guidelines (OEHHA, 2003) require that cancer risk and non-cancer health hazard values at each sensitive receptor within the zone of impact be estimated. For non-carcinogens, the zone of impact is defined as the area surrounding the modeled facility that has a potential hazard index of greater than or equal to one half.

The evaluation of potential non-cancer health effects from exposure to short-term and long-term concentrations in air was performed by comparing modeled concentrations for the MEI with reference exposure levels (RELs). The REL is a concentration in ambient air at or below which no adverse health effects are anticipated. Potential non-cancer effects were evaluated by calculating a ratio of the modeled concentration in air and the REL. This ratio is the hazard index. Inhalation cancer potency, oral slope factor values, and RELs used to characterize health risks associated with modeled impacts were obtained from the *Consolidated Table of OEHHA/CARB Approved Risk Assessment Health Values* (OEHHA/CARB, 2005).

This HRA included potential health impacts from inhalation, skin contact, and oral pathways, as required by OEHHA guidelines. Additionally, this assessment included highly-conservative assumptions such as a 70-year exposure duration for residential receptors and a 40-year exposure duration for commercial/industrial receptors. Additional conservative assumptions included extremely high exposure rates such as the 95th percentile breathing rate of 393 liters of air/per kilogram per day (kg-day) were included.

Modeling showed that the MEIR excess lifetime cancer risk was 0.3 in one million, and the MEIW excess lifetime cancer risk was 0.06 in one million. Excess lifetime cancer risks less than 10 in one million are unlikely to represent public health impacts that require additional controls of facility emissions.

For residential receptors, formaldehyde and PAH emissions have the highest potential to contribute to the cancer impact; however, the contribution is less than 0.2 in one million for formaldehyde and less than 0.1 in one million for PAHs. The dominant exposure pathway for formaldehyde is inhalation and the dominant exposure pathway for PAHs is ingestion. Other substances each contribute less than 0.01 in one million at the MEIR.

The HI for acute non-carcinogenic substances was 0.1. The HIs for chronic non-carcinogenic substances were 0.02 for both the MEIR and MEIW.

Because the maximum cancer risk estimated in this evaluation was far less than one for both the MEIR and MEIW, and because the hazard indices for chronic and acute exposure to non-carcinogenic substances was also far below one-half, there is no zone of impact and

OEHHA risk assessment guidelines (OEHHA, 2003) do not require an analysis of the potential risk levels at sensitive receptor locations. For the sake of completeness however, this evaluation includes the modeled potential maximum health impacts at the proposed school under consideration across Taylor Street approximately 1,100 feet to the south of the project site.

Modeling showed that the MEIR excess lifetime (70 year) cancer risk within the proposed school property boundary was 0.02 in one million. The HI for chronic non-carcinogenic substances was 0.0009 calculated over a 70-year exposure period. The HI for acute non-carcinogenic substances was 0.002.

HARP results that detail the health risks associated with emissions to the air are presented in Appendix 8.6C.

8.1.6.4 Class I Area Visibility Impacts Analysis

SCAQMD Regulation XIII requires any major facility to conduct a modeling analysis for plume visibility if the net emission increase from the new or modified source exceeds 15 tpy of PM_{10} or 40 tpy of NO_x; and the location of the source, relative to the closest boundary of a specified Federal Class I area, is within the distance specified in Table 8.1-30.

The distances to the Class I areas from the Highgrove Project were determined using the UTM coordinates for the project site and the nearest boundary of the Class I areas. Based on the assessment, the distances from the Highgrove Project site to the Class I areas are greater than the SCAQMD Regulation XIII thresholds (Table 8.1-30).

Therefore, because the project does not result in an increase of 15 tpy of PM_{10} or 40 tpy of NO_x and the Class I areas are not within the SCAQMD Regulation XIII thresholds, a visibility analysis was not conducted.

TABLE 8.1-30
Distance from Proposed AES Highgrove Project to Federal Class I Areas

Class I Area	SCAQMD Regulation XIII Distance (km)	Distance from the Highgrove Project to Class I Area	Visibility Analysis Required (Yes/No)
Agua Tibia	28	68.8	No
Cucamonga	28	29.3	No
Joshua Tree	29	81.5	No
San Gabriel	29	53.3	No
San Gorgonio	32	35.6	No
San Jacinto	28	55.3	No

8.1.7 Compliance with Laws, Ordinances, Regulations, and Standards

8.1.7.1 Compliance with Federal Requirements

The SCAQMD has been delegated authority by the USEPA to implement and enforce most federal requirements that are applicable to the project, including the New Source Performance Standards. However, the SCAQMD relinquished its delegated authority for PSD review. Compliance with the SCAQMD regulations ensures compliance and consistency with the corresponding federal requirements. As discussed in AFC Subsection 8.1.5, Laws, Ordinances, Regulations and Standards, the PSD program requirements apply on a pollutant-specific basis to the following:

- A new major facility that will emit 100 tpy or more, if it is one of the 28 PSD source categories in the federal Clean Air Act, or a new facility that will emit 250 tpy or more; or
- A major modification to an existing major facility that will result in net emissions increases in excess of significant emissions levels.

The proposed project is a new facility that is not one of the listed 28 PSD sources, therefore, the 250 TPY threshold applies. The Highgrove Project is not expected to emit pollutants exceeding 250 TPY and is not subject to PSD review.

The project will be required to comply with the Federal Acid Rain requirements (Title IV). Since the SCAQMD has received delegation for implementing Title IV through its Title V permit program, AES will secure a SCAQMD Title V permit that incorporates the necessary requirements for compliance with the Title IV Acid Rain provisions.

New Source Performance Standards: 40 CFR 60 Subpart GG of this rule require monitoring of fuel; impose limits on the emissions of NO_x and SO_2; and require source testing of stack emissions, process monitoring, and data collection and recordkeeping. All of the BACT limits will be more stringent than the requirements of the NSPS emission limits. Monitoring and recordkeeping requirements for BACT (Rules 1303, 2005), Title V (Regulation XXX) and the RECLAIM program (Regulation XX) will be more stringent than the requirements in this rule; therefore, the facility will comply with the NSPS regulations.

As indicated above, the USEPA has proposed a revised new source performance standard (Subpart KKKK) that will replace Subpart GG. The Highgrove Project turbines will utilize low-NO_x combustor technology along with an SCR, and will utilize pipeline quality natural gas, so they will comply with both the NO_x and SO_2 limits. The NO_x emissions of the turbine will be 0.109 lb/MW-hr, since NO_x emissions at 100 percent load will be 11.2 lb/hr and the output will be 102.6 MW. The certified NO_x CEMS will ensure compliance with the standard. Records of natural gas usage will ensure compliance with the SO_2 limit.

Once this NSPS is promulgated, the requirements of Subpart GG will not be applicable, and the Highgrove Project turbines will comply with the requirements of Subpart KKKK.

Acid Rain, 40 CFR 75, SCAQMD Regulation XXXI: Applications for Title IV will be made concurrent with the Title V and the NSR applications submitted to the SCAQMD. Monitoring and CEMS requirements imposed to ensure compliance with BACT, Title V and RECLAIM requirements will incorporate the CEMS and monitoring requirements of Title IV. Once the facility begins operation, it will acquire Title IV SO_2 Allowances, as required by this program.

8.1.7.2 Compliance with State Requirements

State law sets up local air pollution control districts and air quality management districts with the principal responsibility for regulating emissions from stationary sources. As discussed above, the Highgrove Project is under the local jurisdiction of the District, and compliance with SCAQMD regulations will ensure compliance with state air quality requirements.

8.1.7.3 Compliance with Local Requirements: South Coast Air Quality Management District

The SCAQMD has been delegated responsibility for implementing local, state, and federal air quality regulations in the portions of four counties[4] within the SCAQMD. The project is subject to SCAQMD regulations that apply to new sources of emissions, to the prohibitory regulations that specify emission standards for individual equipment categories, and to the requirements for evaluation of impacts from toxic air pollutants. The following subsections include the evaluation of facility compliance with the applicable SCAQMD requirements.

Under the CEC's AFC program, AES is required to secure a preconstruction DOC from the SCAQMD. Because of the Title V and NSR permitting requirements, the SCAQMD will be requested to provide the CEC with a DOC in addition to processing its own permit applications related to the Highgrove Project. The preconstruction DOC review includes demonstrating that the project will use BACT and will provide any necessary emission offsets.

Applicable BACT levels are shown in Table 8.1-31, along with anticipated potential facility emissions. SCAQMD Rule 1303 requires the project to apply BACT for emission increases of NO_x, VOC, SO_x, CO, and PM_{10} (criteria pollutants), as well as ammonia. Through long-standing administrative policy, the increase threshold per permit unit for applicability of the BACT requirement is 1 lb/day. As shown in the table, BACT is required for NO_x, VOC, SO_2, CO, PM_{10}, and ammonia. The calculation of facility emissions is discussed in AFC Subsection 8.1.6.1.1.

TABLE 8.1-31
Best Available Control Technology Requirements

Pollutant	Applicability Level	Permit Units Exceeding this Level	BACT Required?
Criteria Pollutants: SCAQMD Rules 1303 and 2005			
VOC	1 lb/day/Permit Unit	CTGs	Yes
NO_x	1 lb/day/Permit Unit	CTGs	Yes
SO_2	1 lb/day/Permit Unit	CTGs	Yes
PM_{10}	1 lb/day/Permit Unit	CTGs	Yes
CO	1 lb/day/ Permit Unit	CTGs	Yes
Ammonia	1 lb/day/ Permit Unit	CTGs	Yes

BACT for the applicable pollutants was determined by reviewing the SCAQMD BACT Guidelines Manual, the Compilation of California BACT Determinations, CAPCOA

[4] Including the portion of Kern County that is within SCAQMD boundaries.

(2nd Ed., November 1993), and USEPA's RACT/BACT/LAER Clearinghouse (RBLC). A summary of the review is provided in Appendix 8.1D. For the gas turbines, the SCAQMD considers BACT to be the most stringent level of demonstrated emission control that is feasible. The project will use the BACT measures discussed below.

As a BACT measure, the Applicant will limit the fuels burned at the project to natural gas, a clean burning fuel. Liquid fuels will not be used at the proposed Highgrove Project. Burning of liquid fuels in the gas turbine combustors would result in greater criteria pollutant emissions than if the units burned only gaseous fuels. This measure acts to minimize the formation of all criteria air pollutants.

BACT for NO_x emissions from the gas turbine will be the use of low NO_x emitting combustion equipment and post-combustion controls. The Applicant has selected a gas turbine equipped with water injected NO_x combustors. The gas turbine will be designed to generate less than 25 parts per million by volume-dry (ppmvd) NO_x, corrected to 15 percent O2, at the outlet of the engine,. In addition, the turbines will be equipped with a post-combustion SCR system to further reduce NO_x emissions to 3.5 ppmvd NO_x, corrected to 15 percent O_2 on a one-hour average basis (excluding startups and shutdowns). The current SCAQMD BACT/LAER requirement for natural-gas-fired-simple cycle gas turbines is 3.5 ppmvd, corrected to 15 percent O_2 over a one hour averaging period. Therefore, the Highgrove Project will meet the BACT requirements for NO_x. The SCAQMD BACT Guideline determination for NO_x from gas turbines is shown in Appendix 8.1D.

BACT for CO emissions will be achieved by use of gas turbines equipped with water-injected combustors and an oxidation catalyst. Water-injected combustors emit low levels of combustion CO while maintaining low NO_x formation. In addition, the project will use an oxidation catalyst system to further reduce CO emissions to 6 ppmvd, corrected to 15 percent O_2. The Applicant has specified a CO limit of 6 ppmvd, corrected to 15 percent O_2, for base load and part load operation above 50 percent. The SCAQMD adopted a BACT requirement for natural-gas-fired simple-cycle gas turbines of 6 ppmvd over a one-hour averaging period. For all operating levels at and above 50 percent load, the CO emission rate from the gas turbines and duct burners at the outlet of the exhaust stacks will not exceed 6 ppmvd, corrected to 15 percent O_2, except under startup and shutdown conditions. A review of recent BACT determinations for CO from gas turbines is provided in Appendix 8.1D.

BACT for VOC emissions will be achieved by use of the gas turbine water-injected combustors. BACT for VOC emissions from combustion devices has historically been the use of best combustion practices. With the use of the water injected combustors, the VOC emissions leaving the stacks will not exceed 2.0 ppmvd, corrected to 15 percent O_2 for turbine operation above 50 percent. This level of emissions is consistent with the SCAQMD's BACT guidelines for large gas turbines.

For the turbines, BACT for PM_{10} is best combustion practices and the use of gaseous fuels. As mentioned, use of clean burning natural gas fuel will result in minimal particulate emissions.

SO_2 emissions will be kept at a minimum by firing clean burning natural gas fuel.

The SCAQMD imposes an ammonia slip limit of 5 ppmvd as a BACT limit for that pollutant. While offsets are not required for ammonia emissions, the SCAQMD's NSR Rule (Regulation XIII) that regulates emissions of ammonia and BACT is required. The project will be designed and operated to meet the stringent 5 ppmvd ammonia slip requirement. Also, as required by the SCAQMD for aqueous ammonia storage tanks used in SCR service, the storage tank will be equipped with a pressure relief valve and the storage tank will be vented back to the tank on the delivery truck when the storage tank is being filled.

SCAQMD Rule 219 exempts the cooling towers from SCAQMD permitting requirements. Nevertheless, the cooling towers will be designed with a drift eliminator efficiency of 0.0005 percent, which complies with all BACT requirements. This control efficiency has been proposed by similar projects that have recently been approved.

The oil/water separator, while required to obtain an SCAQMD Permit to Construct, will have daily emissions of less than one pound per day. In accord with long-standing SCAQMD administrative policy, increases of criteria pollutant emissions from a new or modified permit unit of less than one pound per day are exempted from BACT requirements.

In addition to the BACT requirements, SCAQMD Rule 1303 requires the Applicant to provide full emission offsets when emissions exceed specified levels on a pollutant-specific basis. SCAQMD Rule 2005 requires the Applicant to provide RTCs for the project's NO_x emissions. As shown in Table 8.1-32, the project will be required to provide emission offsets for CO, SO_2, PM_{10}, and VOC emissions and RTCs for NO_x emissions.

TABLE 8.1-32
SCAQMD Offset Requirements and Project Emissions[a] (ref: Rule 1304(d)(1)(B), Rule 1303(b)(2), Rule 1304, Table A, Regulation 2005)

Pollutant	Offset Threshold	Offsets Required
VOC	4 ton/yr	138.6 lb/day ERCs
CO	29 ton/yr	814.9 lb/day[c]
NO_x	4 ton/yr[b]	212,144 lb NO_x RTCs (first year [d]) 183,518 lb NO_x RTCs (normal operation)
PM_{10}	4 ton/yr	333.3 lb/day
SO_2	4 ton/yr	33.2 lb/day

[a] Because the cooling towers will be exempted from SCAQMD permitting requirements by Rule 219(e)(3) and Rule 219(s)(2), emission offsets are not required as indicated in Rule 1304(d)(3). In accordance with Rule 1303 and Rule 1309.1, ERCs are required at an offset ratio of 1.2:1.

[b] Proposed Highgrove Project will enter the SCAQMD NO_x RECLAIM program (Regulation XX). NO_x emissions will be offset through purchase of RTCs at a ratio of 1:1 to actual emissions per year.

[c] CO Offsets may not be required if SCAQMD is redesignated attainment for the 8-hr CO ambient air quality standard. A redesignation request is pending.

[d] first year = 12 months of emissions plus commissioning emissions

As a Rule 219 permit exempt permit unit, the cooling towers are exempted from SCAQMD offset requirements by Rule 1304(d)(3).

Rule 1303(b)(2) requires ERCs to be provided at an offset ratio of 1.2 to 1. Based on the proposed 1309.1, any Priority Reserve Credits for CO, SO_2 and PM_{10} would also be provided

at a ratio of 1.2 to 1 when emission reductions are obtained from the SCAQMD's Priority Reserve pool of credits. Interpollutant offsets can be allowed, at the discretion of the Air Pollution Control Officer (APCO), primarily in cases where there is a precursor relationship.

To ensure that there was an adequate supply of emission offsets for essential public service projects (landfills, waste treatment plants, schools, hospitals, etc.) the SCAQMD created a Priority Reserve pool of credits with the June 1990 amendments to its NSR Regulation, Regulation XIII. As specified in Rule 1309, the SCAQMD maintains and funds this pool of credits that can be accessed at no cost by essential public services at an offset ratio of 1:1. Primarily, because of the severe shortage in PM_{10} ERCs to offset the large emissions increases from new power plants, the SCAQMD provided power projects access to purchase necessary offset credits from this pool of Priority Reserves. Although initial access to the Priority Reserve expired, the SCAQMD staff has proposed a modification to Rule 1309.1that would again provide access to the PM_{10}, CO and SO_2 credits in the Priority Reserve. The cost to purchase Priority Reserve credits has not been finalized. The SCAQMD Governing Board is scheduled to hear proposed revisions to Rule 1309.1 in July 2006.

Rule 1303 also requires project denial if air quality modeling results indicate emissions will cause a violation or make significantly worse an existing violation of the applicable ambient air quality standards. Table 8.1-26 shows that for NO_2, CO, and SO_2, the project's impacts would not cause or contribute to the violation of either the state or federal ambient air quality standards. For non-attainment pollutants, such as PM_{10}, the procedure for evaluating the potential for significant change in air quality concentrations is presented in Rule 1303, Appendix A, Table A-2. Based on this approach, the modeling analyses for PM10 indicates the PM10 concentrations (Table 8.1-28) would not exceed the significant change threshold listed in Rule 1303 Table A-2 and would therefore not interfere with the attainment or maintenance of the applicable air quality standards.

Because the Highgrove Project will be located in Trading Zone 2, better known as the Inland Zone, Rule 1303 allows the purchase of ERCs for this project from either Inland or Coastal zones. The SCAQMD ERC listing in Appendix 8.1F provides the required information for offset identification and amount issued with each certificate. This list contains the current SCAQMD ERCs that may be purchased and used as offset mitigations for the project. The information includes:

- Ownership of emission offset credits; and
- Emission reduction credits granted by the SCAQMD that have been determined to meet the SCAQMD's requirements for bankable offsets. Note that unlike some other California air districts, the SCAQMD goes through a stringent surplus evaluation to discount emission reductions before ERCs are granted. No further reduction, other than the offset ratio, is applied when ERCs are purchased and used as mitigation for project emissions.

A confidential filing will be submitted with the AFC identifying the offset strategy for the project.

While a single listing of all NO_x RTCs by year is not presently available from the SCAQMD, a figure obtained from a SCAQMD February 2, 2005 presentation, which lists the NO_x RTCs issued by year on a ton per day basis, is included in Appendix 8.1F. This figure incorporates

the NO_x RTC adjustment that will occur as a result of changes in the RECLAIM program adopted by the SCAQMD in January 2005.

The Highgrove Project is required to participate in the NO_x RECLAIM program and will purchase NO_x RTCs from the market, through the established broker network that has evolved to serve this market. The SCAQMD has requested redesignation for the 8-hour CO standard from nonattainment to attainment. When the SCAQMD is redesignated as attainment of the 8-hour CO standard, CO ERCs may not be required for the Highgrove Project. If required to obtain CO offsets, the Applicant will either purchase CO ERCs directly from certificate holders or obtain CO ERCs from the Priority Reserve to satisfy CO emission offset requirements. The Applicant will either participate in the SO_x RECLAIM program, purchase SO_x ERCs directly from certificate holders, or obtain SO_x ERCs from the Priority Reserve to satisfy SO_x emission offset requirements. The Applicant will either purchase PM_{10} ERCs directly from certificate holders or obtain PM_{10} ERCs from the Priority Reserve to satisfy PM_{10} emission offset requirements.

Acid Rain Allowances: The Phase II acid rain requirements of Regulation XXXI are also applicable to the facility. As a Phase II Acid Rain facility, the Highgrove Project will be required to provide sufficient allowances for every ton of SO_2 emitted during a calendar year. The Applicant will obtain any necessary allowances on the current open trade market upon operation of the plant.

Rule 1401: As demonstrated in Subsection 8.6 of this AFC, the permit units required to be analyzed for compliance with the requirements of this rule will not cause the Acute or Chronic Health Index to exceed 1.0 for any organ group at any offsite receptor location. While controls and operations that would qualify as T-BACT will be employed in the design and operation of this project, excess cancer risk will not exceed the T-BACT applicability threshold of one in one million. Cancer burden, as required, does not exceed 0.5. Rule 1401 exempts the emergency fire pump engine from the risk assessment requirements, as the engine would be covered under the Rule 1304(a)(4) exemptions from modeling and offsets.

The general prohibitory and source-specific rules of the SCAQMD applicable to the project and the determination of compliance follow.

Rule 218: Each gas turbine will be equipped with a CEMS. These units will comply with all applicable requirements of Rule 218, Rule 2012 (NO_x RECLAIM) and Title IV (Acid Rain—40CFR75).

Rule 219: The cooling tower will be exempted from permitting through Rule 219(e)(3) and Rule 219(s)(2).

Rule 401—Visible Emissions: Because natural gas will be used as a fuel, the Highgrove Project turbines will not generate visible emissions as dark as or darker than Ringlemann No. 1 for more than 3 minutes in any hour.

Rule 402—Nuisance: Under normal operation, the facility will not emit significant quantities of odorous or visible substances; therefore, the facility will comply with this regulation.

Rule 403—Fugitive Dust: Establishes requirements to reduce the amount of particulate matter entrained in the ambient air as a result of man-made fugitive dust sources. The site

will implement best available control measures to minimize fugitive dust emissions so that they do not result in visible dust emissions beyond the property line.

Rule 404—Particulate Matter—Concentration: This rule does not apply to emissions resulting from the combustion of liquid or gaseous fuels in steam generators or gas turbines.

Rule 405—Particulate Matter—Weight: The maximum natural gas expected to be used as a fuel is 38,594 pounds per hour per CTG and based on Table 405(a), the maximum allowable particulate matter emission rate is 16.1 pounds per hour. The CTGs are expected to emit 6 pounds per hour and are expected to comply with the applicable limit in this rule.

Rule 407—Liquid and Gaseous Air Contaminants: Emissions from the project will be 6 ppmv CO, well under the 500 ppmv CO limit in Rule 407. In addition, the site is exempt from the SO_x provisions of this rule because natural gas is used as a fuel.

Rule 409—Combustion Contaminants: The facility will comply with the standards in Rule 409 through the use of natural gas as a fuel.

Rule 431.1—Sulfur Content of Gaseous Fuels: The site will use natural gas that complies with Rule 431.1.

Rule 475—Electric Power Generating Equipment: Establishes limits for combustion contaminant (i.e., PM) emissions from subject equipment. Rule 475 prohibits PM emissions that exceed both 11 lb/hr (per emission unit) and 0.01 gr/dscf at 3 percent O_2. During operation of the turbines, PM_{10} emissions will not exceed the 11 lb/hr or 0.01 gr/dscf at 3 percent O_2 limit.

Rule 53A—Specific Contaminants: The equipment used onsite will burn natural gas and, therefore, will comply with the SO_2 and PM limits from Rule 53A.

Rule 1404—Hexavalent Chromium Emissions from Cooling Towers: No hexavalent chromium will be used in cooling towers.

8.1.8 Cumulative Air Quality Impacts Analysis

An analysis of potential cumulative air quality impacts that may result from the project and other reasonably foreseeable projects is generally required only when project impacts are significant.

The Applicant received a listing of 53 potential cumulative impact sources from the SCAQMD that have submitted permit applications to the SCAQMD or those that have received permits but are not yet in operation. Appendix 8.1E contains the list of the potential cumulative impact analysis sources and a description of the permitting actions. The Applicant and the CEC staff will review the list and determine the appropriate scope of the cumulative modeling analysis. Furthermore, a review of the SCAQMD's CEQA projects did not identify any projects within 6 miles of the project site. A review of the City of Grand Terrace and the County of San Bernardino planning departments did not identify any Notices of Preparation for projects that would be expected to emit significant operational emissions (refineries, power plants, engine generators, etc.).

The Applicant expects to provide the cumulative impact analysis within 60 days of the CEC's finalization of the list of cumulative impact sources to be included in the cumulative air quality impact analysis.

8.1.9 Mitigation

Mitigation will be provided for all emission increases from the project in the form of offsets (either ERCs or RTCs) and the installation of BACT, as required under SCAQMD regulations (Table 8.1-32). Through the use of BACT/LAER to control air pollutant emissions, the acquisition of ERCs/RTCs as described in confidential submittal under separate cover accompanying the AFC, combined with the results of the air quality impact analysis, the project will not result in significant air quality impacts. Therefore no additional operational mitigation is necessary beyond the offsets that will be provided in accordance with SCAQMD requirements.

The Highgrove Project proposes to implement the standard construction mitigation measures developed by the CEC to mitigate construction air quality impacts expected during construction.

8.1.10 References

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USEPA. 2005. Guideline on Air Quality Models, 40 CFR, Part 51, Appendix W.

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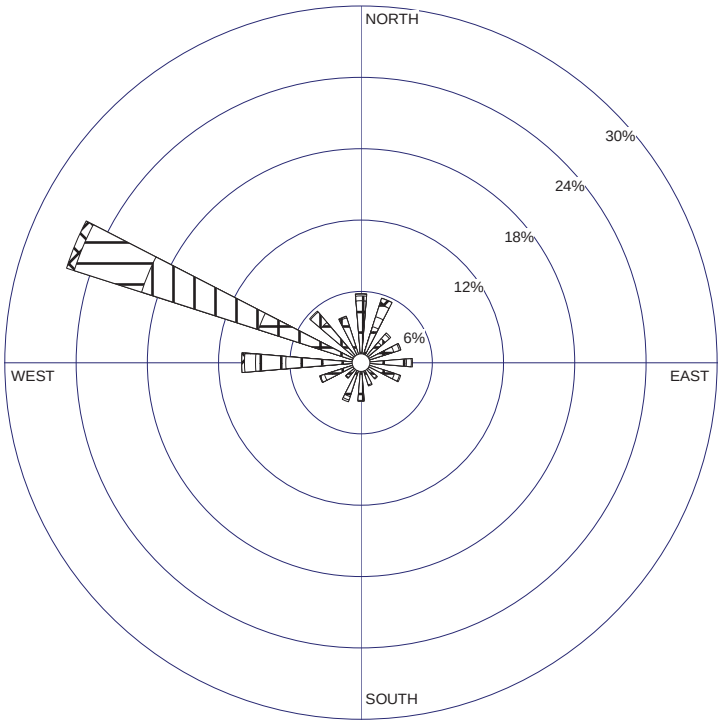
WIND ROSE PLOT:	DISPLAY:
Riverside **Annual Wind Rose**	**Wind Speed** **Direction (blowing from)**



WIND SPEED
(m/s)

- >= 11.1
- 8.8 - 11.1
- 5.7 - 8.8
- 3.6 - 5.7
- 2.1 - 3.6
- 0.5 - 2.1

Calms: 12.12%

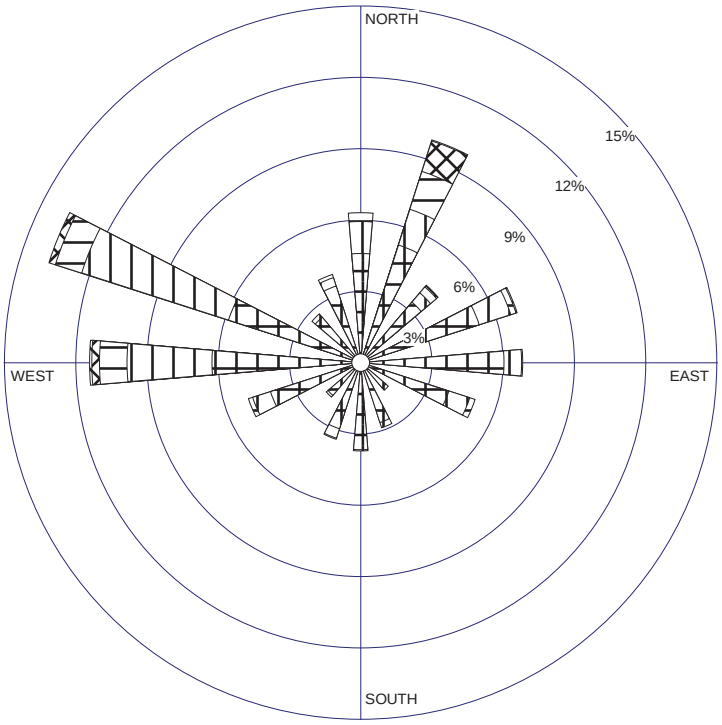
COMMENTS:	DATA PERIOD:	COMPANY NAME:	
	1981 **Jan 1 - Dec 31** **00:00 - 23:00**	MODELER:	
	CALM WINDS: **12.12%**	TOTAL COUNT: **8760 hrs.**	
	AVG. WIND SPEED: **1.73 m/s**	DATE: **03/23/2006**	PROJECT NO.: **AES**

WRPLOT View - Lakes Environmental Software

FIGURE 8.1-1a
ANNUAL WINDROSE
AES HIGHGROVE
GRAND TERRACE, CALIFORNIA

CH2MHILL

WIND ROSE PLOT:	DISPLAY:
Riverside **1st Quarter Wind Rose**	**Wind Speed** **Direction (blowing from)**



WIND SPEED
(m/s)

- >= 11.1
- 8.8 - 11.1
- 5.7 - 8.8
- 3.6 - 5.7
- 2.1 - 3.6
- 0.5 - 2.1

Calms: 10.83%

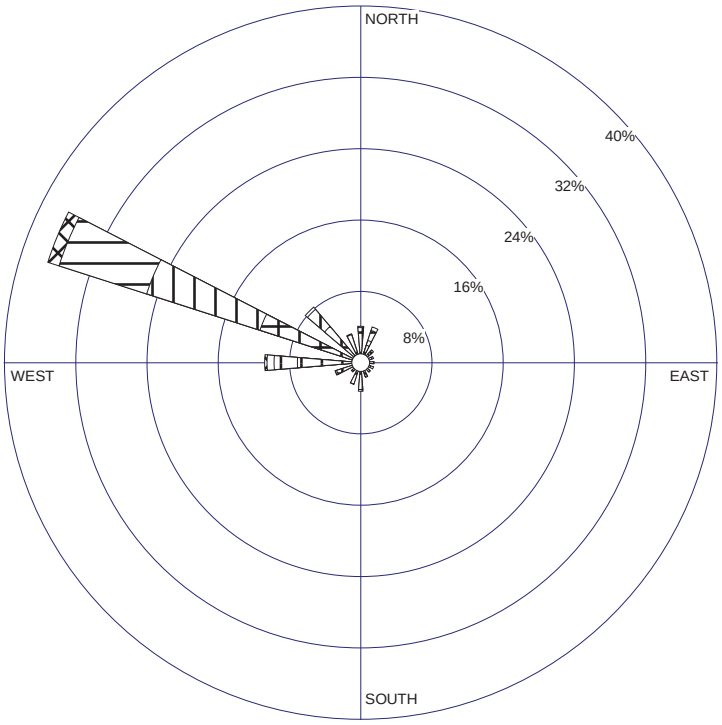
COMMENTS:	DATA PERIOD:	COMPANY NAME:	
	1981 **Jan 1 - Mar 31** **00:00 - 23:00**	MODELER:	
	CALM WINDS: **10.83%**	TOTAL COUNT: **2160 hrs.**	
	AVG. WIND SPEED: **1.65 m/s**	DATE: **03/23/2006**	PROJECT NO.: **AES**

WRPLOT View - Lakes Environmental Software

FIGURE 8.1-1b
FIRST QUARTER WINDROSE
AES HIGHGROVE
GRAND TERRACE, CALIFORNIA

CH2MHILL

WIND ROSE PLOT:	DISPLAY:
Riverside **2nd Quarter Wind Rose**	**Wind Speed** **Direction (blowing from)**



WIND SPEED
(m/s)

- >= 11.1
- 8.8 - 11.1
- 5.7 - 8.8
- 3.6 - 5.7
- 2.1 - 3.6
- 0.5 - 2.1

Calms: 12.87%

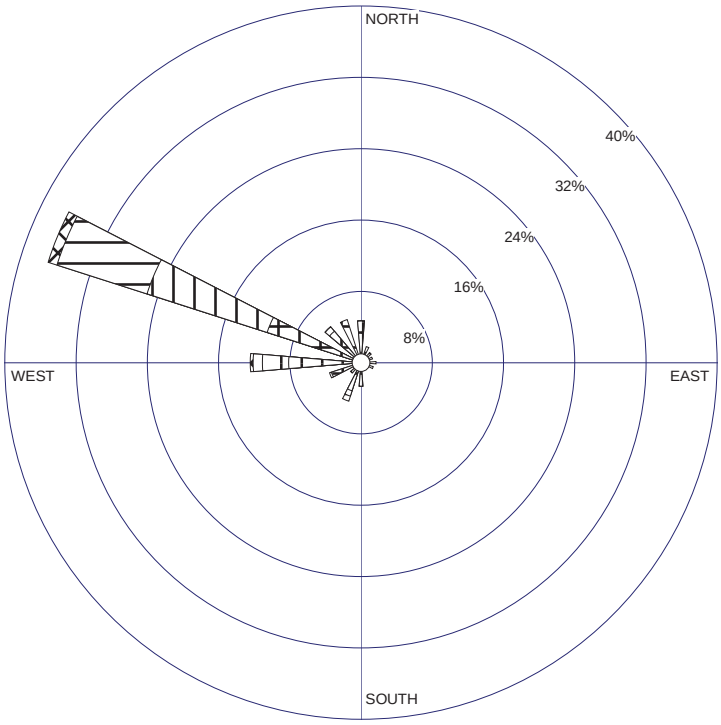
COMMENTS:	DATA PERIOD:	COMPANY NAME:	
	1981 **Apr 1 - Jun 30** **00:00 - 23:00**	MODELER:	
	CALM WINDS: **12.87%**	TOTAL COUNT: **2184 hrs.**	
	AVG. WIND SPEED: **1.93 m/s**	DATE: **03/23/2006**	PROJECT NO.: **AES**

WRPLOT View - Lakes Environmental Software

FIGURE 8.1-1c
SECOND QUARTER WINDROSE
AES HIGHGROVE
GRAND TERRACE, CALIFORNIA

CH2MHILL

WIND ROSE PLOT:	DISPLAY:
Riverside **3rd Quarter Wind Rose**	**Wind Speed** **Direction (blowing from)**



WIND SPEED
(m/s)

- >= 11.1
- 8.8 - 11.1
- 5.7 - 8.8
- 3.6 - 5.7
- 2.1 - 3.6
- 0.5 - 2.1

Calms: 13.86%

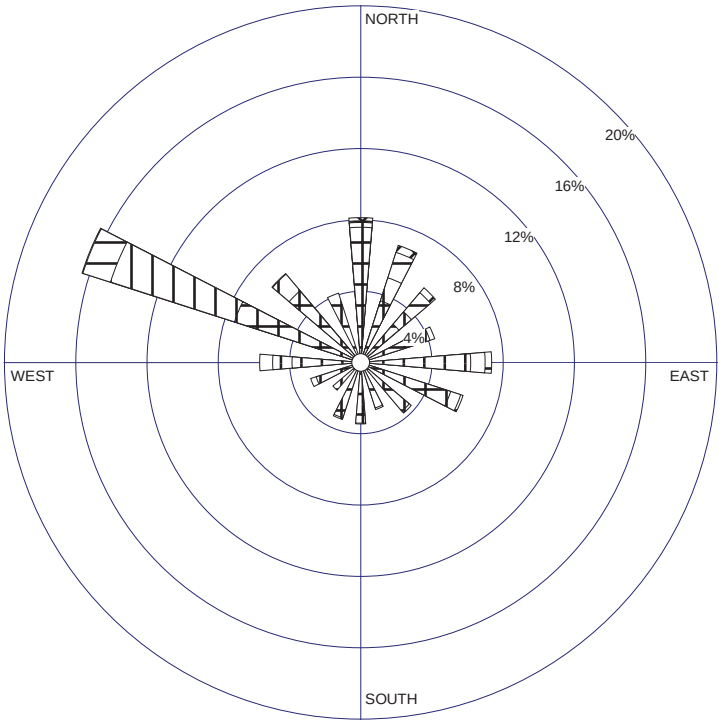
COMMENTS:	DATA PERIOD:	COMPANY NAME:	
	1981 **Jul 1 - Sep 30** **00:00 - 23:00**	MODELER:	
	CALM WINDS: **13.86%**	TOTAL COUNT: **2208 hrs.**	
	AVG. WIND SPEED: **1.82 m/s**	DATE: **03/23/2006**	PROJECT NO.: **AES**

WRPLOT View - Lakes Environmental Software

FIGURE 8.1-1d
THIRD QUARTER WINDROSE
AES HIGHGROVE
GRAND TERRACE, CALIFORNIA

CH2MHILL

WIND ROSE PLOT:	DISPLAY:
Riverside **4th Quarter Wind Rose**	**Wind Speed** **Direction (blowing from)**



WIND SPEED
(m/s)

- >= 11.1
- 8.8 - 11.1
- 5.7 - 8.8
- 3.6 - 5.7
- 2.1 - 3.6
- 0.5 - 2.1

Calms: 10.91%

COMMENTS:	DATA PERIOD:	COMPANY NAME:	
	1981 **Oct 1 - Dec 31** **00:00 - 23:00**	MODELER:	
	CALM WINDS: **10.91%**	TOTAL COUNT: **2208 hrs.**	
	AVG. WIND SPEED: **1.51 m/s**	DATE: **03/23/2006**	PROJECT NO.: **AES**

WRPLOT View - Lakes Environmental Software

FIGURE 8.1-1e
FOURTH QUARTER WINDROSE
AES HIGHGROVE
GRAND TERRACE, CALIFORNIA

CH2MHILL

PROJECT SITE

LEGEND

- Project Site
- 6-Mile Buffer of Project Site

Elevations in feet above sea level

- 0 - 1,000
- 1,001 - 2,000
- 2,001 - 3,000
- 3,000+

0 1.5 Miles

SCALE 1:95,040

FIGURE 8.1-2
ELEVATIONS WITHIN 6 MILES OF PROJECT SITE
AES HIGHGROVE PROJECT
CALIFORNIA

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SAC \\GLACIER\SACGIS\AES_HIGHGROVE\MXDS\ELEVATIONS_SIX_MILES.MXD 02/08/2006 10:14:45

8.2 Biological Resources

8.2.1 Introduction

This subsection describes the laws, ordinances, regulations, and standards (LORS) that apply to biological resource protection, the environmental setting and conditions of the affected site, the methods that were used to evaluate the potential presence of special-status species, and the potential adverse impacts on biological resources that could occur as a result of project construction and operation. It also presents protection and mitigation measures that would avoid, minimize, or compensate for adverse impacts.

8.2.2 Applicable Laws, Ordinances, Regulations, and Standards

The following subsections and Table 8.2-1 describe the primary LORS that apply to potential impacts on biological resources in the project area and list the agencies responsible for enforcing the regulations.

8.2.2.1 Federal

8.2.2.1.1 Federal Endangered Species Act (FESA, 16 U.S. Code [USC] 1531 et seq.)

Applicants for projects that could result in adverse impacts on any federally listed species are required to consult with and mitigate potential impacts in consultation with the U.S. Fish and Wildlife Service (USFWS). Adverse impacts are defined as "take," which is prohibited except through authorization of a Section 7 or Section 10 consultation and Incidental Take Authorization. "Take" under federal definition includes "such act as may include significant habitat modification or degradation" (50 Code of Federal Regulations [CFR] §17.3). Species that are candidates for listing are not protected by FESA; however, USFWS advises that a candidate species (as well as species of concern) could be elevated to listed status at any time, and therefore, applicants should regard these species with special consideration.

8.2.2.1.2 Migratory Bird Treaty Act (16 USC 703 to 711)

This Act protects all migratory birds, including nests and eggs.

8.2.2.1.3 Bald and Golden Eagle Protection Act (16 USC 668)

This Act specifically protects bald and golden eagles from harm or trade in parts of these species.

8.2.2.1.4 Clean Water Act (33 USC 1251 et seq.)

The objective of this Act is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters [Section 10(a)]. Section 404 of the Clean Water Act (CWA) establishes a program to regulate and permit the discharge of dredged or fill material into waters of the United States, including wetlands.

Section 401 of the CWA requires that federal agencies issuing licenses or permits for construction or other activities get a written certification that the activity will not cause or contribute to a violation of the state or tribe's water quality standards. After receiving the certification, the federal agency issuing the permit must include conditions in the permit to prevent the project from degrading water quality of a downstream state or tribe.

TABLE 8.2-1
Laws, Ordinances, Regulations, and Standards Applicable to Biological Resources.

LORS	Purpose	Regulating Agency	Permit or Approval	Applicability (AFC Section Explaining Conformance)
Federal				
Endangered Species Act of 1973 and implementing regulations, Title 16 USC §1531 et seq. (16 USC 1531 et seq.), Title 50 CFR §17.1 et seq. (50 CFR 17.1 et seq.)	Designates and protects federally threatened and endangered plants and animals and their critical habitat.	USFWS	Issues, Biological Opinion, or Authorization with Conditions after review of project impacts	Applicant has sited facility to avoid habitat for endangered species. Critical habitat has not been designated in the project area. Potential habitat for special-status species does not exist on the project site. Implementation of protection measures will reduce impacts to less than significant (Subsections 8.2.3.2, 8.2.4. and 8.2.5).
Section 404 of Clean Water Act of 1977	Requires permit to fill jurisdictional wetlands.	U.S. Army Corps of Engineers (USACE)	Section 404 Permit	Applicant has sited the facility to avoid wetlands
Section 401 of Clean Water Act of 1977	Requires the Applicant to conduct water quality impact analysis for the project when using 404 permits and for discharges to waterways.	Regional Water Quality Control Board (RWQCB)	Water Quality Certification	Applicant will avoid waters by using horizontal directional drilling (HDD), or will open trench in compliance with Nationwide Permit (NWP) 12. (Subsection 8.2.4.2). Applicant will apply for a 401 permit if required (Subsection 8.2.4.3).
Migratory Bird Treaty Act 16 USC §§703-711	Prohibits the non-permitted take of migratory birds.	USFWS and California Department of Fish and Game (CDFG)	California Energy Commission (CEC) Conditions	Applicant will avoid take of migratory birds by implementing migratory bird protection measures (Subsections 8.2.4.2 and 8.2.5).

TABLE 8.2-1
Laws, Ordinances, Regulations, and Standards Applicable to Biological Resources.

LORS	Purpose	Regulating Agency	Permit or Approval	Applicability (AFC Section Explaining Conformance)
State				
California Endangered Species Act of 1984, Fish and Game Code, §2050 through §2098	Protects California's endangered and threatened species.	CDFG	Comments as cooperating agency on Section 7 or Issues 2081 incidental take permit for state-listed species.	No state-listed species will be "taken" as a result of the project (Subsections 8.2.4.2 and 8.2.5).
Title 14, California Code of Regulations (CCR) §§670.2 and 670.5	Lists plants and animals of California declared to be threatened or endangered.	CDFG	N/A	N/A
Fish and Game Code Fully Protected Species §3511: Fully Protected birds §4700: Fully Protected mammals §5050: Fully Protected reptiles and amphibians §5515: Fully Protected fishes	Prohibits the taking of listed plants and animals that are Fully Protected in California.	CDFG	N/A	Applicant will avoid take of state-listed plants and wildlife species (Subsections 8.2.4.2 and 8.2.5)
Fish and Game Code §1930, Significant Natural Areas (SNA)	Designates certain areas such as refuges, natural sloughs, riparian areas, and vernal pools as significant wildlife habitats. Listed in the CNDDB.	CDFG		There are no SNAs in the project area (Subsection 8.2.3.1).
Fish and Game Code §1580, Designated Ecological Reserves	The CDFG commission designates land and water areas as significant wildlife habitats to be preserved in natural condition for the general public to observe and study.	CDFG		There are no DERs in the project area (Subsection 8.2.3.1).
Fish and Game Code §1600, Streambed Alteration Agreement (SAA)	Reviews projects for impacts to waterways, including impacts to vegetation and wildlife from sediment, diversions, and other disturbances.	CDFG	Issues conditions of the SAA that reduces and minimizes effects on vegetation and wildlife downstream of construction areas.	Applicant will apply for SAA to put pipelines under irrigation canals if required to do so by CDFG (Subsection 8.2.4).

TABLE 8.2-1
Laws, Ordinances, Regulations, and Standards Applicable to Biological Resources.

LORS	Purpose	Regulating Agency	Permit or Approval	Applicability (AFC Section Explaining Conformance)
Native Plant Protection Act of 1977, Fish and Game Code, §1900 et seq.	Designates state rare and endangered plants and provides specific protection measures for identified populations.	CDFG	Reviews mitigation options if there will be significant project effects on threatened or endangered plant species	There are no rare or endangered plants on the project site (Subsections 8.2.4.2 and 8.2.5).
Public Resource Code 25527	Siting of facilities in certain areas of critical concern for biological resources, such as ecological preserves, wildlife refuges, estuaries, and unique or irreplaceable wildlife habitats of scientific or educational value, is prohibited, or when no alternative, strict criteria is applied.	CEC	Specific Findings included in Final Decision	There are no areas of critical biological concern in the project area (Subsection 8.2.4).
Title 20 CCR §§1702 (q) and (v); and	Protects “areas of critical concern” and “species of special concern” identified by local, state, or federal resource agencies in the project area, including the California Native Plant Society (CNPS).	USFWS and CDFG	Issues Biological Opinion or Authorization with Conditions after review of project impacts.	There are no areas of critical biological concern in the project area (Subsection 8.2.4).
Title 14 CCR Section 15000 et seq.	Describes the types and extent of information required to evaluate the effects of a proposed project on biological resources of a project site.	USFWS and CDFG	Review and comment on AFC.	AFC provides this information (Subsection 8.2.4).
Suggested Guidelines for Raptor Protection (Avian Power Line Interaction Committee [APLIC], 1996)	Describes design measures to avoid and reduce impacts to raptors from electrical transmission and other facilities.	CEC	CEC Conditions of Approval	Applicant will implement design measures to protect raptors from collision and electrocution (Subsections 8.2.3.2, 8.2.4.3, and 8.2.7).

8.2.2.2 State

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

Species listed under this act cannot be "taken" or harmed, except under specific permit. At present, "take" means to do or attempt to do the following: hunt, pursue, catch, capture, or kill.

Fish and Game Code

Section 3511 describes bird species, primarily raptors, that are "fully protected." Fully protected birds may not be taken or possessed, except under specific permit requirements.

Section 3503 states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto.

Section 3503.5 protects all birds of prey and their eggs and nests.

Section 3513 makes it unlawful to take, possess, or destroy any birds of prey or to take, possess, or destroy the nest or eggs of any such bird.

Sections 4700, 5050, and 5515 lists mammal, amphibian, and reptile species that are fully protected in California.

Sections 1900 et seq., the Native Plant Protection Act lists threatened, endangered, and rare plants listed by the state.

8.2.2.2.2 Title 14, California Code of Regulations, Sections 670.2 and 670.5

These sections list animals designated as threatened or endangered in California. California species of special concern (CSC) is a category conferred by the CDFG on those species that are indicators of regional habitat changes or are considered potential future protected species. CSCs do not have any special legal status, but are intended by CDFG for use as a management tool to take these species into special consideration when decisions are made concerning the future of any land parcel.

8.2.2.2.3 California Fish and Game Code (Sections 1601 through 1607)

These sections prohibit alteration of any stream, including intermittent and seasonal channels and many artificial channels, without a permit from CDFG. The limit of CDFG jurisdiction is subject to the judgment of the department, up to the 100-year flood level. This applies to any channel modifications that would be required to meet drainage, transportation, or flood control objectives of the project.

8.2.2.2.4 California Environmental Quality Act (CEQA) (Public Resources Code Section 15380)

CEQA defines "rare" in a broader sense than the definitions of threatened, endangered, or species of special concern. Under this definition, CDFG can request additional consideration of species not otherwise protected. CEQA requires that the effects of a project on environmental resources be analyzed and assessed using criteria determined by the lead agency.

8.2.2.2.5 Warren-Alquist Act

The Warren-Alquist Act is a CEQA-equivalent process implemented by the CEC. Preparation of this application will result in an assessment prepared by the CEC staff to fulfill the requirements of CEQA.

8.2.2.3 Local and Other Jurisdictions

The following subsections and Table 8.2-2 describe the applicable conservation policies that apply to potential impacts on biological resources in the project area.

8.2.2.3.1 Applicable Habitat Conservation Plans and Critical Habitat Designations

The City of Grand Terrace does not have approved habitat conservation plan that covers the area of the proposed AES Highgrove facility. Similarly, the City of Riverside does not have an approved habitat conservation plan that covers the area of the proposed gas line. However, the proposed gas pipeline route traverses both San Bernardino County and Western Riverside County. While San Bernardino County does not have an approved habitat conservation plan that covers the project features, Western Riverside County has an approved Multi Species Habitat Conservation Plan (MSHCP) that encompasses approximately 1.26 million acres and serves as a Habitat Conservation Plan (HCP) pursuant to Section 10(a)(1)(B) of FESA, as well as a Natural Communities Conservation Plan (NCCP) under the NCCP Act of 2001. Analyses of the project location and potential impacts from construction and operation indicate it is unlikely that the proposed project would significantly affect any of the species or their critical habitat targeted in the Western Riverside County MSHCP.

Critical habitat has been designated under the FESA in San Bernardino and Riverside counties for the southwestern willow flycatcher (*Empidonax traillii extimus*), least Bell's vireo (*Vireo bellii ssp pusillus*), desert tortoise (*Gopherus agassizii*), Cushenberry milk-vetch (*Astragalus albens*), Cushenberry buckwheat (*Eriogonum ovalifolium*), San Bernardino Mountains bladderpod (*Lesquerella kingii* ssp. *bernardina*), Cushenberry oxytheca (*Oxytheca parishii* var. *goodmaniana*), and Parish's daisy (*Erigeron parishii*).

The closest Critical Habitat Unit (CHU) for the southwestern willow flycatcher is located approximately 2 miles northwest of the project (USFWS, Critical Habitat Portal) along the foothills of the San Gabriel Mountains, within the Jurupa Hills. The unit includes lands within the San Bernardino National Forest and on Norton Air Force Base that include portions of the Santa Ana River and extend to its tributaries including Bear Creek, Mill Creek, Holcomb Creek, and the San Timoteo Wash.

Critical habitat for least Bell's vireo was designated by the Service on February 2, 1994 (59 FR 4845), and includes reaches of 10 streams in southern California from Santa Barbara County to San Diego County encompassing approximately 38,000 acres. Critical habitat for the species includes portions of the Santa Ana River in Riverside and San Bernardino counties. The closest CHU for least Bell's vireo is located approximately 2 miles northwest of the AES Highgrove site.

TABLE 8.2-2
Applicable Conservation Policies

Element	Goal/Policy	Conformance
San Bernardino County General Plan		
Natural Resources	Goal C-6 Preserve rare and endangered species and protect areas of special habitat value.	The AES site is not in a sensitive natural area and protection and mitigation measures were developed to avoid and minimize impacts to sensitive areas.
Natural Resources	Policy BI-3 Because species occurrences may be adversely affected by land use approvals, provisions of Policy BI-1 may be applied in areas supporting these species if it can be shown that the species is "threatened" as that term is used in the Federal Endangered Species Act.	The project will involve informal consultation with CDFG and USFWS if required. Protection and mitigation measures were developed to avoid and minimize impacts to sensitive areas.
Natural Resources	Goal C-7 Conserve populations and habitats of commonly occurring species.	The project will avoid impacts to commonly occurring species by remaining in previously developed areas.
Riverside County General Plan		
Open Space and Conservation	OS 3.3 Minimize pollutant discharge into storm drainage systems and natural drainage and aquifers.	Onsite discharges will be diverted to the detention basin. If the HDD construction method is used to cross drainages, a contingency plan to address the inadvertent return of drilling mud will be developed prior to construction.
Open Space and Conservation	OS 5.5 New development shall preserve and enhance existing native riparian habitat and prevent obstruction of natural watercourses.	Project activities have been sited to avoid riparian habitats.
Open Space and Conservation	OS 5.6 Identify and, to the maximum extent possible, conserve remaining upland habitat areas adjacent to wetland and riparian areas that are critical to the feeding, hibernation, or nesting of wildlife species associated with these wetland and riparian areas.	Project activities have been sited to avoid upland, wetland and riparian areas
County of Riverside General Plan – Highgrove Area Plan		
Open Space and Conservation	Policy HAP 18.1. Protect the watercourse and floodplain areas, and provide recreational opportunities and flood protection through adherence with the General Plan Land Use and Multipurpose Open Space Elements.	If the HDD construction method is used to cross drainages, a contingency plan to address the inadvertent return of drilling mud will be developed prior to construction.
Multispecies Habitat Conservation Plan	Policy HAP 19.2. Maintain a contiguous linkage through the Springbrook Wash from Box Springs Reserve to the Santa Ana River.	If the HDD construction method is used to cross drainages, a contingency plan to address the inadvertent return of drilling mud will be developed prior to construction.
Multispecies Habitat Conservation Plan	Policy HAP 19.4. Conserve large blocks of inter-connected coastal sage scrub habitat in order to connect gnatcatcher populations within Riverside County with those located at Blue Mountain in San Bernardino County.	Project activities have been sited to avoid coastal sage scrub habitat.

Sources: San Bernardino County, 1998; Riverside County, 1993; Riverside County, 2003.

The proposed project disturbance areas do not fall in any designated or proposed critical habitat areas. There are no preserves or limitations associated with this plan that are affected by the project. Therefore, construction of the project would not conflict with goals of any County HCP. Therefore, no significant impacts to critical habitat are expected.

8.2.2.3.2 San Bernardino County General Plan

San Bernardino County is currently updating the General Plan, with completion anticipated for 2006. The Natural Resources Element of the current General Plan (San Bernardino, 1998) contains specific objectives to preserve biological resources. It also contains specific policies and goals for protecting areas of sensitive plant and wildlife habitat and for assuring compatibility between natural areas and development. Conservation policies applicable to the project are summarized in Table 8.2-2.

8.2.2.3.3 San Bernardino County Development Plan

Chapter 4, Division 9 of the San Bernardino County Development Plan applies to all desert native plants and riparian habitat on private land within the unincorporated areas of San Bernardino County and on public land owned by the County of San Bernardino or the State of California. Removing, harvesting, or transplanting desert native plants must first be approved by the County. The removal of any vegetation within 200 feet of the bank of a stream or in an area indicated as a protected riparian area on an overlay map or Specific Plan, shall be subject to a tree or plant removal permit. Streams include those shown on United States Geological Survey Quadrangle topographic maps as perennial or intermittent, blue or brown lines (solid or dashed), and river wash areas. No desert native or riparian vegetation is expected to be removed as a result of the proposed project and removal actions by any public utility subject to jurisdiction of the Public Utilities Commission are exempt from the permitting requirements.

8.2.3 Environmental Setting

The following subsections describe the biological conditions of the proposed AES site, beginning with a regional overview, the vegetation types and habitat present in the project area, a description of wildlife typical to the area, and a discussion of specific special-status species known to occur in the general region (see Figures 8.2-1 and 8.2-2 for documented species locations, figures are located at the end of the subsection).

8.2.3.1 Regional Overview

The proposed AES site is located in the City of Grand Terrace, San Bernardino County. San Bernardino County comprises three regions – the Valley, Mountain, and Desert, each with distinct geographic and physical characteristics. The proposed AES site is located in the Valley Region, which contains about 480 square miles and is bordered on the west by the Chino, Puente, San Jose, and Jurupa Hills and on the north by the San Gabriel and San Bernardino Mountains. The San Bernardino range trends southeast forming the eastern limit of the Valley along with the Yucaipa and Crafton Hills. The southern limits of the Valley are marked by alluvial highlands extending south from the San Bernardino and Jurupa Hills. Elevations within the Valley range from about 500 feet on the Valley floor to approximately 5,400 feet in Yucaipa Hills.

The region is influenced by the nearby Pacific Ocean (approximately 115 miles to the west) to produce a Mediterranean climate consisting of warm, dry summers and mild, wet

winters. Summer temperatures frequently exceed 100 degrees Fahrenheit (°F) and winter temperatures are generally mild, with fewer than 10 freezing days per year. Rainfall averages 10 to 15 inches per year.

8.2.3.2 Highgrove Project Site and Linears

The Highgrove project site is located at 12700 Taylor Street, north of the intersection of Taylor and Main streets, at the site of the former Highgrove Generating Station, which was owned by Southern California Edison (SCE). The project site for the new facility will occupy approximately 9.8 acres. The project also includes demolition of the existing Generating Station equipment. A portion of the parcel on which the existing plant is located will be used for construction parking and construction laydown. This area contains scattered ruderal vegetation bordered by Russian olive (*Elaegnus angustifolius*) trees. The laydown area is completely developed with buildings, asphalt surfaces, and some landscape vegetation.

Primary access to the site will be provided via an existing paved entrance from Taylor Street, which was used to access the former Highgrove Generating Station. The electrical transmission interconnection will link the Highgrove Project to the SCE power grid through a 115-kV switchyard located adjacent to the site. Natural gas for the facility will be delivered to the site via approximately 7 miles of new 12-inch pipeline that will connect to the Southern California Gas (SoCalGas) existing main pipeline (Figure 8.2-2). The water supply source for the project will be the existing onsite well water system. Water from Riverside Highland Water Company will be used as an emergency backup supply. Potable water for drinking and sanitary uses will be also be provided by Riverside Highland Water Company.

The site is currently bordered on the north by a ruderal area used for construction material storage, on the west by railroad tracks, on the south by the Cage Park Property (a private park previously owned by SCE), and on the east by agricultural fields. Figures 8.2-3a through 3e, include project feature locations and biological resources identified on aerial photos at 1:6,000 scale.

The primary land uses adjacent to the project site are agricultural, industrial, and residential. The project site and neighboring parcels directly north, south and west of the site are zoned industrial (M2). Parcels to the east are currently zoned for restricted manufacturing (RM). (Refer to Subsection 8.4, Land Use, for additional information about development plans for adjacent parcels.)

The property is approximately 940 feet above mean sea level and is located less than 250 feet east of the Riverside Canal Aqueduct, a waterway that flows northeast to southwest. Other surface waters in the vicinity include Springbrook Wash, approximately one mile south; and Gage Canal, approximately three-quarters mile east (see Figure 8.14-1) The Santa Ana River is approximately 1.75 miles west of the site and flows southwest toward the Pacific Ocean, approximately 45 miles away. Lake Mathews and Lake Perris, both in Riverside County, are approximately 13 miles to the southwest and southeast, respectively. There are no Significant Natural Areas or Designated Ecological Reserves in the project area.

The following subsections describe the types of habitat found in the project impact area. A comprehensive list of special-status species obtained from the USFWS and CDFG's California Natural Diversity Data Base (CNDDB) that are known or have the potential to

occur in the project impact area are listed in Table 8.2-3 (at the end of this subsection) and described in Subsection 8.2.3.3.

8.2.3.3 Habitat and Vegetation Communities

Habitat types potentially affected in the project area comprise coastal sage scrub, agricultural fields, stormwater canals and drainages, riparian woodlands and associated rivers and streams, ruderal roadsides, and ornamental - industrial, commercial, landscape, and residential (Figures 8.2-3a through 3e.

8.2.3.3.1 Coastal Sage Scrub

Coastal sage scrub habitat can be found approximately one-half mile northwest of the project site within the Jurupa Hills and along the foothills in Sycamore Canyon (Figures 8.2-3athrough 3e). This vegetation community supports a mixture of sclerophyllous low chaparral shrubs and drought-deciduous sage scrub species. Characteristic species in this habitat include California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), laurel sumac (*Malosma laurina*), California encelia (*Encelia californica*), and several species of sage (*e.g., Salvia mellifera, S. apiana*) (Holland, 1986). No special-status plant species have been reported in this area.

Wildlife species that commonly frequent coastal sage scrub habitats in San Bernardino and Riverside Counties include coyote (*Canis latrans*), Audubon cottontail (*Sylvilagus audubonii*) and the California ground squirrel (*Spermophilus beecheyi*).

8.2.3.3.2 Agricultural Fields

Agricultural activity occurs in the vicinity of the project site and is comprised of row crops and orchards (Figures 8.2-3a through 3d). Farming activities result in the complete removal of native vegetation as farm fields are plowed or graded up to the edge of rural roads and highways.

Vegetation species present are almost exclusively agricultural crop, maintained in a weed-free state. Special-status plant species endemic to the area have narrow habitat requirements. Many of which require periodic flooding or similar mesic conditions and are not expected to occur within agricultural areas.

Wildlife species that commonly frequent orchards and row crops are generally wide-ranging species that are highly adaptable. American crows (*Corvus brachyrhynchos*), Brewer's blackbirds (*Euphagus cyanocephalus*), mourning dove (*Zenaida macroura*), northern mockingbird (*Mimus polyglottos*), house finch (*Carpodacus mexicanus*), and house sparrows (*Passer domesticus*) are common in the area. Large, soaring raptors (e.g., red tail hawks [*Buteo jamaicensis*] and Swainson's hawks [*Buteo swainsoni*]) often forage in row-crop fields. California ground squirrels and coyotes are also relatively common. This habitat type is regionally abundant and the species that occur there are generally widely distributed and common.

8.2.3.3.3 Stormwater Canals and Drainages

Stormwater canals and drainages in the area direct surface water runoff toward washes west and south of the project site that eventually drain into the Santa Ana River. These washes contain fragmented riparian habitat and are discussed in detail in Section 8.2.3.3.4. Stormwater canals and drainages in the proposed construction area vary in size from approximately 3 to 30 feet wide, are cement-lined, and generally ephemeral in nature (see

Figure 8.14-1). A drainage channel south of the project site in Cage Park Property feeds into a man-made detention basin in Cage Park Property used by the previous power plant during well testing and cooling tower discharge. The Cage Park Property detention basin supports hydrophytic vegetation and is inundated year-round. Fish (species unknown) have been used in the detention basin to control mosquito larvae (Doug Russell, site manager, personal communication). This area also receives seasonal runoff from concrete lined stormwater channels. Overflow from the Cage Park Property detention basin drains into tributaries of that flow into the Santa Ana River and eventually to the Pacific Ocean. However, project activities would not occur in this area and stormwater drainage from the project site would be diverted to an onsite detention basin, eliminating any potential effect to the Cage Park Property basin.

The stormwater canals and drainages directly south and north of the site are partially lined with concrete. The southern drainage, located in Cage Park Property, was clear of all vegetation; however, the northern drainage (located on the northern edge of the Tank Farm Property) contained vegetation species associated with wetland areas (cattails and mule fat). These canals and drainages empty into tributaries that flow into the Santa Ana River and eventually release into the Pacific Ocean, making them fall under the jurisdiction of the USACE as waters of the U.S. Clearing or removing vegetation from the channel would require 401/404 permitting. Wildlife that may use vegetated or wetland portions of canals and drainages include egrets, herons, song birds, raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), and coyotes. Mallard ducks (*Anas platyrhynchos*) and other migratory waterfowl may use ditches that have some remaining cover, and red-winged blackbirds (*Agelaius phoeniceus*) could use patches of cattails in the ditches as nest sites. None of the canals or drainages in the project impact areas contain suitable vegetation for significant wildlife use.

No special-status species were observed or are known or expected to inhabit the drainages in the project impact areas.

8.2.3.3.4 Riparian Woodlands and Associated Rivers and Streams

Fragmented riparian habitat occurs along linear corridors south and west of the AES site. The southern riparian section includes the western portion of Springbrook Wash, a wildlife corridor (designated by the Western Riverside County MSHCP) extending from Box Springs to the Santa Ana River (Figure 8.2-3a). The riparian habitat bordering Springbrook Wash where it is crossed by the gas line includes eucalyptus (*Eucalyptus sp.*), walnut (*Juglans sp.*), Mexican (Blue) elderberry (*Sambucus mexicana*), cottonwood (*Populus sp.*) and willow (*Salix sp.*), with an understory of mule fat (*Baccharis salicifolia*), and poison hemlock (*Conium maculatum*). Vegetation in this area is maintained by surface water runoff from the nearby mountains as well as discharges from stormwater drainages and canals. Tall trees in the area provide potential nest sites for raptors (e.g., Swainson's hawk Cooper's hawk (*Accipiter cooperii*), white-tailed kite (*Elanus leucurus*), and red-shouldered (*Buteo lineatus*) and red-tailed hawks. A red-shouldered hawk was observed along Springbrook Wash during the site visit on January 28, 2005. A pair of red-shouldered hawks were observed in the wash crossing Chicago Avenue, south of the site, during the May 2, 2005, site visit.

The Santa Ana River lies approximately 1.75 miles west of the project site. Southern Cottonwood Willow Riparian Woodland habitat occurs adjacent to the rivers edge. This vegetation community is dominated by cottonwood (*Populus fremontii*) and willow (*Salix sp.*). Vegetation in this area is maintained by surface water runoff from the nearby

mountains as well as discharges from stormwater drainages and canals. Tall trees in the area provide potential nest sites for raptors and many species of resident and migratory birds. Portions of the Santa Ana River contain designated critical habitat for least Bell's vireo and southwestern willow flycatcher.

8.2.3.3.5 Disturbed/Ruderal Habitat

Disturbed or ruderal habitat includes areas that contain mostly non-native plant species including ornamentals and ruderal exotics. Many non-native, weedy species have invaded areas previously and currently being developed for residential and industrial uses. The most common invasive plants observed included horseweed (*Conyza canadensis*), cheeseweed (*Malva parviflora*), and non-native grasses including foxtail (*Hordeum* sp.) and slender wild oat (*Avena barbata*).

Roadside ruderal habitats are found at the edges of farmed fields, in open fallow fields, or along railroad and highway rights-of-way with compacted substrates. These areas are typically kept free of vegetation (purposely or from continual disturbance) and used for farm equipment access, drainage ditches, utility line rights-of-way, or other activities related to industrial, residential, and agricultural use. Habitat along the railroad tracks typically contains ruderal vegetation communities where ground squirrels, hares, and other small mammals often construct underground burrows in the friable soils of the railroad berms. These burrows can subsequently provide shelter habitat for other wildlife, including lizards, snakes, amphibians, or burrowing owls (*Athene cunicularia*). Ruderal habitat occurs in the lot adjacent to the northern boundary of the site, along the railroad tracks directly west of the site and along the road shoulders of the southern extension of the gas line.

8.2.3.3.6 Ornamental - Industrial, Commercial, Landscaped, and Residential Communities

Non-native ornamental landscaping is present throughout the project area in association with previous and ongoing residential, industrial, and commercial land uses. Houses, streets, and parking lots tend to be planted with typical landscaping plants such as rose (*Rosa* sp.), olive (*Olea europea*), eucalyptus, pepper tree (*Schinus* sp.), and palm (*Washingtonia* sp.). The availability of water, shady cover, and insects makes the yards and landscaping around urban areas attractive to certain adaptable species, many of which are non-native. Dominant wildlife in these areas include common species (e.g., house sparrow, house finch, Northern mockingbird, western meadowlark (*Sturnella neglecta*), mourning dove, American crow, and American robin (*Turdus migratorius*). Mammal species include raccoon, opossum, house mouse (*Mus musculus*), California ground squirrels, and domestic or feral cats and dogs. These species tend to be highly adaptable, widespread, and common. Landscape and urban habitats dominate the project impact area along the gas line routes.

8.2.3.4 Special-Status Species

A list of special-status plant and animal species was compiled for the project area based upon the following references: the CDFG CNDDB; California Native Plant Society's (CNPS) Electronic Inventory; a USFWS species list requested for San Bernardino and Riverside Counties; and project-specific onsite field surveys. A comprehensive list of special-status species is provided in Table 8.2-3. The list includes species listed as threatened or endangered that have special requirements under the FESA and California Endangered Species Acts (CESA) and other non-listed special-status species that could become listed in

the future. The table includes the habitat types that could support these species as well as the potential for occurrence in the project area.

Preliminary surveys, habitat evaluations, and aerial photographs suggest that the site is not located in a sensitive area. Table 8.2-3 presents the list of the special-status species that were evaluated as potentially occurring in the project area. Table 8.2-3 also includes special-status species whose habitat(s) and/or known distribution are present in the Highgrove Project area evaluated for potential impacts from construction and project operations. Other special-status species that were included on the USFWS, CDFG, and CNPS lists whose habitats or known distribution do not occur in the project area are included in Table 8.2-3, but were not evaluated further. Species with suitable habitat that may be seasonally present in the area and require further analysis (i.e. nesting surveys) to determine presence are also included in Table 8.2-3.

The reference information is based on known occurrences, historical records, or the presence of suitable habitat for any given life stage of a particular species. The known locations of special-status species identified in the CNDDB records are shown in Figures 8.2-1 and 8.2-2.

Initial field surveys were performed by CH2M HILL biologists on January 12, and 28, and May 2, 2005. The qualifications of field biologists are provided in Appendix 8.2A.

8.2.3.4.1 Special-Status Plants

Information acquired from the CNDDB, CNPS, and other sources resulted in a list of 14 special-status plant species that have the potential to occur in the project area (Table 8.2-3, due to its size, this table has been moved to the end of this subsection). These species are associated with grasslands, chaparral, and riparian habitats that were once prevalent in the area but have since been lost to extensive agricultural and urban development. Habitat modification, weed control, and irrigation practices have forced these species into remnant pockets of marginal habitat.

According to CNDDB records, only one special-status plant species, Parry's spineflower (*Chorizanthe parryi* var. *parryi*), was recorded historically along the proposed gas pipeline alignment (Figure 8.2-2). Parry's spineflower is a CNPS 3 species and requires sandy or rocky openings in chaparral and coastal scrub habitat.

Recently updated records from CNDDB indicate there are no occurrences of special-status plant species in the proposed project work areas. The project site is extensively developed and lacks suitable habitat for any of the listed sensitive plant species. No special-status plants are expected to occur on the project site or on the gas alignment. The area where the spineflower was located is now used for agriculture. It is possible for it to still be found there. However, Parry's spineflower is covered under the Riverside County MSHCP and according to the MSHCP, sensitive plant surveys are not required in that particular area.

Project-specific field surveys were conducted during the appropriate blooming periods for the special-status plants to determine if they occur in the project impact areas and to further characterize the potential of available habitat in the vicinity. Potential habitat may be found along the ruderal margins of fields, roads, and railroad corridors where sandy soils and ruderal vegetation exists. The gas alignment traverses developed areas where focused surveys for sensitive plant species are not required due to the lack of suitable habitat (CDFG, 1983; Riverside County, 2003). Within these areas, the gas alignment will remain

within the existing roadways and road shoulders and will not disturb areas containing native vegetation.

8.2.3.4.2 Special-Status Animals

Information acquired from the CNDDB, USFWS, and other sources resulted in a list of 35 special-status wildlife species with the potential to occur within the project area (Table 8.2-3). Of these, only 17 have suitable habitat or known distribution within the project area.

Of the special status species with suitable habitat or known distribution in the area, only the coast horned lizard (*Phrynosoma coronatum blainvilli*) has been recorded in the project impact area (Table 8.2-3, Figure 8.2-1). The coast horned lizard is a California Species of Special Concern.

There is no suitable habitat on the project site for any of the federal or state listed species. The potential for occurrence is low due to the predominance of agriculture and highly developed industrial and residential uses that characterize the project area. The following paragraphs briefly describe the potential for special-status animals to occur in the project disturbance areas.

Fish Species

The project area is not adjacent to significant natural aquatic features. Waterways in the project area include drainage canals, stormwater channels, and ephemeral washes. However, these drainages are tributaries to creeks and rivers that could provide habitat for the Arroyo chub (*Gila orcutti*), Santa Ana speckled dace, (*Rhinichthys osculus ssp. 3*), and the Santa Ana sucker (*Catostomus santaanae*).

To minimize potential impacts to downstream aquatic wildlife, AES Highgrove, LLC proposes to construct the gasline within the roadway as it crosses the drainages, canals, or washes within the area, either by using trenchless (jack-and-bore or horizontal directional drilling [HDD]) methods, or by trenching through the drainage during the dry season when most significant biological resources are absent.

Arroyo chub is a California Species of Concern. It occurs in natural or naturalized water courses in portions of the Los Angeles River system. It requires cool, flowing water and gravel or sandy substrates to breed. It has not been recorded in the developed lower portion of the Santa Ana River and would not be expected to occur in the ephemeral waterways crossed by the gas pipeline.

Santa Ana sucker is endemic to the Los Angeles Basin coastal streams; it is federally threatened and a California Species of Concern. The Santa Ana sucker generally lives in small, shallow streams, less than 7 meters in width and may be found in the lower portions of the Santa Ana River and would not be expected to occur in the ephemeral waterways crossed by the gas pipeline.

Reptiles

The *coast horned lizard* (*Phrynosoma coronatum blainvilli*) is a California Species of Concern. It is generally found in inland areas and is restricted to areas with pockets of open microhabitat, such as those created by disturbance (e.g., floods, fire, roads, and grazed areas. There is little open area left within the highly developed, urbanized project area. The project

site and gasline are proposed for previously developed or paved areas, making it unlikely that project activities would impact this species.

Birds

Swainson's hawk, a California threatened species, is a winter migrant found throughout Riverside and San Bernardino Counties. Swainson's hawk breeds in North American from March through September. Swainson's hawks often nest in trees adjacent to crop fields (e.g., alfalfa, hay, and row crops) where prey species provide forage. Swainson's hawks are known to forage up to 10 miles from a nest tree. No nest locations have been recorded within the project area however potential nest trees are present along the perimeters of fields, in residential landscape areas, and in the riparian habitats west and south of the site. Most of the trees near the project site and along the gas line are landscape shade trees associated with residences and farms. There are no CNDDB records of Swainson's hawk nesting sites in the project area.

Western burrowing owl, a federal and California species of concern, could potentially forage in agricultural fields and nest in underground burrows in the project area. Although intensive development and agricultural practices make the habitat marginally suitable for nesting, burrowing owls may find nesting opportunities along the margins of agricultural fields, in open fallow fields, or along the railroad corridor where ground squirrel burrows provide nesting sites and shelter. Most burrowing owls in this region are residents; but some owls are migratory, spending winters in other areas of Southern California or Mexico. Burrowing owls use mammal burrows dug by ground squirrels, skunks, and hares for shelter and nesting. Appropriate-sized burrows are nearly absent from agricultural areas due to frequent soil disturbance and pest control measures. Ground squirrels are often poisoned in agricultural and industrial areas reducing the potential for burrowing owls. Although no active nest sites appeared in the CNDDB records within 1 mile of the project area and no owl sign was observed during reconnaissance-level surveys of the project area, additional nesting-season surveys will be conducted in potentially suitable areas prior to construction (e.g., the railroad berm). Dispersing owls may later colonize burrows in suitable habitats that have not been used before.

California horned lark (*Eremophila alpestris*), and ***tricolored blackbird*** (*Agelaius tricolor*) could potentially forage in the agricultural fields within the project area. Horned larks are a California species of concern and are resident birds in California, where they are often associated with open areas with low vegetation. This species is a ground nester whose nesting habitat would be limited to pastures, as well as the margins of field and transportation corridors. No horned larks were observed during field surveys. Tricolored blackbird nesting colonies are associated with densely vegetated wetland areas, including stock ponds and other artificial wet areas. The detention basin south of the project area contains marginal potential nesting and forage areas for tricolored blackbirds.

Coastal California gnatcatcher (*Polioptila californica californica*) is listed as a federally threatened species and California species of concern. The preferred plant structure in gnatcatcher territories is described as low growing with moderate gaps in the shrub canopy. The gnatcatcher is a resident species strongly associated with Coastal and Riversidean sage scrub habitats, particularly those dominated by California sagebrush stands on mesas, gently sloping areas, and along the lower slopes of the coast ranges (Atwood, 1990). This bird will also use chaparral, grassland, and riparian habitats where they occur adjacent to

sage scrub both during the breeding and non-breeding periods, especially during dispersal of young birds after fledging and during the hot summer months. Suitable gnatcatcher habitat is present within the coastal sage scrub community approximately one-half mile northwest of the AES site. In addition, the riparian habitats found 0.5 mile south where the gas line crosses Springbrook Wash and 1.75 miles west along the banks of the Santa Ana River may be used for foraging.

Southwestern willow flycatcher (*Empidonax traillii extimus*) is a California and federally endangered species. This species is generally restricted to riparian woodlands along streams and rivers with mature, dense stands of willows, cottonwoods or smaller spring fed or boggy areas with willows or alders. Critical habitat for southwestern willow flycatcher is found along portions of the Santa Ana River, approximately 1.75 miles west of the project site. Due to the highly disturbed nature of the riparian habitat where gas pipeline crosses Springbrook Wash, it is highly unlikely that nesting would occur in this area.

Least Bell's vireo (*Vireo bellii* ssp *pusillus*) is a California and federally endangered species. Least Bell's vireo primarily occupy riverine riparian habitats that feature dense cover within 1-2 meters of the ground and a dense, stratified canopy along water or dry parts of intermittent streams. Least Bell's vireo typically arrive in southern California in late March to early April to begin breeding activities. Nesting territories range from 0.5 to 4.0 acres and are established in riparian habitat, usually in dense willow-dominated thickets. Potential vireo nesting and foraging habitat occurs in the riparian areas approximately 1.75 miles northwest of the proposed AES site within least Bell's vireo critical habitat along the banks of the Santa Ana River.

8.2.3.5 Biological Surveys

Biological resources evaluated for project impacts include vegetation communities, wetlands, wildlife, and wildlife habitats in all the temporary and permanent project impact locations. The surveyed areas include the proposed 9.8-acre plant site, the temporary laydown area, an area one mile (radius) out from the plant site, and areas within 1,000 feet of either side of the proposed natural gas pipeline route. Construction of the gas pipeline requires a construction zone of 50 to 75 feet; therefore, a 2,150-foot wide corridor was evaluated along the route. The field surveys focused on a 75-foot construction zone along either side of the pipeline route and immediate construction areas on the site and laydown area. The general project vicinity is dominated by industrial and agricultural use, so survey efforts concentrated on "edge" areas where natural habitat or native species may persist. The pipeline route traverses residential, commercial, agricultural, and industrial areas and would be installed within the existing roadways and road shoulders

The field surveys were aided by aerial photographs, which helped identify land uses. The presence, or potential presence, of sensitive biological resources was determined from information gathered during field surveys conducted for the project, published and unpublished literature, and natural resource agency databases.

Biological surveys for the project area and general vicinity were performed by biologists from CH2M HILL on January 12 and 28 and May 2, 2005. Surveyors' qualifications are provided in Appendix 8.2A. Additional surveys will be conducted for burrowing owls during the nesting and breeding seasons.

8.2.4 Environmental Analysis

Potential direct and indirect impacts to biological resources were evaluated to determine the permanent and temporary effects of project construction, operation, maintenance, and decommissioning of the Highgrove Project and supporting facilities. A summary of potential project impacts is presented in Table 8.2-4.

8.2.4.1 Standards of Significance

Impacts on biological resources are considered significant if one or more of the following conditions could result from implementation of the proposed project:

- Substantial effect, reduction in numbers, restricted range, or loss of habitat for a population of a state or federally listed threatened or endangered species.
- Substantial effect, reduction in numbers, restricted range, or loss of habitat for a population of special-status species, including fully protected, candidate proposed for listing, CSC, and certain CNPS list designation.
- Substantial interference with the movement of any resident or migratory fish or wildlife species.
- Substantial reduction of habitat for native fish, wildlife, or plants.
- Substantial disturbance of wetlands, marshes, riparian woodlands, and other wildlife habitat.
- Removal of trees designated as heritage or significant under County or local ordinances.

8.2.4.2 Potential Impacts of Construction and Operation of Highgrove Project Site and Temporary Construction Laydown Area

8.2.4.2.1 Vegetation Removal and Site Preparation

Construction of the Highgrove project site would permanently remove 4 acres of previously disturbed ruderal habitat (Figure 8.2-3a). The quality of the land as wildlife habitat is marginal but could be used seasonally by foraging birds and small mammals.

Removal of non-native or degraded native habitats may result in direct mortality to wildlife using the site, such as ground squirrels. Suitable nesting habitat occurs for songbirds in the trees adjacent to the site. Nesting areas for raptors may also be found in the riparian habitat areas along the gas pipeline. The loss of active bird nests or young is regulated under the federal Migratory Bird Treaty Act and California Fish and Game Code 3511. The loss of other common wildlife such as ground squirrels, rats, garter snakes using the site would be minimized by using specific protection measures in the project area (see Section 8.2.5 that discusses the protection measures). The loss of common wildlife from vegetation removal at the site would not represent a significant impact under CEQA, as these species are regionally common.

TABLE 8.2-4
Summary of Permanent and Temporary Project Impacts on Biological Resources During Construction.

Location	Project Work	Construction Zone Size	Time Requirements	Habitat Type	Sensitive Biological Resources	Impacts	
						Temporary	Permanent
Power plant site	Grading for footprint construction	9.8 acres	Start Second Quarter 2007	Previously developed area	Ruderal field may provide marginal foraging for songbirds and mammals.	None	9.8 acres of previously developed habitat
Access roads (main and emergency access)	Construction access will be from Taylor Street	0 acres	Start Second Quarter 2007	Existing paved and dirt roads	None	None	None
Construction laydown area	Construction laydown and parking areas will be located on the former plant site, south of the construction area	5 acres	Start Second Quarter 2007	Previously developed area	None	None	5 acres of previously developed habitat
Natural gas pipeline	Open pipeline trench	7 miles of trench for 12-inch pipeline.	Start Third Quarter 2007	Paved road and road shoulders	None.	None	None
Potable water supply line	Existing City supply line	N/A	Start Third Quarter 2007	N/A	None	None	None
115-kV transmission lines	Transmission tower footings, construction and maintenance	115-kV is 600 feet long	Start Third Quarter 2007	Previously developed tank site	Ruderal field may provide marginal foraging for songbirds and mammals.	None	The transmission lines are located entirely on the project site and will be part of the permanent impacts from site development.

8.2.4.2.2 Cooling Tower Drift

Cooling tower drift is the fine mist of water droplets that escape the cooling tower's mist eliminators and emitted into the atmosphere. Cooling towers concentrate the particulates (total dissolved solids) during the cooling process and produce a mist that contains higher total dissolved solids or salt than potable water typically contains. These salts can physically damage a leaf cell, which affects the photosynthetic ability of plants. Other effects include blocking the stomata (leaf pores) so that normal gas exchange is impaired, as well as affecting leaf adsorption and solar radiation reflectance. These effects can reduce productivity in crops, trees, and sensitive special-status plant species in a deposition area.

Studies performed by Lerman and Darley (1975) concluded that particulate deposition rates of 365 grams per square meter per year (g/m^2/year) caused damage to fir trees, but rates of 274 g/m^2/year and 400 to 600 g/m^2/year did not cause damage to vegetation at other sites. Pahwa and Shipley (1979) exposed vegetation (corn, tobacco, and soybeans) to varying salt deposition rates to simulate drift from cooling towers that use saltwater (20 to 25 parts per thousand) in the circulation water. Salt stress symptoms on the most sensitive crop plants (soybeans) were barely perceptible effects at a deposition rate of 2.98 g/m^2/year (Pawha and Shipley, 1979).

Assuming a particulate deposition rate of 2 centimeters per second and a maximum salt concentration of 0.0895 microgram per cubic meter (the cooling tower particulate matter deposition rate), the expected deposition rate is 0.056 g/m^2/year, which is significantly less than levels expected to cause barely perceptible effects to the most sensitive crop plants.

8.2.4.2.3 Cooling Water Supply and Effluent

Water for the Highgrove power plant operations will be supplied by an onsite well. Since the Highgrove Project will acquire water from an onsite well, there will be no mechanism to affect fish or other biota from securing water for operations. Process wastewater will be discharged to the SARI brine line.

8.2.4.2.4 Noise and Lights from Plant Operations

The AES site is currently zoned M2 (Industrial). The project site is adjacent to several industrial facilities. These facilities have standard industrial lighting and significant noise. Operation of the plant would produce some noise, as described in Subsection 8.5. Operational noise levels are described in detail in Subsection 8.5.

Generally, noise from power plant operations would not adversely impact wildlife, as wildlife usually become accustomed to low-level, routine background noise.

Bright night lighting could disturb resident wildlife (e.g., nesting birds, foraging mammals, and flying insects) in areas where suitable habitat exists. During migration, night lighting may attract migratory birds. If night lighting is required, the lights will be pointed down to minimize impacts to wildlife.

8.2.4.2.5 Collision and Electrocution Hazard to Birds

The project would involve the installation of about 600 feet of new electric transmission lines that could potentially result in bird collisions. The transmission lines would connect the plant to the adjacent SCE Substation. There is also the potential for birds to collide with the 80-foot tall exhaust stacks. Most bird collisions involve nocturnal migrants flying at night in inclement weather and low-visibility conditions, colliding with tall guyed television or radio

transmission towers (CEC, 1995; Kerlinger, 2000). Migratory birds generally fly at an altitude that would avoid ground structures, except when crossing over topographic features (e.g., ridge tops) or when inclement weather forces them down closer to the ground. There are no topographic or ecological features that would attract birds to this location or "funnel" them into the vicinity of exhaust stacks or other elevated features of the project. Because of the relatively low structure height and lack of guy wires, the potential for bird collisions with stacks, poles, electric conductor wires, structures, and towers of the project is considered less than significant.

Large raptors can be electrocuted by transmission lines when a bird's wings simultaneously contact two conductors of different phases, or a conductor and a ground. The installation of transmission lines or poles will be constructed according to "raptor-friendly" guidelines (APLIC, 1996). The 115-kV electrical transmission lines for the project will be constructed with at least a 5.5-foot span between conductor wires. Due to the short distance and low height, these additional lines would not increase avian electrocutions in the area. Risk of electrocution is not expected to be significant since the area does not attract large numbers of birds. In addition, the "raptor-friendly" design would reduce potential impacts to less than significant.

8.2.4.2.6 Special-Status Species

No threatened or endangered plants or animals were recorded from CNDDB in the project boundaries or observed during the field surveys. Only two records of historical observations were included in the CNDDB for the one-mile radius around the project site and within 2,000 feet of the gas pipeline. The following paragraphs describe the potential for the evaluated species to occur within the project impact area.

Although no burrowing owls or burrowing owl sign were observed during the 2005 field surveys, the railroad berms west of the site contains small mammal burrows that could provide suitable nesting sites for burrowing owls. The burrowing owl nesting season is typically from February 1 through August 15. Preconstruction field surveys (conducted under CDFG guidelines) to identify active nest sites will be conducted prior to construction activities. If active nest sites are found, protection measures will be implemented (see Subsection 8.2.5).

The coast horned lizard was not observed during the 2005 field surveys and only one historical record exists with the CNDDB within the one-mile radius of the project site. The project site is highly developed and does not contain suitable habitat for the coast horned lizard; therefore, no impacts to this species are expected to occur.

8.2.4.2.7 Wetlands and Waters of the U.S.

Waters of the U.S. occur within the project impact area. The Riverside Canal Aqueduct and the Santa Ana River may be affected during construction at the AES site. Construction activities such as grading may cause sediment to be washed into surface waters during storm events that could impact water quality and may represent a significant adverse impact on biological resources using those waterways.

A Stormwater Pollution Prevention Plan (SWPPP) would be required as part of compliance with a construction National Pollutant Discharge Elimination System (NPDES) permit. See Appendix 8.14A, which contains a draft of the Construction SWPPP. The permit specifies

BMPs to avoid sediment runoff and erosion that would cause water quality degradation. With implementation of the SWPPP, the impacts to biological resources using waterways would be less than significant. Silt fencing would be installed along the project boundaries near waterways to keep wildlife out of the work areas and prevent sediment from depositing in the drainages. An onsite biological monitor would be required during any and all ground disturbance, monitors would move wildlife observed during construction activities to prevent death or injury

The project would not cause loss or fill of any wetlands on the project site or laydown area.

There would be no operational cooling water discharge from the Highgrove Project, as the wastewater will be sent to the SARI brine line, and therefore, no adverse impact to wetlands or water quality is expected to occur from this source.

8.2.4.3 Potential Impacts of Natural Gas Pipeline Construction and Operation

The proposed gas pipeline alignment is approximately 7 miles long and would be installed within the existing paved roadway and road shoulders through industrial, residential, commercial, and agricultural areas.

The primary method of construction includes excavation of an open trench approximately 4 feet deep and 3 to 7 feet wide, depending on site-specific conditions. The specific location of the pipeline will be determined based upon the avoidance of any sensitive receptors, ability to obtain right-of-way, and the location of existing pipelines, but will remain within the existing roadway surface and shoulder. A temporary construction corridor 12 feet wide will be used to store the excavated soil, provide access for equipment and vehicles, and space for welding the pipeline prior to installation and backfill. The pipeline installation would require trench excavation and would generate fugitive dust. Water will be applied to the site for dust control during construction.

The pipeline will require pressure testing after construction to ensure welds are tight and remove any accumulated dust or welding residue from the pipeline. To do this, the pipe is filled with a large volume of water and pressurized. After use, this water will be tested and discharged into the local storm drain per a permit obtained by SoCalGas from the appropriate water quality control board. If the water does not pass the required testing, it will be disposed of offsite.

8.2.4.3.1 Special-Status Species

With the exception of the short segment of pipeline that will follow the Riverside Canal from the plant site to Main Street, construction of the gas pipeline is confined to paved roadways and urban road shoulders adjacent to commercial, industrial, residential, and agricultural areas. Potential impacts on biological resources are minimized by locating the pipeline in previously developed areas. However, localized sections of the pipeline route are adjacent to marginal habitat that may support special-status species. Burrowing owls could nest along the railroad berms where rodent burrows may be present. Migrant least Bell's vireo and southwestern willow flycatcher may use the riparian as area along Springbrook Wash as a foraging site.

Unintentional disturbance to nesting birds could result from construction activities that interfere with the breeding and foraging of these species. Mortality of eggs, nestlings, or

juveniles may occur if nests are established in areas adjacent to the project activities. If active nest sites are found within 200 feet (500 feet for raptors) of the project activities, approved CDFG protection measures will be implemented. Protection measures may include implementation of environmental awareness training, preconstruction surveys, and seasonal avoidance as described in Subsection 8.2.5 and would reduce impacts to nesting birds to less-than-significant. General nesting bird surveys shall be performed for all species that may have active nests within 200 feet (or 500 feet for raptors) of construction activities. If any active nests are found during the surveys, protective measures shall be taken to restrict construction activities that may potentially cause significant disruptions to nesting behavior.

8.2.4.3.2 Wetlands and Waters of the U.S.

No vernal pools were observed during the wet season surveys and none have been recorded in the area. The project would not result in the loss or fill of any wetlands as identified by the USACE.

Waters of the U.S. occur within the project impact area. The Riverside Canal Aqueduct, Gage Canal, and Springbrook Wash, would be crossed during installation of the gas pipeline. Construction activities occurring within these areas would generally remain within the existing paved roadways or rights-of-way. Best management practices would be employed to ensure sediment is not washed into surface waters during excavation, boring, or trenching activities.

Springbrook Wash, as well as the minor irrigation ditches and drainages, are generally ephemeral and are often dry for 4 to 6 months of the year during the summer and fall. Construction of the pipeline could potentially disrupt wildlife species that may forage along the drainage canals or nest within the riparian areas along this wash. Construction of that segment of the gas pipeline that crosses Springbrook Wash or Gage Canal would be performed either by using trenchless construction methods (e.g., jack-and-bore or HDD), or by trenching through the drainage from the existing roadway surface during the dry season.

A Streambed Alteration Agreement from CDFG, with conditions to reduce potential adverse impacts to wildlife and water quality downstream of the crossing, would be required to cross water features in the area. Temporary potential impacts to aquatic species downstream of the construction area could also occur if inadvertent returns of drilling mud occurs (most often referred to as a "frac-out") and escapes through a fissure in the soil structure to the ground surface. The drilling mud (normally bentonite) is a non-toxic clay material often used as an impervious layer in wetland construction and by farmers as a soil enhancement. When drilling mud enters a waterway, it can smother benthic invertebrates, aquatic plants, fish eggs, and young fish. If the HDD construction method is used, a contingency plan will be developed for HDD activities prior to construction. The contingency plan would outline how an inadvertent return of drilling mud would be minimized, contained, and cleaned. It would also provide emergency contact numbers and a spill response team to contact in case of excessive spills. The pipeline will require pressure testing after construction to ensure welds are tight and remove any accumulated dust or welding residue from the pipeline. To do this, the pipe is filled with a large volume of water and pressurized. After use, this water will be tested and discharged into the local storm drain per a permit obtained by SoCalGas from the appropriate water quality control board. If the water does not pass the required testing, it will be disposed of offsite. Therefore no impacts are anticipated.

8.2.4.4 Conflicts with Regional Habitat Conservation Plans

There are no countywide or regional HCPs in San Bernardino County. The southern section of the proposed route for the gas pipeline crosses into Riverside County. Biological resources in this area are addressed in the Western Riverside County MSHCP. There are no preserves or limitations associated with this plan that are affected by the project. Therefore, construction of the project would not conflict with goals of any HCP or other regional conservation plan.

8.2.4.5 Cumulative Impacts

The Highgrove Project would not cause any new habitat disturbance from construction of the site. Because the proposed site was previously developed and is located in an industrial area, no significant individual or cumulative impacts would occur.

The associated gas pipeline for the project would be located in areas that have been previously disturbed and would not result in the permanent loss of habitat or cause significant adverse impacts to biological resources individually or cumulatively.

8.2.5 Proposed Mitigation and Monitoring

The following subsections describe proposed mitigation intended to avoid and minimize effects or compensate for potential adverse effects of the project on biological resources, and to monitor and document the effectiveness of mitigation and protection measures.

8.2.5.1 General Project Construction

The following measures would be implemented in construction areas:

- Provide worker environmental awareness training (WEAT) for all construction personnel that identifies the sensitive biological resources and measures required to minimize project impacts during construction and operation.
- Avoid sensitive habitats and species during construction by developing construction exclusion zones and fencing around sensitive areas.
- Conduct additional preconstruction surveys for sensitive species in potential impact areas during the spring before construction begins, including burrowing owls, or breeding birds if vegetation removal during the nest season is unavoidable.
- Preconstruction surveys would be conducted prior to nesting season to remove potential nest substrate (shrubs, trees as necessary, and tall vegetation) and install silt fence to keep snakes and ground dwellers out of the site.

8.2.5.2 Worker Environmental Awareness Program (WEAP)

A site-specific WEAP will be designed to inform all onsite personnel of the sensitive biological resources, restrictions, protection measures, and individual responsibilities associated with the project. The WEAP will be administered in an onsite and/or classroom setting and may include an oral, video, or written materials presentation. The presentation would include the types of construction activities that could impact biological resources and the measures developed to avoid such impacts. It would also include appropriate contact procedures and personnel information. The program would include information regarding encounters with wildlife and dealing with situations involving biological resources. Special

emphasis will be placed on explaining the protection measures developed for the project and the consequences of noncompliance

8.2.5.3 Mitigation and Protection Measures for Special-Status Species

Special-status species are not likely to occur on the project site or on the highly developed portions of the gas alignment that extend offsite. Specific mitigation/protective measures were developed that focus on providing environmental awareness training, avoiding sensitive habitats, and avoiding seasonal disruption of particular special-status species critical life history events. The following are mitigation and protective measures that would be implemented if sensitive species are found during preconstruction surveys and construction monitoring activities.

8.2.5.3.1 Nesting Bird Protection Measures

The following protection measures will be implemented during construction activities.

1. If necessary, clear vegetation that could be used as nesting substrate in impact areas prior to February 1 before the bird breeding season or after birds have fledged from the nest (August 15th or later).

2. Conduct preconstruction nesting surveys in the spring to determine if any habitat in the construction areas is occupied by nesting birds. Implement mitigation measures that protect nesting birds by coordinating work activities during non-nesting periods or ceasing work within 200 feet (500 feet for raptors) of an active bird nest or monitoring the nest during activities to determine if disturbance is adversely affecting reproduction. Preconstruction field surveys (conducted under CDFG guidelines) to identify active burrowing owl nest sites will be conducted prior to construction activities. If active nest sites are found, protection measures will be implemented.

8.2.5.3.2 Foraging and Migratory Raptors and Waterbirds

Proposed protection measures also include:

1. Design "raptor-friendly" electric transmission lines, as described in *Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 1996* (APLIC, 1996) with conductor wire spacing greater than the wingspans of large birds (43 inches on the vertical and 60 inches on the diagonal) to prevent electrocutions.

2. Provide safety lighting that points downward to reduce avian collisions.

8.2.5.3.3 Aquatic Protection Measures

The following protective measures are proposed to avoid impacts to aquatic resources:

1. Avoid the Riverside Canal, Gage Canal, Springbrook Wash, and downstream reaches of the Santa Ana River habitats, with modifications to gas pipeline design that include use of a trenchless construction method (HDD or jack-and-bore) or constructing during the dry season.

2. Obtain a Streambed Alteration Agreement for activities (that includes protection measures for biological resources downstream). Develop a contingency plan for the potential inadvertent return of drilling mud into waterways during drilling activities.

3. Implement extensive erosion control in the temporary impact areas, especially near drainages and waterways.

8.2.6 Involved Agencies and Agency Contacts

Involved agencies and agency contacts are listed in Table 8.2-5.

TABLE 8.2-5
Contacts for the Highgrove Project

Biological Resource Agency	Person Contacted	Issue	Phone
U.S. Fish and Wildlife Service	Nancy Ferguson	Federal threatened or endangered species	760-431-9440 ext 244
California Department of Fish and Game	Curt Taucher	California threatened or endangered species	562 596-4212
California Department of Fish and Game; 1600	Sheila Aguinaldo 4665 Lampson Avenue, Suite J Los Alamitos, CA 90720	Streambed Alteration Agreement	562 430-7212
Regional Water Quality Control Board – Riverside County	Michael Roth	RWQCB 401 permit	951-320-2027
Regional Water Quality Control Board – San Bernardino County	Adam Fischer	RWQCB 401 permit	951-320-6363
U.S. Army Corps of Engineers	Jerry Salas	Waters of the U.S. and wetland impacts	213-452-3425

8.2.7 Required Permits and Permit Schedule

Required permits and permit schedule are listed in Table 8.2-6.

TABLE 8.2-6
Required Permits and Schedule

Permit/Authorization	What Is Required to Complete Consultations	When Application Needs to be Submitted
Biological Opinion pursuant to Section 7 of the ESA, issued by USFWS Letter of Concurrence, from CDFG	Not needed because federally listed plant or animal species are not impacted.	N/A
CDFG Streambed Alteration Agreement required for pipeline construction across riparian area	Construction drawings of water crossing(s), completion of CEQA compliance documentation.	120 days prior to the start of pipeline construction
Clean Water Act Section 404	Not needed if construction remains within existing roadways or if HDD is used to drill beneath the channels. However, would be required if gas line is installed by trenching through the riparian areas during the dry season.	180 days prior to the start of pipeline construction

TABLE 8.2-6
Required Permits and Schedule

Permit/Authorization	What Is Required to Complete Consultations	When Application Needs to be Submitted
Water Quality Certification	Not needed if construction remains within existing roadways or if HDD is used to drill beneath the channels. However, would be required if gas line is installed by trenching through the riparian areas during the dry season.	Mar 2007
Riverside County MSHCP Consistency Determination	Required for all riparian crossings.	Mar 2007

8.2.8 References

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TABLE 8.2-3
Special-Status Species Potentially Occurring in the Highgrove Project Area

Common Name	Scientific Name[a]	Status[b]	Season[c]	Primary Habitat[d]	Potential Occurrence in Project Area	Comments
Plants						
Ash-gray Indian paintbrush	*Castilleja cinerea*	FT, CNPS List 1B	June-Aug	Mojavean desert scrub, meadows and seeps, pebble (pavement) plain, pinyon and juniper woodland, upper montane coniferous forests (clay openings)	Unlikely to occur due to the highly developed nature of the project area and lack of suitable habitat	
Bear Valley sandwort	*Arenaria ursina*	FT, CNPS List 1B	May-Aug	Pebble (pavement) plain, pinyon and juniper woodland in mesic and rocky areas	Unlikely to occur due to the highly developed nature of the project area and lack of suitable habitat	
California taraxacum	*Taraxacum californicum*	FE, CNPS List 1B	May-Aug	Occurs in meadows and seeps at elevations of 1620-2800 meters	Unlikely to occur due to the highly developed nature of the project area and lack of suitable habitat	
Coulter's Goldfields	*Lasthenia glabrata* ssp. *coulteri*	CNPS:1B	Feb-June	Occurs in coastal salt marshes, playas, valley and foothill grassland, and vernal pools. Usually found on alkali soils in playas, sinks, and grasslands	Unlikely to occur due to the highly developed nature of the project area and lack of mesic, wetland areas.	
Cushenbury buckwheat	*Eriogonum ovalifolium* var. *vineum*	FE, CNPS List 1B	May-Aug	Occurs in Joshua tree woodland, Mojavean desert scrub, and pinyon and juniper woodlands in carbonate soils	Unlikely to occur due to the highly developed nature of the project area and lack of suitable habitat	
Davidson's saltscale	*Atriplex serenana* var. *davidsonii*	CNPS:1B	May-Oct	Found in association with association with the alkali vernal pools, alkali annual grassland, alkali playa, and alkali scrub components of alkali vernal plains	Unlikely to occur in the project area due to lack of suitable habitat.	
Heart-leaved pitcher sage	*Lepechinia cardiophylla*	CNPS:1B	Apr-Jul	Occurs in closed-clone coniferous forest, chaparral and cismontane woodland at elevations of 550 to 1,370 m	Unlikely to occur in the project area due to lack of suitable habitat.	Restricted to the Santa Ana Mountains in Orange and Riverside counties, Iron Mountain in San Diego County and the coastal mountains of northern Baja California

TABLE 8.2-3
Special-Status Species Potentially Occurring in the Highgrove Project Area

Common Name	Scientific Name[a]	Status[b]	Season[c]	Primary Habitat[d]	Potential Occurrence in Project Area	Comments
Little mouse tail	*Myosurus minimus*	CNPS 3	Mar-May	Occurs in association with vernal pools and within the alkali vernal pools and alkali annual grassland components of alkali vernal plains	Unlikely to occur in the project area due to lack of suitable habitat.	
Mojave tarplant	*Hemizonia (Deinandra) mohavensis*	CE, CNPS 1B	Jul-Oct	Associated with chaparral and coastal/riparian scrub communities with mesic soils.	Unlikely to occur in the project area due to lack of suitable habitat.	Mojave tarplant is believed to be extirpated in San Bernardino County.
Nevin's barberry	*Berberis nevinii*	FE/CE CNPS:1B	Mar-Apr	Found in coarse soils and rocky slopes in chaparral and gravelly wash margins in alluvial scrub.	Unlikely to occur in the project area due to lack of suitable habitat.	Nevin's barberry is known in only four areas in Riverside County: Vail Lake, Riverside, Temecula and Aguanga.
Parish's brittlescale	*Atriplex parishii*	CNPS:1B	Jun-Oct	Found in alkaline habitats in association with alkali vernal pools, alkali annual grassland, alkali playa, and alkali scrub components of alkali vernal plains.	Unlikely to occur in the project area due to lack of suitable habitat.	Parish's brittlescale is currently known only from the western Riverside County
Parish's checkerbloom	*Sidalcea hickmanii* ssp. p*arishii*	FC, CNPS List 1B	June-Aug	Occurs in chaparral, cismontane woodland, and lower montane coniferous forests at elevations of 1000-2500 meters	Unlikely to occur due to the highly developed nature of the project area and lack of suitable habitat	
Parish's gooseberry	*Ribes divaricatum var. parishii*	CNPS 1B	Feb-April	Associated with riparian woodlands.	Unlikely to occur due to the low quality nature of the riparian habitat along the gas alignment.	
Parry's spineflower	*Chorizanthe parryi var. parryi*	CNPS 3	Apr–Jun	Occurs within the alluvial chaparral and scrub of the San Gabriel, San Bernardino and San Jacinto Mountains, at elevations of 100 to 1,300 m above msl.	Low potential to occur due to the highly developed nature of the project area	Known from the flats and foothills of the San Gabriel, San Bernardino and San Jacinto.
Pedate checker-mallow	*Sidalcea pedata*	FE, CE CNPS List 1B	May-Aug	Occurs in meadows and seeps and pebble (pavement) plains at elevations of 1600-2500 meters	Unlikely to occur due to the highly developed nature of the project area and lack of suitable habitat	
San Bernardino bluegrass	*Poa atropurpurea*	FE, CNPS List 1B	Apr-Aug	Occurs in meadows and seeps at elevations of 1360-2455 meters	Unlikely to occur due to the highly developed nature of the project area and lack of suitable habitat	

TABLE 8.2-3
Special-Status Species Potentially Occurring in the Highgrove Project Area

Common Name	Scientific Name[a]	Status[b]	Season[c]	Primary Habitat[d]	Potential Occurrence in Project Area	Comments
San Bernardino Mountains bladderpod	*Lesquerella kingii* ssp. b*ernardina*	FE, CNPS List 1B	May-Jun	Occurs in lower montane coniferous forests and pinyon and juniper woodlands, generally in carbonate soils at elevations of 1850-2700 meters	Unlikely to occur due to the highly developed nature of the project area and lack of suitable habitat	
San Diego ambrosia	*Ambrosia pumila*	FE, CNPS List 1B	May-Sep	Occurs in chaparral, coastal scrub, valley and foothill grassland, vernal pools (often in disturbed areas) at elevations of 20-415 meters	Unlikely to occur due to the highly developed nature of the project area and lack of suitable habitat	
San Jacinto Valley crownscale	*Atriplex coronata* var. *notatior*	FE CNPS 4	Apr-Jun	Occurs primarily in floodplains (seasonal wetlands) dominated by alkali scrub, alkali playas, vernal pools, and, to a lesser extent, alkali grasslands.	Unlikely to occur in the project area due to lack of suitable habitat.	
Santa Ana River woolly-star	*Eriastrum densifolium* ssp *sanctorum*	CE, FE, CNPS 1B	Jun-Sep	Found only within open washes and early-successional alluvial fan scrub on open slopes above main watercourses on fluvial deposits.	Unlikely to occur due to lack of optimal habitat and intensive development in the project area.	Occurs along the Santa Ana River and Lytle and Cajon Creek flood plains from the base of the San Bernardino Mountains in San Bernardino County southwest along the Santa Ana River through Riverside County.
Slender-horned spineflower	*Dodecahema leptoceras*	FE, CE, CNPS List 1B	Apr-Jun	Occurs in alluvial fans in chaparral, cismontane woodland, coastal scrub habitats.	Unlikely to occur in areas of direct impact, May occur in the coastal scrub habitats within the Jurupa Hills and Sycamore Canyon.	
Slender-petaled mustard	*Thelypodium stenopetalum*	FE, CE	May-Aug	Occurs in meadows and seeps in alkali and mesic soils.	Unlikely to occur in the project area due to lack of suitable habitat.	

TABLE 8.2-3
Special-Status Species Potentially Occurring in the Highgrove Project Area

Common Name	Scientific Name[a]	Status[b]	Season[c]	Primary Habitat[d]	Potential Occurrence in Project Area	Comments
Smooth tarplant	*Centromadia pungens ssp. laevis*	CNPS 1B	Apr-Sept	Occurs in a variety of habitats including alkali scrub, alkali playas, riparian woodland, watercourses, and grasslands with alkaline affinities.	Unlikely to occur in the project area due to lack of suitable habitat.	Found in southwestern California and northwestern Baja California, Mexico at low elevations.
Southern mountain wild buckwheat	*Eriogonum kennedyi* var. *austromontanum*	FT	Jul-Sept	Occurs in lower montane coniferous forests in gravelly or pebbled plains.	Unlikely to occur in the project area due to lack of suitable habitat.	
Spreading navarretia	*Navarretia fossalis*	FT	Apr-Jun	Occurs in chenopod scrub, marshes and swamps, playas, and vernal pools.	Unlikely to occur in the project area due to lack of suitable habitat.	
Threadleaf brodiaea	*Brodiaea filifolia*	FT/CE CNPS:1B	May-Aug	Occurs on gentle hillsides, valleys, and floodplains in semi-alkaline mudflats, vernal pools, mesic southern needlegrass grassland, mixed native-nonnative grassland and alkali grassland plant communities in association with clay, loamy sand, or alkaline silty-clay soils.	Unlikely to occur in the project area due to lack of suitable habitat.	Endemic to southwestern cismontane California from near sea level to 600 meters (2,000 feet).
Vail Lake ceanothus	*Ceanothus ophiochilus*	FT/CE CNPS:1B		Found in dry habitats along ridgetops and north to northeast-facing slopes in chamise chaparral. Restricted to shallow soils originating from ultra-basic parent rock and deeply weathered gabbro, which are both phosphorous-deficient.	Unlikely to occur in the project area due to lack of required habitat.	
Insects and Crustacea						
Delhi sands flower-loving fly	*Rhaphiomidas terminatus abdominalis*	FE	RES	Tied to fine, sandy soils, often with wholly or partly consolidated dunes referred to as the “Delhi” series. Typically found in relatively intact, open, sparse, native habitats with less than 50% vegetative cover.	Unlikely to occur due to the lack of dune habitat.	Endemic to the Colton Dunes The adult stage can only be found on the surface for a few days during the late summer, however the larval stages are present year-round in the soil.

TABLE 8.2-3
Special-Status Species Potentially Occurring in the Highgrove Project Area

Common Name	Scientific Name[a]	Status[b]	Season[c]	Primary Habitat[d]	Potential Occurrence in Project Area	Comments
Riverside fairy shrimp	*Streptocephals wootoni*	FE	RES	Restricted to deep seasonal vernal pools, vernal pool like ephemeral ponds, and stock ponds.	Unlikely to occur in the project area due to lack of vernal pool or other ponding habitat.	
Vernal pool fairy shrimp	*Branchinecta lynchi*	FT	RES	Prefers cool-water pools that have low to moderate dissolved solids, are less predictable, and often short lived.	Unlikely to occur in the project area due to lack of vernal pool or other ponding habitat.	
Fish						
Arroyo chub	*Gila orcutti*	CSC	RES	Prefer slow moving or backwater sections of warm to cool streams with substrates of sand or mud The depth of the stream is typically greater than 40 centimeters.	Unlikely to occur within the project impact area. However, likely to occur in the Santa Ana River tributaries.	Spawning typically begins in late December and can extend into April.
Santa Ana speckled dace	*Rhinichthys osculus ssp. 3*	CSC	RES	Permanent streams and rivers with cool, flowing rocky-bottomed washes are the primary habitats. Summer water temperatures usually range from 17-20 degrees Celsius and are typically maintained by outflows of cool springs	Unlikely to occur within the project impact area. However, likely to occur in the Santa Ana River.	Currently, the dace has a limited distribution in the headwaters of the Santa Ana and San Gabriel rivers.
Santa Ana sucker	*Catostomus santaanae*	FT, CSC	RES	Generally lives in small, shallow streams, less than 7 meters in width, with currents ranging from swift in the canyons to sluggish in the bottom lands.	Unlikely to occur within the project impact area. However, likely to occur in the Santa Ana River	The native range of *C. santaanae* is southern California including the San Gabriel (east, north and west forks), Los Angeles, and Santa Ana River drainages.
Unarmored threespine stickleback	*Gasterosteus aculeatus williamsoni*	FE, CE	RES	Lowland streams, springs, river, and marsh.	Unlikely to occur in the project area due to lack of suitable habitat.	

TABLE 8.2-3
Special-Status Species Potentially Occurring in the Highgrove Project Area

Common Name	Scientific Name[a]	Status[b]	Season[c]	Primary Habitat[d]	Potential Occurrence in Project Area	Comments
Amphibians						
Arroyo toad	*Bufo californicus*	FE, CSC	RES	Found in foothill canyons and inter-mountain valleys where the river is bordered by low hills and the stream gradient is low.	Unlikely to occur within the project impact area due to lack of suitable breeding habitat.	The species is currently thought to be restricted to the headwaters of large streams with persistent water from March to mid-June that have shallow, gravely pools less than 18 inches deep, and adjacent sandy terraces.
California red-legged frog	*Rana aurora draytonii*	FT, CSC	RES	Deep water ponds with dense stands of overhanging willows and a fringe of cattails (*Typha latifolia*) between the willow roots and overhanging willow limbs.	Unlikely to occur within the project impact area due to lack of suitable breeding habitat.	
Mountain yellow-legged frog	*Rana mucosa*	FE CSC	RES	Populations appear to be restricted to streams and small pools in ponderosa pine, montane hardwood-conifer, and montane riparian habitat types	Unlikely to occur within the project impact area due to lack of suitable habitat.	There are likely far less than 100 adult frogs left in the entire southern California population, found in four small tributaries of the upper reaches of the San Jacinto River system in the San Jacinto Mountains
Western spadefoot toad	*Spea (Scaphiopus) hammondii intermontanus*	CSC	RES	Requires rain pools with water temperatures between 9°C - 30°C that persist with more than three weeks of standing water.	Low potential to occur due to lack of optimal habitat.	*S. hammondii* is found in numerous scattered locations widely distributed throughout western Riverside County, east of the San Jacinto Mountains and desert regions.
Reptiles						
California mountain kingsnake	*Lampropeltis zonata zonata*	CSC	RES	Found most commonly in the vicinity of rocks or boulders near streams or lake shores,	Unlikely to occur due to lack of optimal habitat.	

TABLE 8.2-3
Special-Status Species Potentially Occurring in the Highgrove Project Area

Common Name	Scientific Name[a]	Status[b]	Season[c]	Primary Habitat[d]	Potential Occurrence in Project Area	Comments
Coastal rosy boa	*Charina (Lichanura) trivirgata roseofusca*	CSC	RES	In coastal areas, occurs in rocky chaparral-covered hillsides and canyons, while in the desert it occurs on scrub flats with good cover.	Low potential to occur due to lack of optimal habitat.	There are scattered documented occurrences for Charina [*Lichanura] trivirgata roseofusca* throughout western Riverside County.
Coast horned lizard	*Phrynosoma coronatum blainvilli*	CSC	RES	In inland areas, this species is restricted to areas with pockets of open microhabitat, created by disturbance (e.g., floods, fire, roads, grazed areas, fire breaks)	Low potential to occur due to lack of optimal habitat.	
Orange-throated whiptail	*Cnemidophorus hyperythrus beldingi*	CSC, FP	RES	Found primarily in chaparral, non-native grassland, (Riversidian) coastal sage scrub, juniper woodland and oak woodland	Moderate potential to occur due to lack of optimal habitat. Local habitat limited to fragmented ruderal and active agricultural fields.	No recorded occurrences within the project impact area
Red diamond rattlesnake	*Crotalus ruber ruber*	CSC	RES	Most commonly associated with heavy brush with large rocks or boulders.	Low potential to occur due to lack of optimal habitat.	
San Bernardino mountain kingsnake	*Lampropeltis zonata parvirubra*	CSC	RES	Found most commonly in the vicinity of rocks or boulders near streams or lake shores	Unlikely to occur due to lack of optimal habitat.	Known populations for *L. z. pulchra* occur in the Santa Ana Mountains.
Southwestern pond turtle	*Emys (Clemmys) marmorata pallida*	CSC	RES	The only native freshwater turtle in the Pacific Coast states. Highly aquatic and associated with riparian habitat including streams, rivers, sloughs, ponds, and artificial water bodies. Deep pools, basking sites, and aquatic vegetation are important habitat components.	Unlikely to occur due to lack of optimal habitat. Local potential habitat limited to irrigation canals and ponds that lack significant vegetation and other habitat features important to pond turtle natural history.	Breeding season is typically between April to August. Eggs laid in an excavated chamber in upland habitat as much as 100 meters from the water. Hatchlings emerge in late summer or fall or over-winter in the nest to emerge the following spring. Adults hibernate in the winter by burying themselves in muddy bottoms underwater or in upland soil and vegetative litter.

TABLE 8.2-3
Special-Status Species Potentially Occurring in the Highgrove Project Area

Common Name	Scientific Name[a]	Status[b]	Season[c]	Primary Habitat[d]	Potential Occurrence in Project Area	Comments
Two-striped garter snake	*Thamnophis hammondii*	CSC	RES	Typically associated with wetland habitats such as streams, creeks and pools. It is closely associated with streams with rocky beds and bordered by willows	Low potential to occur due to lack of optimal habitat.	Annual activity range is between January and November. During hot weather, *T. hammondii* may be crepuscular or nocturnal.
Birds						
Bald eagle	*Haliaeetus leucocephalus*	FT, CE	WNTR	Within mainland southern California, the species primarily winters at larger bodies of water in the lowlands and mountains.	Unlikely to breed or nest in the project area due to lack of primary habitat.	
Bell's sage sparrow	*Amphispiza belli belli*	CSC FSC	RES	Dry chaparral and coastal sage scrub along the coastal lowlands, inland valleys, and in the lower foothills of local mountains.	Unlikely to breed or nest in the project area due to lack of primary habitat.	Bell's sage sparrow usually nests in sagebrush or chaparral.
California horned lark	*Eremophila alpestris actia*	CSC, MB	RES	A resident in California. Associated with a variety of open habitats.	Unlikely to breed in the project vicinity due to the lack of significant undisked open areas. May forage in nearby fields.	Nests on the ground. Breeding season is from March to July.
Coastal California gnatcatcher	*Polioptila californica californica*	FT, CSC	RES	Strongly associated with Coastal and Riversidean sage scrub habitats, particularly those dominated by California sagebrush stands on mesas, gently sloping areas, and along the lower slopes of the coast ranges	Moderate potential due to lack of optimal habitat within the project impact area.	Occurs throughout western Riverside County in suitable habitat.
California condor	*Gymnogyps californianus*	FE, CE	RES	Found in mountain and foothill rangelands and forest habitats	Unlikely to occur in the project area due to lack of primary habitat and restricted range.	
Cooper's hawk	*Accipiter cooperii*	CSC	RES	Found in woods and the edges of woods, often hunts around houses and birdfeeders. Nests in tall trees especially pines.	Unlikely to breed in the project vicinity due to the lack of significant wooded areas. Likely to forage in residential areas.	The Cooper's hawk breeds primarily in riparian areas and oak woodlands and apparently is most common in montane canyons.
Golden eagle	*Aquila chrysaetos*	CSC	RES	Habitat is typically rolling foothills, mountain areas, sage-juniper flats, desert within this range in California. Nests on cliff ledges or large trees.	Unlikely to forage in the area due to lack of prey.	

TABLE 8.2-3
Special-Status Species Potentially Occurring in the Highgrove Project Area

Common Name	Scientific Name[a]	Status[b]	Season[c]	Primary Habitat[d]	Potential Occurrence in Project Area	Comments
Grasshopper sparrow	*Ammodramus savannarum*	FSC, MB	SUMR	Prefers moderately open grasslands and prairies with patchy bare ground.	Unlikely to breed in the project area due to the lack of significant undisked open areas. May forage in nearby fields.	Breeding season typically begins in mid-April. A neotropical migrant that primarily winters in Central America.
Least Bell's Vireo	*Vireo bellii* ssp *pusillus*	CE, FE	SPR	Primarily occupies riverine riparian habitats that typically feature dense cover within 1-2 meters of the ground and a dense, stratified canopy. It inhabits low, dense riparian growth along water or along dry parts of intermittent streams.	Moderate potential due to lack of optimal nesting habitat. However migrant birds may be found foraging in the riparian areas.	The breeding season for least Bell's vireo is typically mid-March to September and are known to breed almost exclusively within riparian habitats. Nesting sites are typically selected within structurally heterogeneous woodlands, forests and scrubs that support dense vegetation near the ground, and dense horizontally separated vegetation higher up in the canopy.
Loggerhead shrike	*Lanius ludovicianus*	FSC, CSC, MB	RES	Typically associated with open lowland and foothill scrub or riparian woodland habitats with adequate hunting perches.	Moderate potential due to lack of optimal habitat.	Largely nonmigratory and has been known to defend year-round territories. Nests are typically well-concealed and built in dense shrubs or trees. In California the breeding period typically begins in March and may extend into August.
Southern bald eagle	*Haliaeetus leucocephalus ssp leucocephalus*	FT, CE	WNTR	California winter range is associated with wetlands, agriculture fields, flooded fields, and open land.	Unlikely to forage in cropland in project area.	Breeds in Aleutian Islands and winters in the Central Valley.
Southwestern willow flycatcher	*Empidonax traillii extimus*	FE, CE	SUMR	Restricted to riparian woodlands along streams and rivers with mature, dense stands of willows, cottonwoods or smaller spring fed or boggy areas with willows or alders.	Moderate potential due to lack of dense riparian habitat.	

TABLE 8.2-3
Special-Status Species Potentially Occurring in the Highgrove Project Area

Common Name	Scientific Name[a]	Status[b]	Season[c]	Primary Habitat[d]	Potential Occurrence in Project Area	Comments
Swainson's hawk	*Buteo swainsoni*	CT, MB	Winter migrant/ RES	Nests primarily in riparian trees adjacent to grassland, and agricultural areas with scattered trees. Primarily associated with the Central Valley during the breeding season, migrating to Central and South America in the fall/winter.	Low potential due to lack of potential nesting sites.	The breeding season is from March through September. Migrating to Central or South America in fall/winter.
Tricolored blackbird	*Agelaius tricolor*	CSC, MB	RES	Breeds near fresh water, preferably in emergent wetland with tall, dense cattails or tules, but also in thickets of willow, blackberry, wild rose, and tall herbs. Forages in grassland and cropland habitats.	Moderate potential due to the absence of dense tall wetland vegetation growth for nesting in project vicinity. May forage in nearby fields.	Nest in large colonies. Breeding season is April-July. However has also been reported breeding in October and November.
Western burrowing owl	*Athene cunicularia hypugaea*	FSC, CSC, MB	RES	Habitats includes open grassland habitat with fossorial mammal burrows, often associated with ground squirrels.	Low to moderate habitat for burrowing owl burrows along the railroad corridor and in ruderal fields within the project impact area.	Utilize small mammal burrows for cover and natal dens. Breeding season is typically from February through August.
Western yellow-billed cuckoo	*Coccyzus americanus occidentalis*	CE, FC	SUMR	Requires dense, wide riparian woodlands with well-developed understories for breeding.	Unlikely to breed in the project area due to lack of required breeding habitat.	Breeding is restricted to river bottoms and other mesic habitats where humidity is high and where the dense understory abuts slow-moving watercourses, backwaters or seeps.
Yellow warbler	*Dendroica petechia brewsteri*	CSC	WNTR	Occurs in lowland and foothill woodland habitats such as desert oases, riparian woodlands, oak woodlands, mixed deciduous-coniferous woodlands, suburban and urban gardens and parks, groves of exotic trees, farmyard windbreaks, and orchards.	Moderate potential as a winter migrant. Unlikely to breed in the project area due to lack of suitable riparian habitat.	Breed in lowland and foothill riparian woodlands dominated by cottonwoods, alders, or willows and other small trees and shrubs typical of low, open-canopy riparian woodland.

TABLE 8.2-3
Special-Status Species Potentially Occurring in the Highgrove Project Area

Common Name	Scientific Name[a]	Status[b]	Season[c]	Primary Habitat[d]	Potential Occurrence in Project Area	Comments
Mammals						
Aguanga kangaroo rat	*Dipodomys merriami collinus*	CSC	RES	Associated with Riversidean sage scrub, chaparral, redshank chaparral and non-native grassland.	Unlikely to occur in the project area. Outside of its normal distributional range.	Within Riverside County the Aguanga kangaroo rat occurs in the Aguanga Valley and Wilson Creek north of Radec, and probably is scattered throughout sandy wash areas in the region west of the Anza Valley, particularly in Temecula Creek and tributaries east of Vail Lake
American badger	*Taxidea taxus*	CSC	RES	In California, Badgers occupy a diversity of habitats. The principal requirements seem to be sufficient food, friable soils, and relatively open, uncultivated ground.	Unlikely due to the highly developed nature of the project area.	Agricultural activity is adverse to Badgers, as they do not survive on cultivated land.
Los Angeles pocket mouse	*Perognathus longimembris brevinasus*	CSC	RES	Habitat of the Los Angeles pocket mouse has never been specifically defined, although Grinnell (1933) indicated that the subspecies "inhabits open ground of fine sandy composition".	Moderate potential due to the highly developed nature of the project area.	The inland valleys from San Bernardino south to the vicinity of Temecula appear to be the remaining stronghold for this subspecies.
Northwestern San Diego pocket mouse	*Chaetodipus fallax fallax*	CSC	RES	Inhabits coastal sage scrub, sage scrub/grassland ecotones, and chaparral communities in open, sandy areas of both the Upper and Lower Sonoran life-zones of southwestern California and northern Baja California.	Moderate potential due to the highly developed nature of the project area	
San Bernardino kangaroo rat	*Dipodomys merriami parvus*	FE, CSC	RES	Typically found in alluvial fan sage scrub and sandy loam soils, alluvial fans and flood plains, and along washes with nearby sage scrub.	Low potential due to lack of optimal habitat and the highly developed nature of the project area	

TABLE 8.2-3
Special-Status Species Potentially Occurring in the Highgrove Project Area

Common Name	Scientific Name[a]	Status[b]	Season[c]	Primary Habitat[d]	Potential Occurrence in Project Area	Comments
Stephens' kangaroo rat	*Dipodomys stephensi*	FE, CT	RES	Inhabits annual grassland with sparse perennial vegetation in the San Jacinto Valley and adjacent areas of western Riverside and northwestern San Diego County.	Low potential due to lack of optimal habitat and the highly developed nature of the project area	A previously unknown population of the kangaroo rat was discovered in the Ramona Valley, San Diego County, in October 1997. It is not known if this species still inhabits extreme southwestern San Bernardino County.

Notes:
[a] Scientific names are based on the following sources: American Ornithologists Union (AOU), 1983; Jennings, 1983; Zeiner et al., 1990a-c.
[b] Status. Status of species relative to the Federal and California State Endangered Species Acts and Fish and Game Code:
Federal Status
FE Federally listed as endangered.
FT Federally listed as threatened.
FPE Proposed endangered.
FPT Proposed threatened.
Candidate for listing as federally endangered or threatened. Proposed rules have not yet been issued because they have been precluded at present by other listing activity.
FD Delisted from Federal threatened or endangered status.
FSC Federal Species of Special Concern. Proposed rules have not yet been issued because they have been precluded at present by other listing activity.
MB Migratory Bird Treaty Act. of 1918. Protects native birds, eggs, and their nests.
California Status
CE State listed as endangered. Species whose continued existence in California is jeopardized.
CT State listed as threatened. Species that although not presently threatened in California with extinction are likely to become endangered in the foreseeable future.
CSC California Department of Fish and Game "Species of Special Concern." Species with declining populations in California.
FP Fully protected against take pursuant to the Fish and Game Code Sections 3503.5, 3511, 4700, 5050, 5515.
Other Status.
CNPS California Native Plant Society Listing (does not apply to wildlife species).
Plants, rare, threatened or endangered in California and elsewhere and are rare throughout their range. According to CNPS, all of the plants constituting List 1B meet the definitions of Sec. 1901, Chapter 10 (Native Plant Protection) of the California Department of Fish and Game Code and are eligible for state listing.
[c] Season. Blooming period for plants. Season of use for animals. RES = Resident; SUMR = Summer; WNTR = Winter.
[d] Primary Habitat. Most likely habitat association.

Sources: CDFG, 2005; CNPS, 2001.

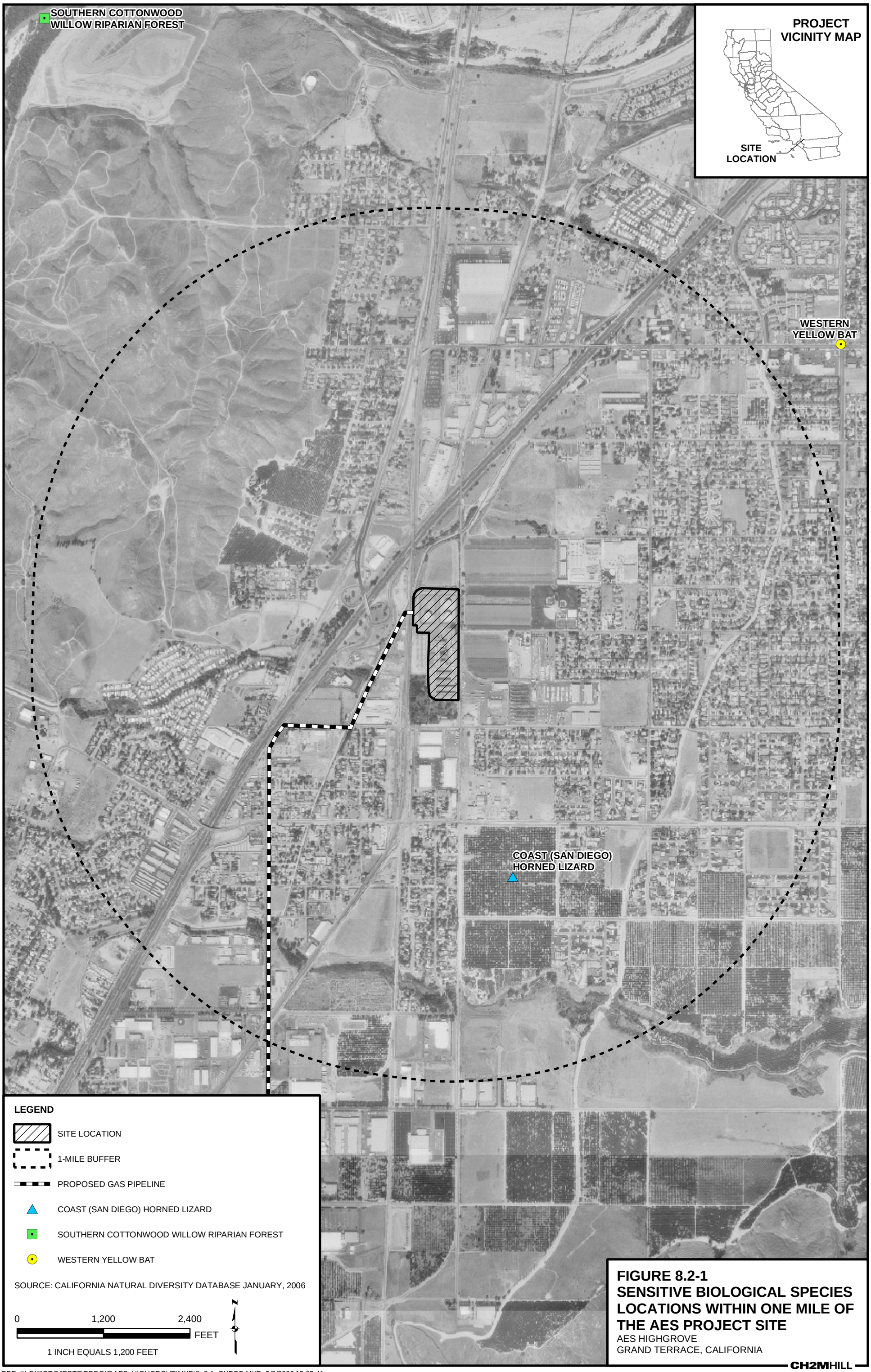

FIGURE 8.2-1
SENSITIVE BIOLOGICAL SPECIES LOCATIONS WITHIN ONE MILE OF THE AES PROJECT SITE
AES HIGHGROVE
GRAND TERRACE, CALIFORNIA

CH2MHILL

RDD \\LOKI\PROJECTS\RDDGIS\AES_HIGHGROVE\MXD\8_2-1_CNDDB.MXD 5/2/2006 15:05:41

City of Grand Terrace

San Bernardino County

Riverside County

MAIN STREET

Highgrove

MARLBOROUGH AVE.

IOWA STREET

City of Riverside

MARTIN LUTHER KING JR. BLVD.

CANYON CREST DRIVE

LEGEND

- PARRY'S SPINEFLOWER (HISTORIC)
- PROPOSED PROJECT SITE
- 1,000-FOOT BUFFER OF GASLINE
- PROPOSED GAS PIPELINE

SOURCE: CALIFORNIA NATURAL DIVERSITY DATABASE JANUARY 2006

0 2,300 4,600 Feet

1 INCH EQUALS 2,300 FEET

N

FIGURE 8.2-2
SENSITIVE SPECIES LOCATIONS WITHIN 1,000 FEET OF THE NATURAL GAS CORRIDOR
AES HIGHGROVE
GRAND TERRACE, CALIFORNIA

CH2MHILL

RDD \\RDD40004508\RDDGIS\AES_HIGHGROVE\MXD\8_2-2_CNDDB_GASLINE.MXD 4/20/2006 21:08:06

COASTAL SAGE SCRUB
AGRICULTURAL
AGRICULTURAL
RUDERAL
RUDERAL
RUDERAL
RUDERAL
RUDERAL
RUDERAL
RUDERAL
RUDERAL
RUDERAL
RUDERAL
ORNAMENTAL
AGRICULTURAL
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RIPARIAN
AGRICULTURAL
RIPARIAN
RIPARIAN
AGRICULTURAL
AGRICULTURAL
ORNAMENTAL
Utility Access
Utility Access
Lark
Van Buren
la Loma
la Cadena
Iowa
Rosedale
Marykknoll
Berkeley
Graymoor
Graymoor
la Cadena Ch
la Cadena Ch
Cage Canal
Drainage
Taylor
Pico
Main
Riverside Canal
Cliffhill
Kluk
Mound
Church
Church
Church
Commercial
Stephens
Center
Pacific
Palmer
Fountain
Highland
Transit
Fountain
Cadena
la Cadena
Highgrove
Ruby
Villa
Prospect
Glen
Electric
Spring
Spring
Glen
Spring Brook
California
Citrus
Iowa
Sanrive
Arliss
Flynn

a
b
c
d
e

MAP LOCATOR

LEGEND

- HABITAT
- SITE LOCATION
- 1000-FT ALIGNMENT BUFFER
- 1-MILE PROJECT SITE BUFFER
- PROPOSED GASLINE
- SURFACE WATER

NOTE:
ALL AREAS THAT ARE NOT IDENTIFIED AS HABITAT ARE DEVELOPED/RESIDENTIAL/INDUSTRIAL/COMMERCIAL

0 500 1,000 FEET

1:6,000

FIGURE 8.2-3a
BIOLOGICAL RESOURCES ALONG GAS LINE ROUTE
AES HIGHGROVE
GRAND TERRACE, CALIFORNIA

CH2MHILL

RDD \\LOKI\PROJECTS\RDDGIS\AES_HIGHGROVE\MXD\8_2-3_HABITAT.MXD 4/18/2006 10:50:40

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